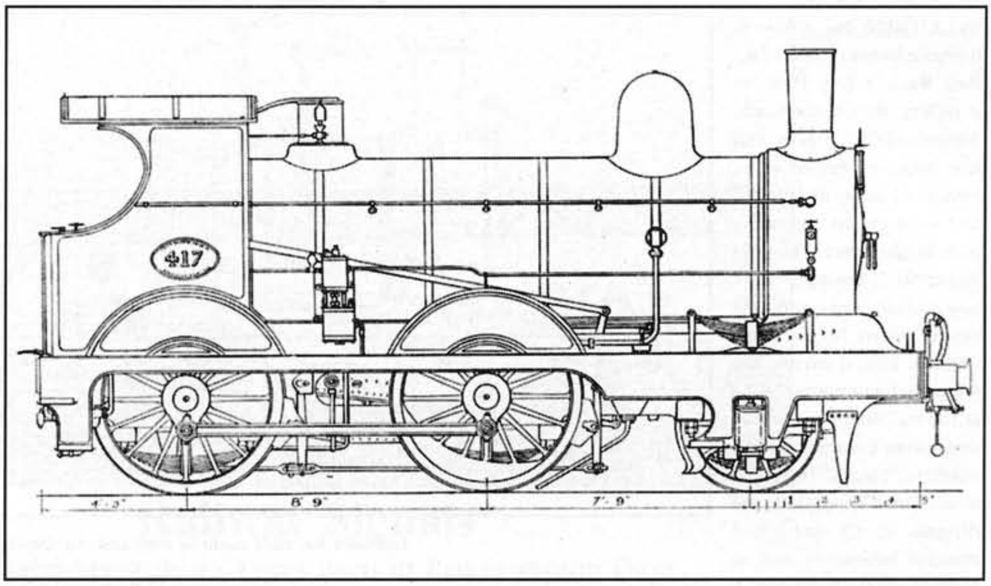
Locomotives Worth Modelling No. 3—"Petrolea's" Little Sister, No. 417. Blue engines and black smoke! This was the abiding impression I had of things wonderful and interesting, which always made a visit to Liverpool Street station an outstanding event. The blue paint gratified the eye, and the smoke delighted the nostrils. Such engineering enthusiasms were not, of course, shared by the "grown-ups" who patiently accompanied me on these strange voyages of exploration......How lovely *Petrolea* looked! I'm not a bit surprised that at this very moment lots of good modellers are hard at work on a model of her. Oh! those *Holden* engines were good-lookers, right enough. The deep rich blue, with its broad black border and thin red separating-line set them off to perfection. But hold !—what is this? A smaller version of *Petrolea* quietly running towards us?

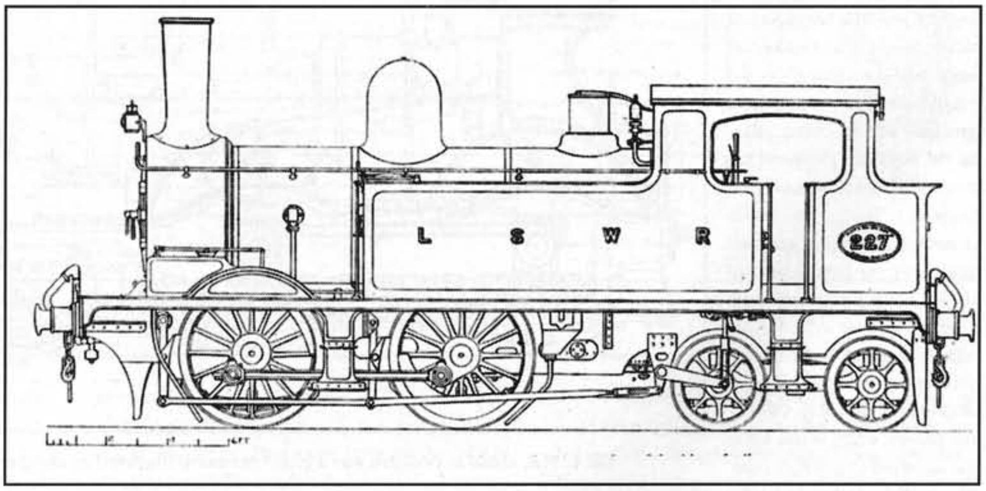
Yes, indeed, and remarkably like her bigger sister. A closer scrutiny reveals the interesting fact that, except for driving wheels and splashers, the two types are one and the same. Instead of seven-footers, substitute 5ft.8in. wheels, and there we are. These mixed-traffic engines are *so* very attractive. Don't you share my admiration for the "little-sister," good locomodeller? The first one, No. 417, was born just a year after *Petrolea* herself; in 1891, and the hundredth, and last of the class, came in 1902.

No. 5—L. & S-W.R. No. 227. When I declare to my locomodeller friends that nothing could beat the stove-pipe chimney for charm—both for good looks and character—one of three things always happens. Either (a) they just say rude things, (b) they give a mirthless chuckle, and remark "That's not funny, old chap," or (c) Of course, you are not serious, are you?" But I stick to my point, and go on bravely with the remark, "You make a model of one of those delightful *Adam's tank* engines that proved such a success on the *LSWR*, and you will be converted without doubt. All of which is perfectly true, the old Nine Elms works never turned out a more attractive type of engine, and, goodness knows, any amount of charmers emanated from the famous London shops. Sixty of the best, one might well call them. *William Adams* was a grand engineer, he designed many classes, most of them exceeding good-lookers. My old tank-engine friend, No. 227, would claim all these virtues. Puffing away at the head of a suburban train, her little 4ft. 10in driving wheels with their heavy coupling rods giving her a "toddling-along" appearance which I used to find quite irresistible. Little did I dream that so many years later I would still be able to see one of the class shunting about in Clapham Yard. Still the same old sharp "hiss" of the steam brake, still the same old skidding along with the driving wheels locked, still the same in every respect except, the lovely green paint and the stove-pipe chimney.

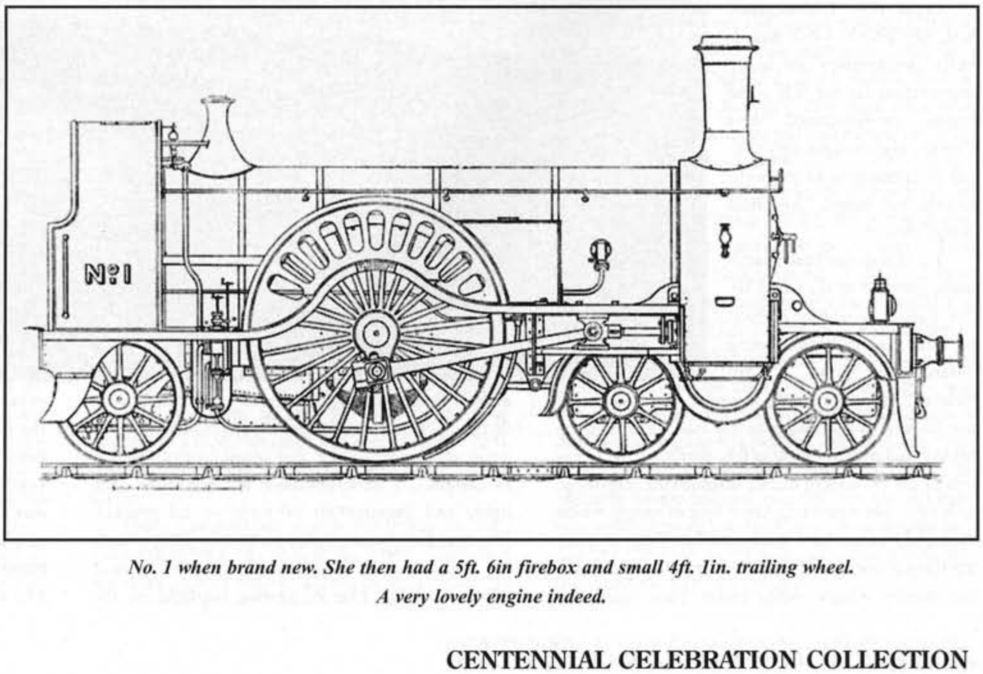
But oh!, what a difference these two items create.......



The G.E.R. mixed-traffic engines are most attractive. A model would bring out their good points better than any drawing.



This sturdy little fellow was one of the most charming members of the Adams family.



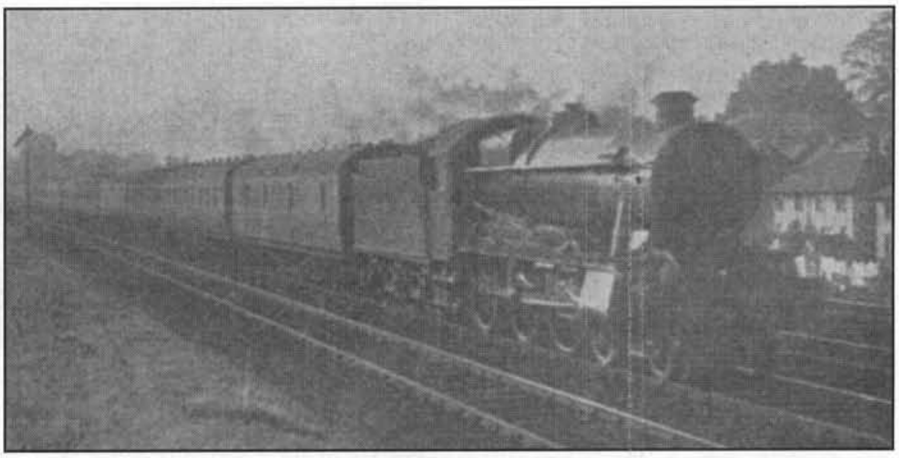
No. 1 when brand new. She then had a 5ft. 6in firebox and small 4ft. 1in. trailing wheel.
A very lovely engine indeed.

1946: No. 17—G.N.R. No.1. Well, of course it had to come to it sooner or later! No series of articles on the older British locomotives could be complete without mention of the famous *Great Northern* Number One, this engine, together with *Deans Lord of the Isles*, was amongst the most popular iron steed ever placed on metals. One would imagine that all that was worth saying about *Patrick Stirling's* masterpiece had been said long ago. But there still remains one little chapter to be recounted. *Mr. Stirling* had been in charge at Doncaster barely a year before his first "Single" appeared, No. 6, a 2-2-2 with 7ft. 1in. drivers. A dozen of these locos convinced their designer that a single pair of drivers could give requisite adhesion together with great freedom of running. The next step was a design with even larger wheels and cylinders, the latter so big (18 by 28in.) that they had to be placed outside the frames. Hence while the last half-dozen of the 7ft class were being completed, the famous No.1 received her finishing touches, appearing in 1870 as No.50. So many locomodellers are familiar with the outlines of No.1 after her rebuild in 1880, when she was brought into line with later engines of her class, that her original appearance may strike them as quite unusual. Nevertheless, she would make a lovely little model, and one, moreover, of great historical interest.

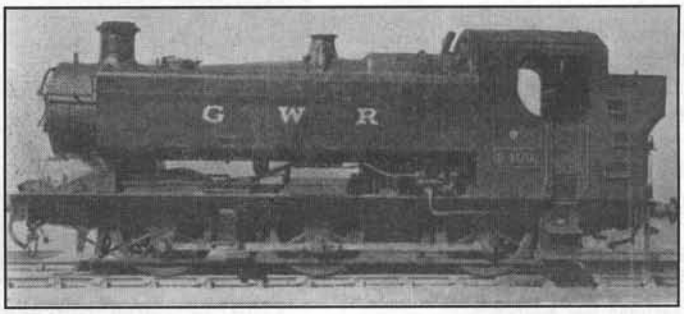
GWR 1000 Class. Introduced in 1945, two cylinders 18½ by 30in., inside *Stephensons* valve gear, wheels 6ft 3in., pressure 280psi, tractive effort 32,580lb. Given the names of the long gone, real "County" class, the first one was No. 1000, County of Middlesex. That in the photo is No. 1002, County of Berks. **(Not one of my favourites, they always remind me of one of the several *LNER* engines that were built with reduced height to run over the North British section, with that squashed safety valve bonnet and chimney. Then, to give them the names of, in my opinion, the best looking engine to run on rails, sacrilege. Having said all that, I have to admit that they were extremely powerful, and did a good job during their short lives. Perhaps one should be philosophical and quote from *W.Boddy's* report on the *Ford Consul* in the *Motor Sport*. " It does have the saving grace, that in the event of an accident, the change can only be an improvement!").**

1947: The "9400" Class, G.W.R. We illustrate herewith one of a series of ten heavy shunting tank engines recently put into service on the *GWR*. They have been designed for heavy shunting or stopping passenger work, as required. A development of the numerous 8750 class, but larger and more powerful. The frames have been modified to take the No. 10 boiler, as used on the 2251 class 0-6-0 tender engines. The engines are attractive in appearance; they have the usual green and black livery, but have copper capped chimneys, and in some cases the safety-valve casings are of polished brass. Cylinders 17½ by 24in., wheels 4ft. 7½in., pressure 200psi, tractive effort 22,515lb. (The last *GWR* design).

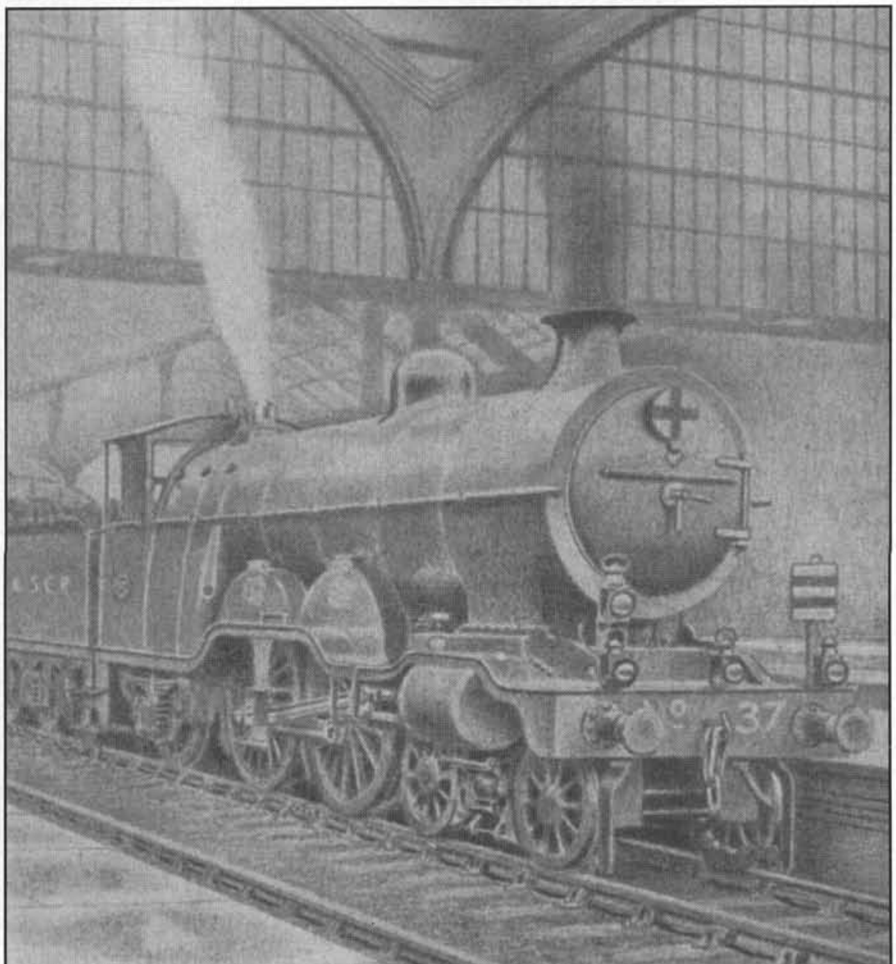
Brighton Atlantic. The illustration is from a pencil drawing by one of our readers, *Mr. William Pretty* of Hendon. It depicts No. 37, *Selsey Bill*, of the *LBSCR* at London Bridge station as she might have appeared from 1906 until c1919.



One of the new GWR "1000" class 4-6-0 locomotives on an up Bristol express, with a 13-coach train.



94XX-Class 0-6-0 heavy shunting pannier tank engine, Great Western Railway.



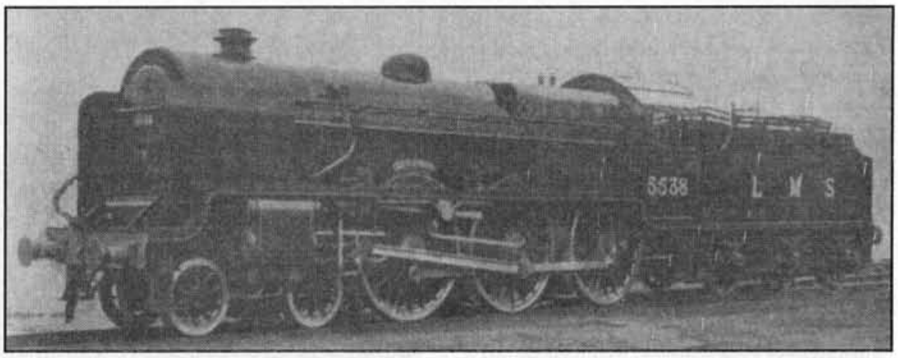
LMS REBUILDING, Conversion of "Patriot" 5X to Class 6 Taper Boiler Engines.

The LMSR's "Patriot class of 3-cylinder 4-6-0 engines, fitted with parallel boilers and bearing the power classification 5X were originally classified as rebuilds of the 4-cylinder "Claughton" class of the former *LNWR*. In all 52 of these engines were completed during the year 1930-1934, to the designs of the late *Sir Henry Fowler*. (Known as "Baby Scots). A number of the engines are now falling due for new boilers and are being rebuilt to the designs of the C.M.E., *Mr. H.G. Ivatt*, so as to take the type 2A boiler which has been used with conspicuous success on the "Royal Scot" conversions as well as on two of the "Silver Jubilee" engines. The opportunity has been taken to renew various details such as the cab, smokebox and saddle, cylinders and the spring suspension, so that the converted engine becomes virtually identical with the two "Jubilee's," No's 5735-6. It is interesting to note that the whole conversion has been carried out with an increase in weight of only 1 ton 5cwt. Whilst the power has been increased out of all proportion. Cylinders 17 by 26in., wheels 6ft 9in., pressure 250psi, tractive effort 29,590lb, ("Patriot" 26,520lb.)

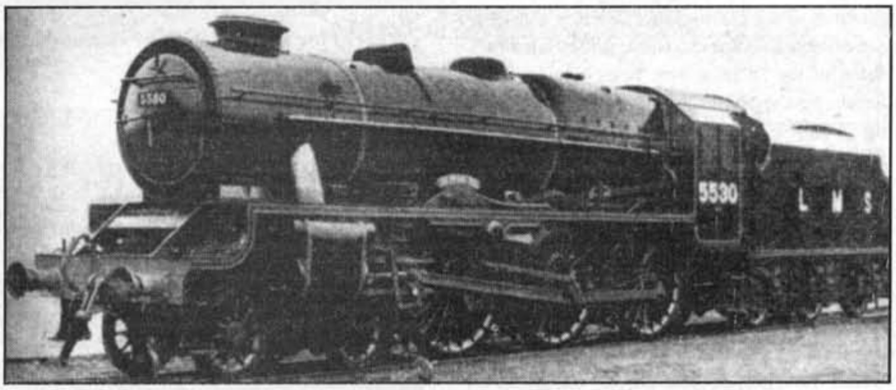
1948: (Compared to 1923, the Nationalised Grouping was a strangely muted affair in the ME. Maybe I missed it, but I could find no official announcement of the occasion. Perhaps they were as depressed as I was at the time? The only acknowledgement that anything had happened, was the occasional editorial comment on loco exchanges.)

Preservation. *ex-GNR* Atlantic No. 251 is to be preserved and restored to its original condition. Built at Doncaster in 1902, she was withdrawn from service in 1947. Another loco, not shown, to be preserved and restored, is *LBSCR No. 82 Boxhill.*

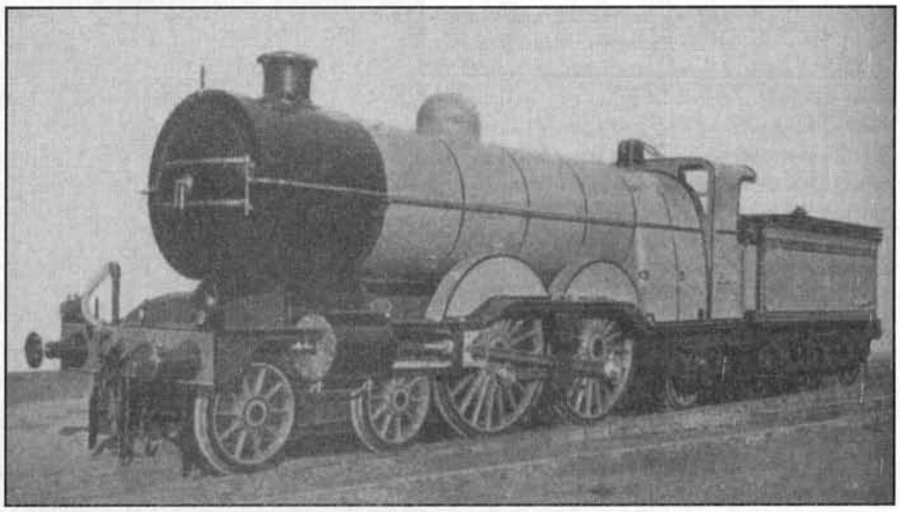
"Peppercorn Pacific" The first of a series of express passenger and freight locos has just been completed at Doncaster and, resplendent in apple green livery, is now in service. No. 525 was named *A.H. Peppercorn* after her designer, the last C.M.E. of the *LNER*. No. 525 is the 1,434th and the last loco to be built by the *LNER* since the formation of the company 25 years ago; it is also the 2,016th to be constructed at Doncaster. It is classified A2 and differs considerably from those of the previous order built during the regime of *Mr. Edward Thompson*, now designated "A2/3." The three cylinders of 19 by 26in. have been brought closer together by moving forward the outside cylinders to the more orthodox position between the bogie wheels, thus shortening the exhaust ports and eliminating the external exhaust ducts. At the same time the bogie has been brought back nearer to the coupled wheels, and the total wheelbase shortened by 2ft. 7in. As before, the drive is divided, the middle cylinder acting on the leading axle and the outside cylinders on the middle. The inside connecting rod and Walschaerts is identical with that on the previous locos, while the outside gear has been lengthened and now resembles that used on the B1. A turbo-generator is provided for lighting. Wheels 6ft. 2in., pressure 250psi, tractive effort 40,300lb.

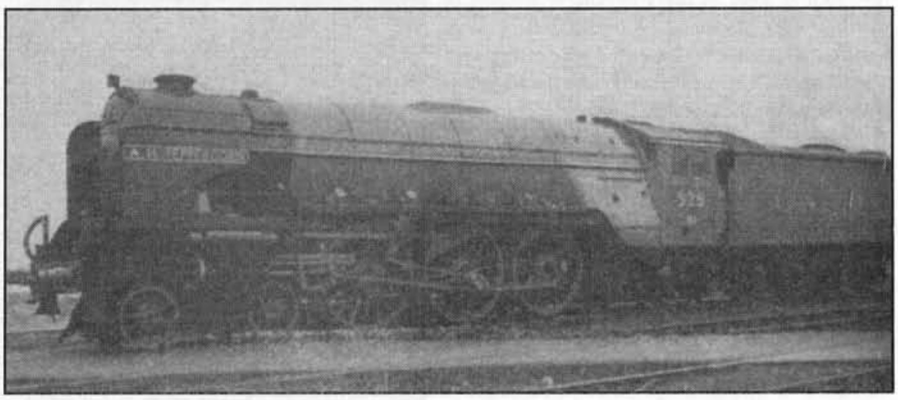


Patriot" class locomotive No. 5538 with parallel boiler.



Converted "Patriot" class locomotive, No. 5530, with taper boiler.





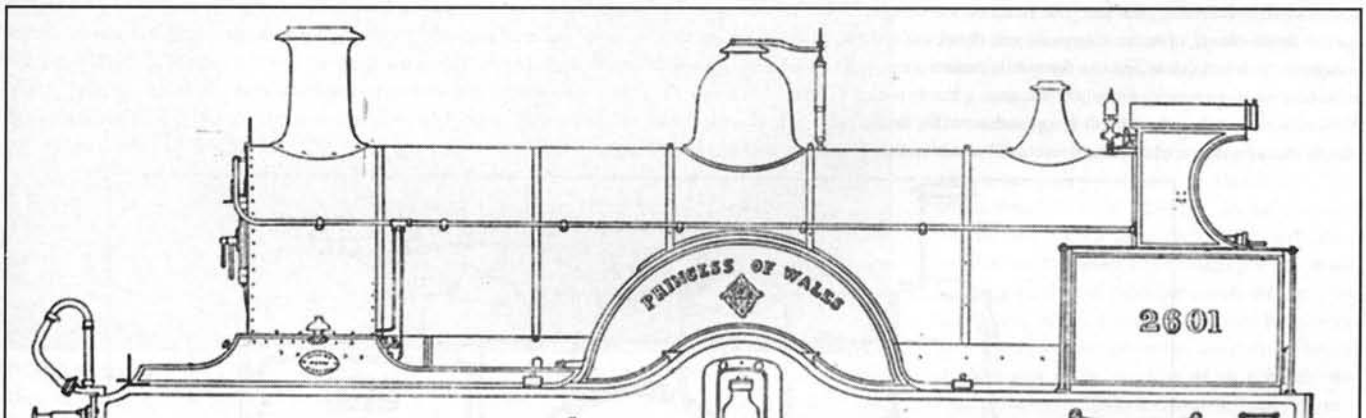
L.N.E.R. engine No. 525, "A.H. Peppercorn," named after her designer.

Interchange of Locomotives. IT WOULD appear that, during the coming summer, locomotive enthusiasts will be provided with some interesting entertainment on a scale never witnessed before on our railways. An exchange of locos between the regions of *British Railways* is being arranged to start on Monday, April 19th, in order to obtain information on which to base plans for future standardisation. The locos to be exchanged will be express passenger, mixed traffic, and freight engines. These will be worked in the normal services over selected routes. The locos will all use the same grade of coal and will be manned by the enginemen who normally work them in their home region. The selected classes of locos include: *L.N.E., L.M.S., and S.R.* Pacific's; *L.M.S.* "Royal Scot" and *G.W.* "King" 4-6-0's; Mixed-traffic 4-6-2 and 4-6-0 types and 2-10-0 and 2-8-0 heavy freight engines. It is interesting to learn that *Southern* locos operating services over routes where water pick-up facilities exist will be fitted with *L.M.S.* tenders. —J.N.M.

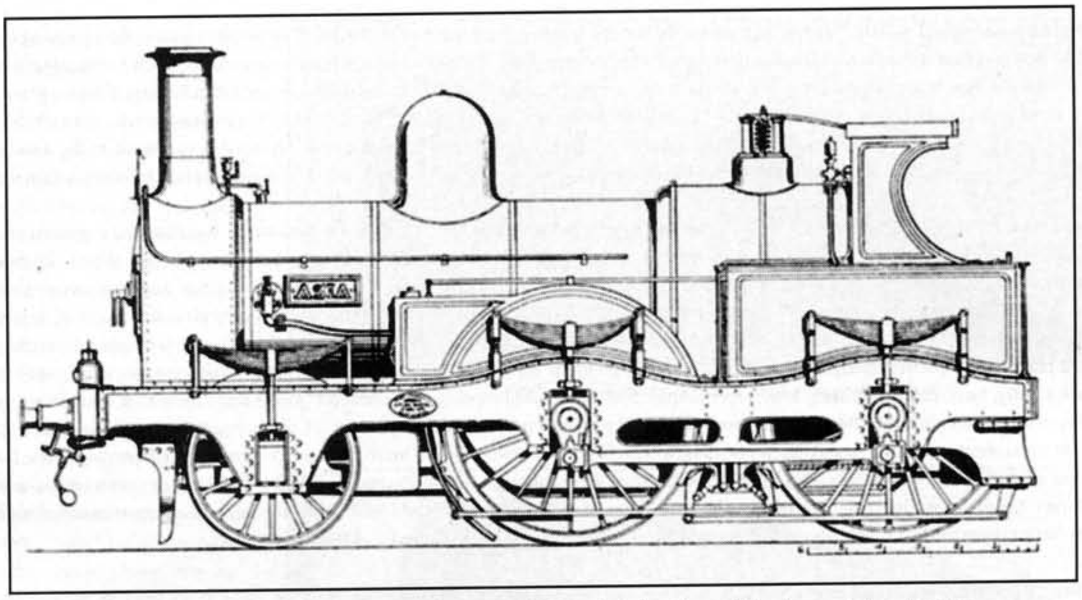
The Locomotive Exchanges. Monday April 19th was something of a red-letter day for all locomotive zealots, for it marked the beginning of that "test of strength" between various types of British locomotives on other than their normal routes. On that day, I was at Paddington to see the 1.30 p.m. West of England express depart. The train was the usual one of 14 Great Western mainline corridor coaches, but the "King" class engine was not there; in its place was what used to be the *Southern Railway's* "Merchant Navy" 4-6-2 engine *French Line C.G.T.*, now re-numbered 25019. This engine was fairly clean and in the standard *S.R.* livery of malachite green with golden yellow lining. Attached to her was a *L.M.S.* tender, painted black and with *"British Railways"* in plain block, straw coloured letters, placed conspicuously on its side. This multi-coloured procession departed exactly on time; but what a contrast to the sort of thing I am used to! Instead of the sonorous, evenly spaced barks of a "King" or "Castle", came a fluffy, fussy, pulsating hissing sound, several spasms of unrestrained slipping, and a noticeably slow start. Even after the train got well moving, the engine seemed unable to avoid a recurrence of those slipping potentialities. It reminded me of the days of the French compound Atlantics, if not of the earlier days when single-wheelers would waste steam and power in slipping while trying to start loads that were really too much for them. However, a different story came from Kings Cross, a few days later, when a *L.M.S.* rebuilt "Royal Scot," No. 46162, *Queens Westminster Rifleman,* in well-cleaned black and with *L.M.S.* very conspicuous on her tender (!), got away with the 1.10 p.m. Leeds express in a manner that seems to have surprised many devotees of the *LNER*. I am hoping to have opportunities of seeing something of these tests at points further down the line where the trains concerned are normally running at good speed. —J.N.M.

Interchange of Locomotives. I must offer an apology to the *Southern* 4-6-2, for what I wrote about her in the first note on these most interesting trials. There may be some quite satisfactory explanation of the display of slipping which was apparent on the first departure from Paddington. I saw her again during the following week, and I must say the departure was excellent; there was no slipping this time. Further, the engine has improved on the timing in both directions. The famous *Mallard* met very bad luck on her first "up" trip. She ran well on the down trip on the previous day and duly impressed everybody concerned. On the return journey however, she gained so easily on the booked times that she was seven minutes early at Savernake; then she had the misfortune to suffer the failure of the inside big-end bearing, and had to retire from the contest. She was replaced by a sister engine, No. 60033, *Seagull*, which I saw make a splendid start from Paddington the following day. At the moment of writing, the tests show "little in it," so far as performance is concerned—J.N.M.

The Locomotive Tests. I am wondering if it would not be possible for the Railway Executive to give us something like an official report on the findings of the recent trials. Unfortunately, Editorial duties prevented me from seeing much of the tests, with the result that I have nothing to add to what I have already published…The technical data gleaned by the dynamometer staffs will no doubt be carefully sifted and examined; the results will probably influence the design of future locomotives for the respective kinds of duties, and that, I think, is all we can expect. —J.N.M.



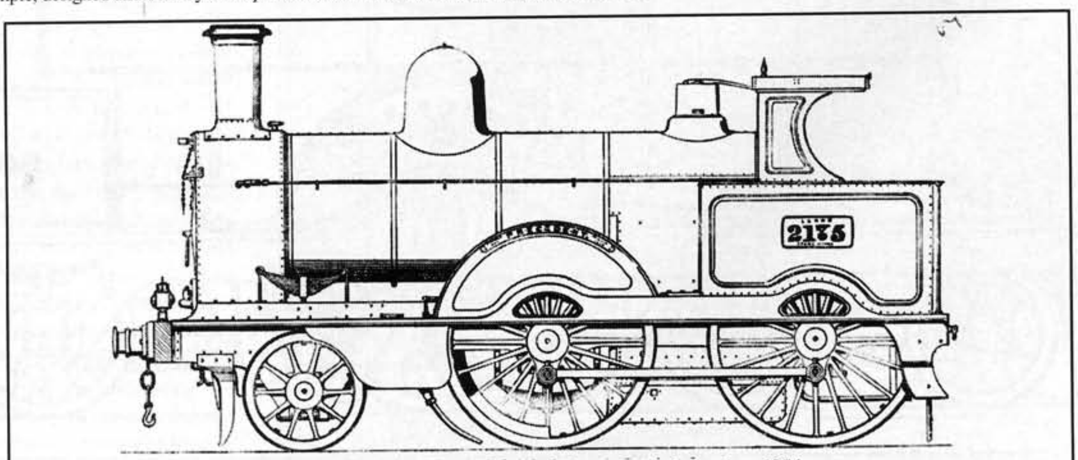
Locomotives Worth Modelling No.22—Midland Railway "Princess of Wales" The *Midland* Singles. How we loved to watch these splendid engines steaming in and out of St. Pancras—that wonderful terminus with its fascinating one-span roof of graceful curve, under which everything was spick and span, painted and polished, in a manner only dimly to be guessed at nowadays! What a spectacle a night scene there proved to be! The dark red engine with its rich touches of gleaming brass-work at the head of a superb set of carriages, painted in the same colour, and sharing the same high degree of finish. In the darkness at the end of the platform stood the interesting starting signal—and the *Midland* signals were interesting in every way. They had many unique features, prominent amongst which was the absence of lenses in the lamps. The result was that one could see a fascinating spot of flame shining through the deep green glass, and giving a vivid and beautiful splash of colour to the general scene. Oh! Those were the days of *Midland* glory right enough! "Could there," we said, "could there be anything finer than this?" To this question, Derby gave the very remarkable answer of "Yes!" Came the year 1899, and with it more of the 115's—and then, *Princess of Wales* sailed into our ken! Here was a super single-wheeler, and no mistake, 7ft 9in. drivers and an eight -wheeled tender to complete the picture.



"Asia" was built by Sharp, Stewart (No. 2332) in 1873 and ran in this condition for nearly twenty years.

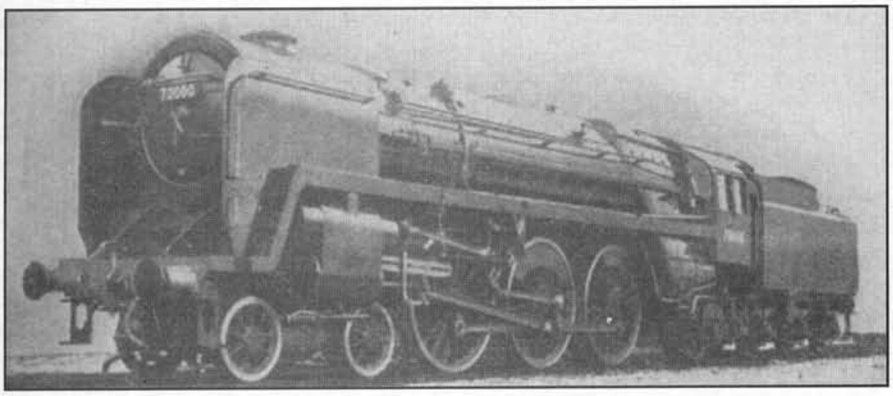
No.30—London, Chatham and Dover Railway—*Asia* The last four express engines that *William Martley* designed just before his death were built by *Sharp, Stewart & Co.*, and quickly became famous, one might say throughout the length and breadth of the country. They were set to work the Victoria-Dover boat trains, which naturally brought them into prominence. The traveller that walked along the platform to inspect one of the quartet (*Europa, Asia, Africa or America*) certainly saw an attractive engine. Try to imagine that we too, are sharing the inspection of *Asia* with our imaginary voyager. A big brass dome and high valve cover gleam in the sun. A shapely copper cap (not unlike a *Gooch*, or perhaps a *William Dean*) crowns the chimney. The green paint is well set off by its thick black banding, which itself is lined inside with a fine yellow line, and outside with a red one. So thus our four friends ran until 1892—green and shiny and surrounded by more and more black engines—when they were rebuilt in the fashion of the day. Did they look finer when they emerged from Longhedge works to enter upon yet another long lease of life? Green or black? Take your choice good locomodeller, but only after you have seen them in their later rebuilt condition.

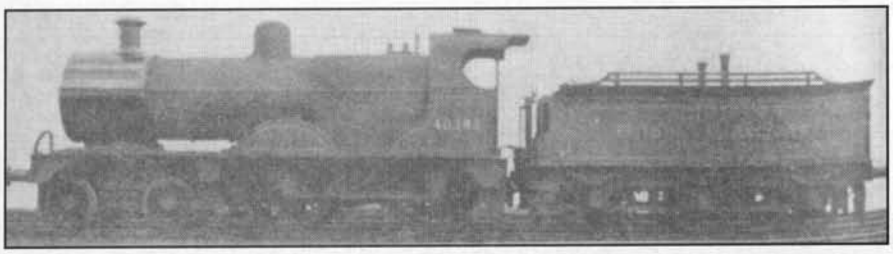
1950: The Gas Turbine Locomotive. We have been privileged to make a detailed inspection of the gas turbine locomotive which was ordered by the *GWR* as far back as 1946 but not delivered until February this year. The new loco was designed and built by the *Swiss Loco Works*, Winterthur and is similar to one built in 1941. The design was developed by *Messrs Brown-Boveri*, of Baden. Compared with diesel and steam locomotives, the gas turbine seems to offer considerable advantages, due to the absence of the large number of moving parts, which should lead to a decrease in maintenance and give the loco a high availability. When, following the war the directors of the *GWR* turned their attention to the consideration of gas turbines for railway purposes, it is only natural that their C.M.E., *Mr. F.W. Hawksworth*, should be given the opportunity to inspect, in Switzerland, the first gas turbine loco ever to have been built. It is probable that the British gas turbine loco, No. 18000, will be carefully watched for an extended period. Meanwhile, delivery is expected shortly of a second example, designed and built by *Metropolitan Vickers* and Swindon works in collaboration.



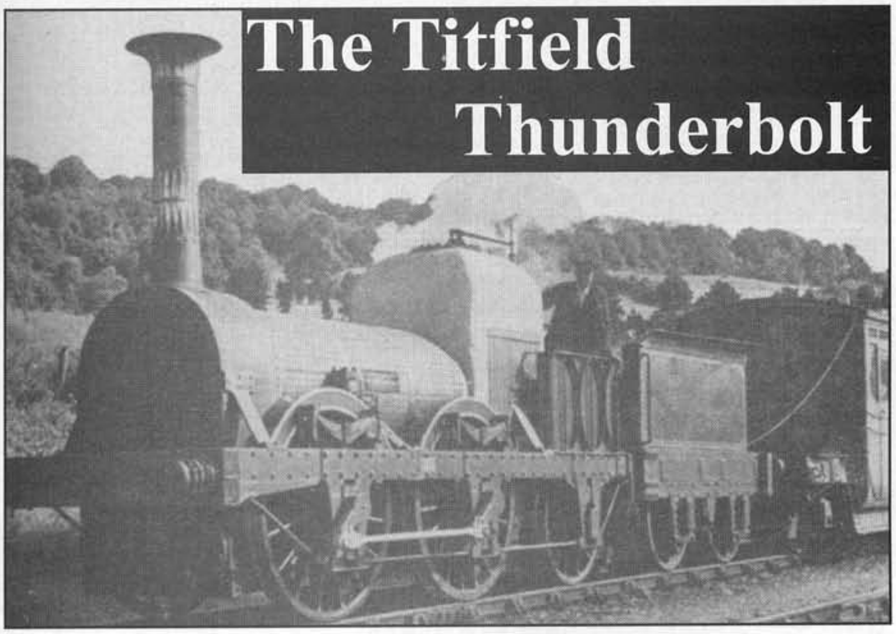
This is how "Precedent" looked when new in December, 1874.

LNWR "Precedents." It would be a waste of time to sing the praises of the famous 166 engines which comprised the "Precedent" class of the *L.N.W.R.* Dear old "Precedents"; how lovely they were! How familiar and how excellent! Was there ever a more celebrated class of locomotive? I very much doubt it. *Hardwicke, Eamont Vulcan* and *Charles Dickens* were perhaps the best known, the first three for their record runs, the fourth for its daily round trip Manchester-London and back to Manchester. Now in 1874, F.W. Webb turned out from Crewe works the first express engine which was entirely his own design. She was No.2175, *Precedent*, and between then and 1894 another 165 would join her, in batches and with modifications. They ran like greyhounds and pulled like elephants and were later dubbed "the Jumbos". One of the last batch was No. 790, *Hardwicke*, on August 22nd, 1895 she became part of railway history when she ran her memorable "Race-to-the-North." Only two lamp sockets on the buffer beam, these supported those charming Webb headlamps fitted with white and red hollow lenses back and front. They gave a rather poor light, and they wouldn't stand up if out of their sockets. So *Hardwicke* screamed her way to Carlisle on that celebrated night, a white light over each buffer showing in front, and their corresponding ruby glass gleaming to the rear. How fortunate it is that *Hardwicke* herself has been preserved—for ever, let us hope.





The Titfield Thunderbolt



1951: B.R. Standard 4-6-2 Locomotive No. 70000. The first of 159 B.R. Standard Locos to be built in 1951 has just been turned out from Crewe Works. It is a Class 7, 4-6-2 mixed traffic locomotive, No. 70000, named *Btitannia.* Like the other B.R. Standard types which will appear during this year, it has been designed and built under the direction of Mr. R.A. Riddles, Member for Mechanical and Electrical Engineering, Railway Executive. (What a mouthful, whatever happened to C.M.E.?). Although Derby is the parent office for the design of this particular type, important sections were designed at Brighton, Doncaster and Swindon as part of the policy of using the resources of all the regional mechanical Drawing Offices to cover the standard types as a whole. **(Today, of course, we would do it differently. Make Derby the centre and close down all the rest, with certain personnel being given the "option" of moving to Derby. Very popular in current industry, publication being a prime example).** Having two 20 by 28in. cylinders, 6ft 2in. wheels, 250psi boiler pressure, 94 tons weight and a starting tractive effort of 32,160lb., No. 70000 is intended for main line passenger and fast fitted freight services of the kind now undertaken by W.R. "Castle," L.M.R. rebuilt "Scot," E & N.E.R. V2 class and S.R. "West Country" locomotives, having equal or better route availability.

1952: LAST OF THE CLASS. Locomotive No. 40383, the last of the old Midland Railway 4-4-0 non-superheated Class 2 engines has been withdrawn from stock for breaking up. Designed by S.W. Johnson and built in 1888, this engine was one of a batch of ten. She had 6ft. 6½in. wheels, 18 by 26in. cylinders, and 160psi on the boiler, giving her a tractive effort of 12,960lb. In 1904 a larger boiler, at 175psi was fitted raising the tractive effort to 14,487lb. The total mileage run by No. 40383 was 1,604,149 and her last years were occupied in pulling the Derby District Engineer's saloon on inspections round the district.

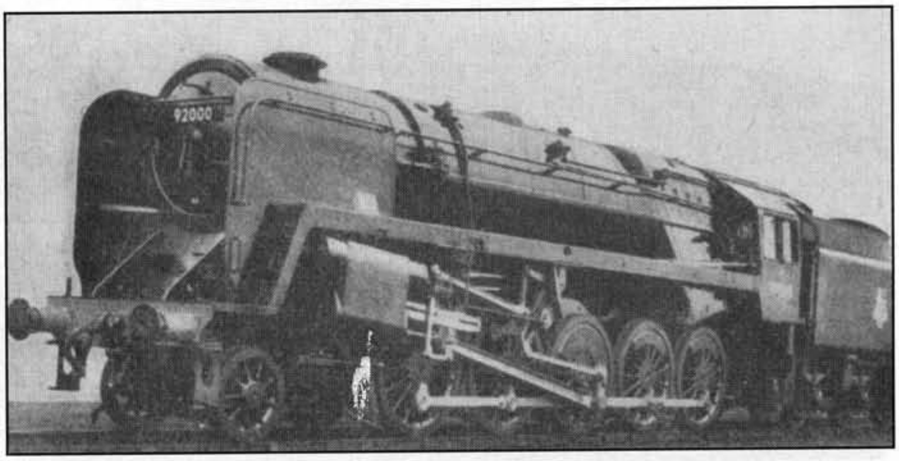
Turbomotive. We learn that B.R. No. 46202 is back in service after being converted to an ordinary 4-cylinder 4-6-2 engine of the "Princess" class. It has been named *Princess Anne*, in line with other engines of the class.

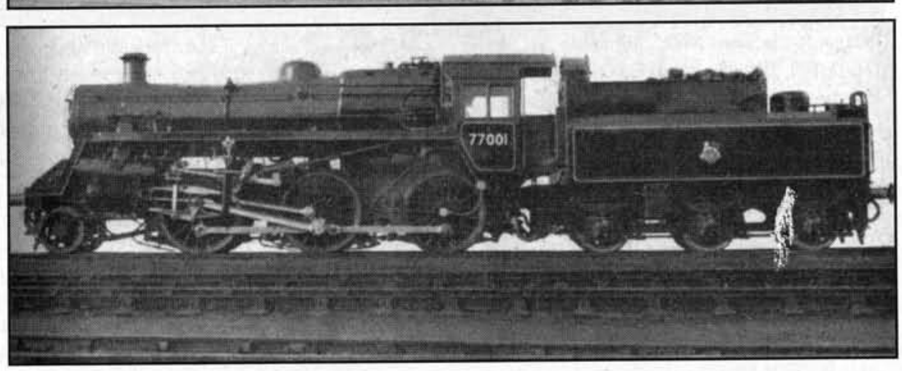
Detecting Faults in Railway Track. We have been privileged, (yet again), by invitation of the Railway Executive, to inspect and travel in a most unusual railway vehicle brought over by train-ferry from the continent for trials in this country. It is a track testing "detective" coach of unusual design, which mechanically records irregularities in the track under load conditions, and gives the engineers data to enable such faults to be corrected. The vehicle is known as the *Mauzin* coach after its designer *M. Mauzin*, an officer of the French National Railways. British Railways have for many years used the *Hallade* track recorder, a portable machine which can be taken into any coach and gives a degree of information about the track, but the accuracy of this instrument is limited because the records it makes are affected to some extent by the characteristics of the coach in which it travels; the French coach gives fuller and more accurate information and can pin-point the exact spot where defects occur. Our run in the coach was from Paddington to Reading and back; the working of the apparatus was very interesting to watch; though nothing of a serious nature was noted. (Naturally).

1953: "The Titfield Thunderbolt." A well produced film, presented by Ealing Studios, and seems to be something of a box-office success. It is a railway story "with a difference," and doubtless will be enjoyed by rail enthusiasts. The hero of the film is an aged 0-4-2 which is taken out of a local museum to replace the 14XX wrecked by the rival bus company just before the railway is to be checked by the railway inspectorate. The actual engine used is our old friend the *Lion,* built in 1838, as No. 57 on the Liverpool and Manchester Railway. In 1859, she was sold to the Mersey Docks and Harbour Board, who used her as a stationary boiler for supplying steam to pumps, for a great many years. In 1928, *Lion* was presented to the Liverpool Engineering Society, and was taken to the *LMS* shops at Crewe to be reconditioned. She was running at the Liverpool & Manchester Centenary exhibition at Wavertree Park in 1930. She then retired to a specially prepared pedestal at Lime St. station, Liverpool, which is her legitimate home. Came 1937 and she was out again, in steam, making her first appearance as a film star, this time at Swindon where she took part in a film in connection with the *GWR's* centenary. As the "Titfield Thunderbolt" she gives what is generally regarded as by far her best performance; but in certain quarters, there is a growing feeling of dismay at the idea of a valuable locomotive relic being used in such a manner. We can only hope that every possible care is being taken to ensure that *Lion* shall suffer no damage as a result of her entertaining exploits. **(I think someone had their lines crossed there, the *GWR* centenary was in 1935. But she was certainly out in 1938, for her part in "Sixty Glorious Years", a film of Queen Victoria, played by Anna Neagle, and was based at Watford Loco. Alan ["Completely Loco"] Ashberry told me that they had to keep running her up and down the line between "takes," to keep the water level up, since she was solely dependent on her pump).**

"Britannia's Prowess. We were privileged, recently, to take part in a most enjoyable and interesting event. B.R. had invited a special party to attend at the Rugby Testing Plant where Class 7 engine, No. 70005, *John Milton*, was under test. At Rugby, we saw No. 70005 on the stand; she was artificially loaded to the equivalent of 500 tons behind the tender and running at the equivalent of 25mph at 40% cut-off with the regulator wide open. This was impressive, to say the least; but after a while the speed was increased to something like 80mph. The engine was now a really terrifying spectacle, and to stand within a few inches of the rapidly revolving wheels and coupling rods when they are making something in the region of 380 rpm is an experience which can never be forgotten. In addition, the whole effect is intensely heightened by the terrific noise. But the information being obtained in the control room, as well as that in the dynamometer car during the outward and inward journeys behind No. 70009, *Alfred the Great*, is such as to convince even the most hardened sceptic that the day of the steam locomotive is still far from finished. The "Britannia's" are really worthy successors of their famous ancestors.

1953: THE PLANT CENTENARIAN. The special train will make two runs, each time behind the two GNR Atlantic locos No. 990, *Henry Oakley*, and No. 251, in September, is to be known as "The Plant Centenarian." On each date the return trip will be made by the celebrated A4, *Silver Link* and so timed as to provide opportunities for some high-speed running. On both occasions, approximately 1hr. 45min. will be spent at Doncaster Works where the *Stirling* Single No.1 will be on view. Cost of tickets from London will be 55s (£2 -75p). This covers the return rail fare, reserved seat, guide fee for Works tour, and two meals. Tickets from *Mr. H.T.S. Bailey*, (I remember him well), or *Mr. A.F. Pegler*, (Sounds familiar).



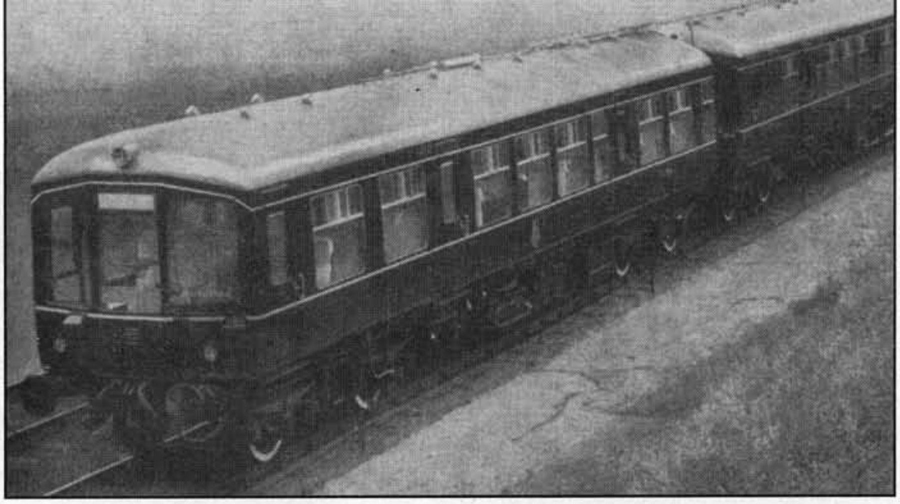


1954: Britain's new "Decapod" Locomotives.

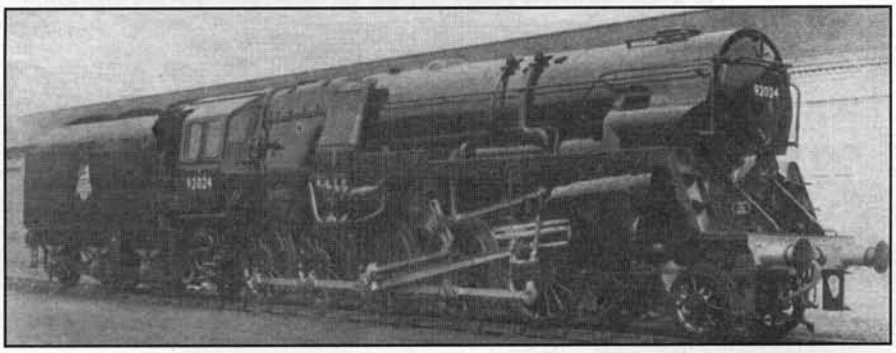
The ten-coupled steam locomotive, up to the present, has been but rarely used on the railways of Britain. The first example was the experimental 0-10-0 well-tank built at Stratford for the *GER* in 1902. This engine had a very short life and no more were built. The second example came in 1919 when the massive 0-10-0 banking engine was built to help trains climb the Lickey Incline on the *Midland* Railway. This engine, known to enthusiasts as "Big Emma," is still the only one of her class and is kept to the work for which she was built. Almost a quarter of a century passed before a third example made its appearance; this was the 2-10-0 "Austerity" freight engine designed by *Mr. R.A. Riddles* for dealing with heavy munition trains during the war. 25 of the engines being built at Crewe in1943-4, all of them are now in service on B.R. A fourth design of ten-coupled engine is now being built at Crewe for delivery to the various regions of B.R. The design was prepared at Brighton works under the direction of *Mr. Riddles,* although certain sections, as with *Britannia*, were designed at Derby, Doncaster and Swindon. The first four have been completed, numbered, 92000-1-2 and 3 and will be designated Class 9. The two cylinders are 20 by 28in., driving wheels 5ft., (the centre pair is flangless), pressure 250psi, weight 86tons 14cwt., tractive effort 39,667lb. A later batch of these engines will be fitted with *Franco-Crosti* boilers; an Italian invention designed to give fuel economy.

A British-Built Diesel Locomotive for the Commonwealth. A Sulzer-engined 955 h.p., 3ft. 6in. gauge loco, one of 14 built by the *Birmingham Carriage & Wagon Co. Ltd.,* for the for the *Central Australia* line of the *Commonwealth Railways*, ran trials between Smethwick and Banbury. It ran on standard gauge bogies, made to *Commonwealth* order, so that, if necessary, these locos could also run on 4ft 8½in sections of the *C.R.* Weight 62tons, top speed 50mph, tractive effort 27,000lb, wheel arrangement A1A-A1A.

B.R. Standard Class 3 Tender Engines. The building of the first of the new standard class 3 tender engines has now been completed at Swindon. Of the 20 locos to be built, ten are allocated to the N.E. region and ten to the Scottish region. The engines are numbered 77000 to 77019 and were designed under the direction of *Mr Riddles*, who at the time was the Railway Executive Member for Mechanical and Electrical Engineering. The parent office was Swindon but certain details were undertaken at Brighton, Derby and Doncaster. (Are you getting a sense of *déjà vu*?). The tractive effort, 21,490lb. is the same as the class 3, 2-6-2T engines previously built at Swindon. Like the tank version, the tender type has almost universal availability over main and secondary lines throughout Britain. The boiler follows closely the design of the former *GWR* standard 2, used on the 5100, 8100, and 5600 classes. Cylinders 17½ by 26in., wheels 5ft 3in., pressure 200psi, weight 57½ tons.



This photograph shows an external view of the two-car unit.



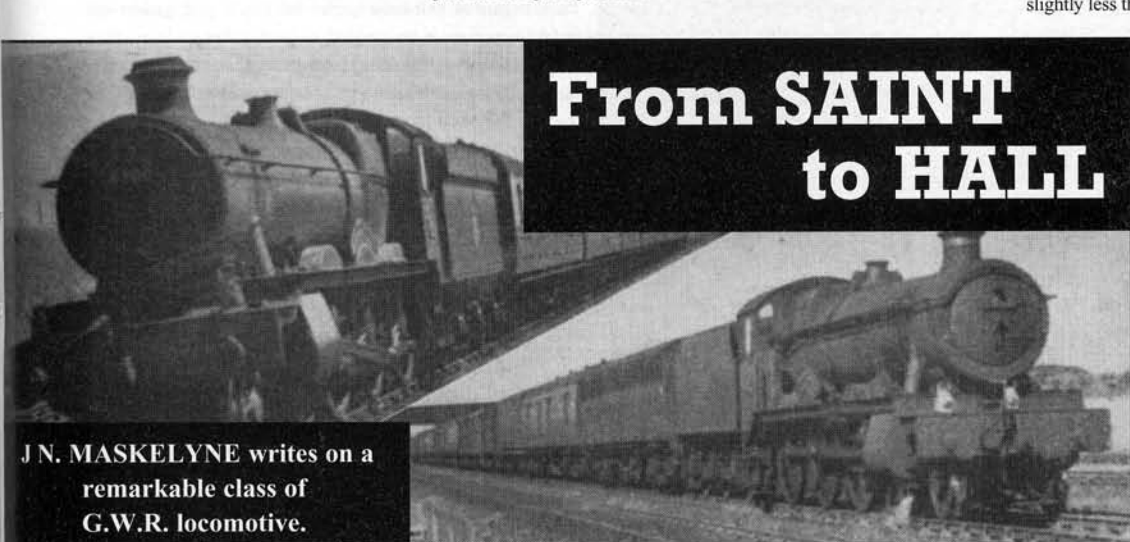
Fireman's side of "Class 9" 2-10-0 locomotive No. 92024, showing final chimney at the side of the boiler, just ahead of the firebox.

The new B.R. Lightweight Diesel Trains. A new lightweight diesel train which was inspected at Marylebone, prior to a demonstration run to Beaconsfield, is the first to be built under the British Transport Commission's £2M programme for the development of lightweight diesel passenger services on *B.R.* It provides for the introduction of multiple-unit diesel trains in six areas, all two-car units initially. Each two-car unit can be driven from either end and can be made up into multiples of four, six or eight vehicles, according to traffic requirements. The power cars have two 125 h.p. *Leyland* engines mounted under the floor, driving via a torque-converter, with electro-pneumatic driver controls. (I also remember, a bit later, some 4-wheel units, called railcars, from *A.E.C.* I think, or *Wickham*. We had some locally, on the St.Albans (Abbey) to Watford line on "The Park Street Flyer." The wheels used to "sing", it was most odd to hear one coming on a quiet night with this peculiar note, and instead of 'diddly- dum', they were going 'num-num' over the joints. Airfix did a plastic kit).

B.R. Class 8 Locomotive. The prototype engine of the Class 8, 4-6-2, No. 71000, *Duke of Gloucester*, first made its appearance at the *B.R.* exhibition at Willesden. The basic design is almost identical with the "Britannia's," except for the *Caprotti* valves and gear, a double chimney, three cylinders, a 12in. longer grate and a very large tender of *LMS* pattern. The engine will be thoroughly tested, on the road and the test plant, in order to compare its performance with that of the other 4-6-2 engines on *B.R.* The cylinders are 18 by 28in., wheels 6ft 2in., pressure 250psi, weight 101¼ tons, tractive effort 39,080lb.

B.R. Class 9 with Franco-Crosti Boilers. Ten Class 9's are being built with the *Franco-Crosti* boiler in order to establish whether significant economies can be gained. The work is being carried out in conjunction with *Franco-Crosti of Milan*. The design work was carried out at Brighton, initially under the direction of *Mr. Riddles*, and subsequently under the direction of *Mr. R.C. Bond*, C.M.E. of the *B.T.C.* In this system, the normal chimney is closed and the gases pass through a bank of tubes in a secondary drum, or drums, before being ejected from the final chimney. The secondary drum is used as a pre-heater for the feed-water so that it enters the boiler at a temperature only slightly less than that of the water already in the boiler. [112/16].

From SAINT to HALL



J N. MASKELYNE writes on a remarkable class of G.W.R. locomotive.

1956: From Saint to Hall, by J.N. Maskelyne.

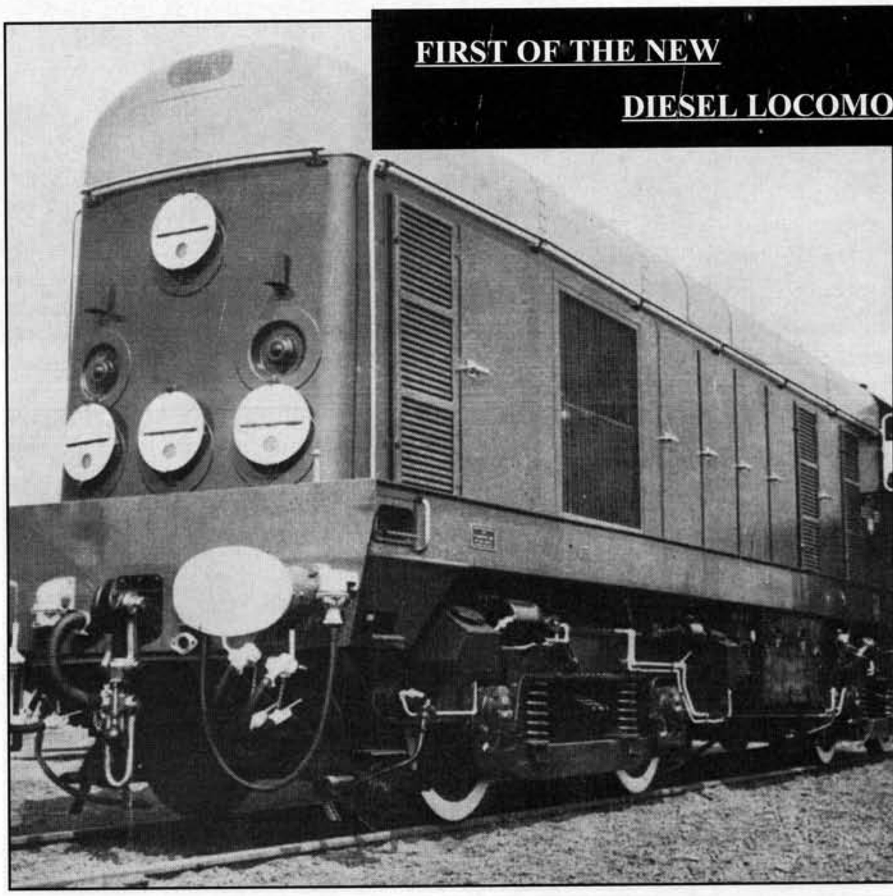
I have lived on the *G.W.R.* since September 1940, and during that period I have made the double journey daily between Paddington and my home. This has given me almost unlimited scope for studying and photographing the work of most classes of *G.W.R.* locomotives.

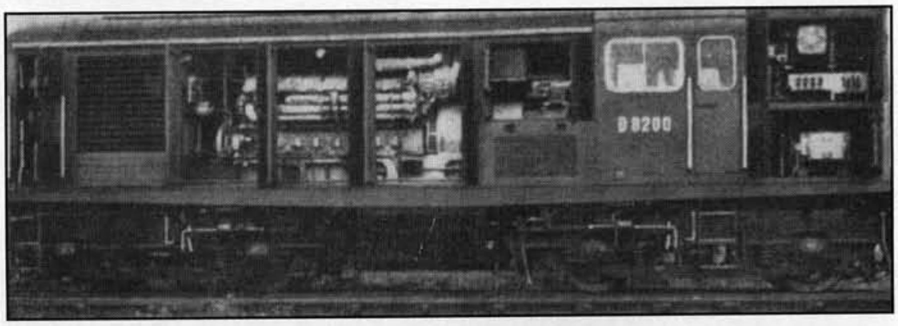
LEFT: A heavy train—No. 6913, LEVANS HALL.

FAR LEFT, left: No. 4900, ST. MARTIN on a Paddington to Gloucester run.

It is not generally appreciated by railway enthusiasts, other than those in close touch with Swindon affairs, that the basic idea for a straightforward 4-6-0, general purpose engine with a wide range of utility was first envisaged by *G.J. Churchward* as far back as 1901. The need for such an engine, however, did not arise until about 20 years later, and then *Churchwards* successor, *C.B. Collett*, decided to give the idea a trial. For this purpose, he took a *Churchwards* 2-cylinder express passenger engine, No. 2925, *Saint Martin*, and modified it by reducing the coupled wheels from 6ft. 8½in. to 6ft.: lowering the pitch of the boiler from 8ft 1¾in. to 8ft. 1¼in. and left everything else as it was, except that cab was replaced by one of *Collett's* design. *Saint Martin*, in her altered form, went into service in 1924, having been tried out on every sort of traffic for more than three years, and proved to be so successful that, between 1928 and 1943 259 similar engines were built, the only alteration being that the boiler height was restored to 8ft. 6in. At the same time, *Saint Martin* was renumbered 4900 and all her sisters named after baronial halls of England. In 1944 *Collett's* successor, *F.W. Hawksworth,* brought out a slightly modified design with larger superheater, "one-piece" plate frames and a simpler type of bogie; he built 71 of these "Modified Halls," and so brought the total to 329. One of the earlier lot, No. 4911, *Bowden Hall*, was destroyed by a bomb during the war, and was never replaced, which accounts for the total being one short of 330. Cylinders 18½ by 30in., pressure 225psi, weight 75 tons, tractive effort 27,275lb. **(I vividly remember being on the *City of Truro* commemorative trip on May 9th 1964, when 4079 *Pendennis Castle* was replaced at Westbury by 6999, *Capel Dewi Hall,* at the drop of a hat, still with the *Festiniog* headboard from a previous outing. She went like the proverbial "bat", touching 86mph at one point and arriving at Taunton with the tender almost empty! From a standing start, she ran the 47.2 miles from Westbury to Taunton, where the standby, *Sudeley Castle* was waiting, in 43min. 9sec, only 2min. 9sec. over scheduled time. I have travelled behind "Halls" before and since, but never in such a spirited manner).**

FIRST OF THE NEW DIESEL LOCOMOTIVES

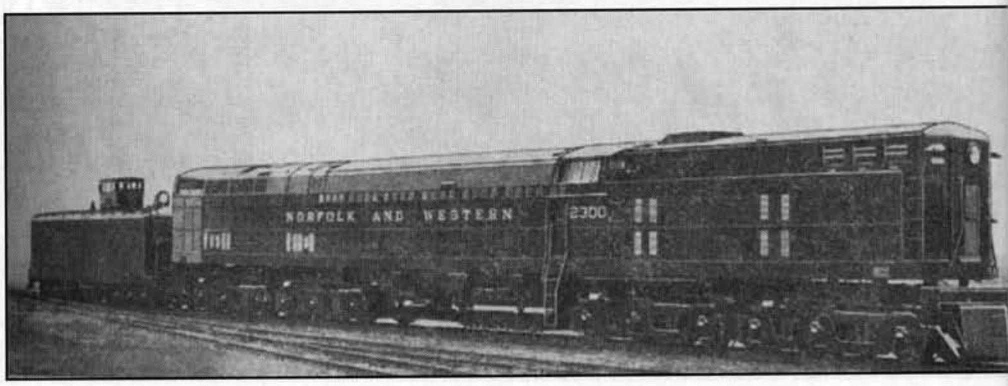




1957: BTH D8200 Class. Serving primarily on mainline freight duty, the D8200 and her sisters are allocated to Devons Road Motive Power Depot and will work freight trains between Poplar, Temple Mills, Acton and Willesden. With a maximum designed speed of 60mph, the engine has a maximum tractive effort of 37,500lb. at starting and a continuous rating of 20,000lb. *Lord Chandos*, the BTH chairman formally handed D8200 over to *Lord Rusholme*, chairman of *BTC's London Midland Area Board. Lord Rusholme* recalled that in the early days, train were hauled from Euston up Camden Bank by endless cables operated by stationary engines at Camden." Within a few years," he said, "the wheel of history will have turned full circle, and cables will once more be installed at Euston: but this time they will be conducting high voltage a.c. electricity for the electrification of the main line from here to the North.

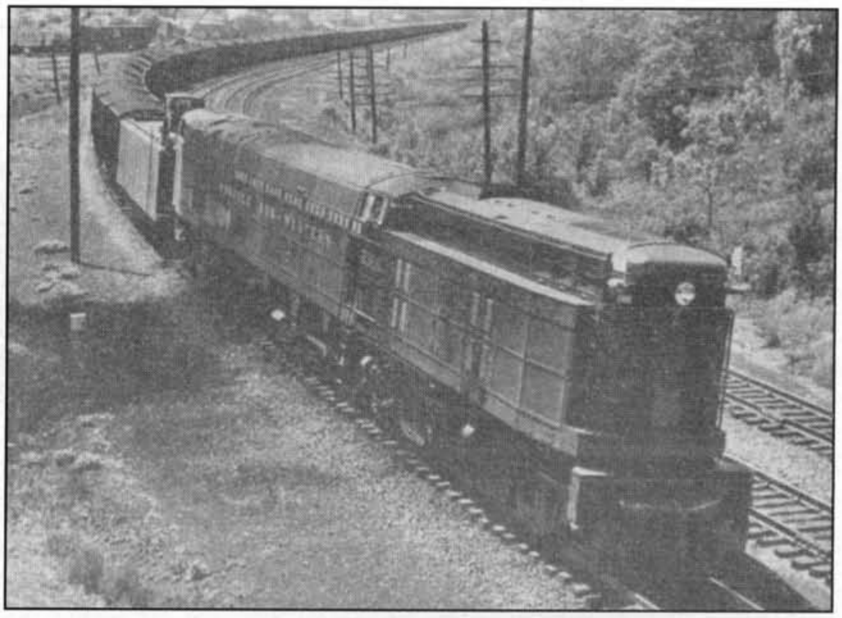
1958:
J. N. Maskelyne takes readers to America for some interesting facts on the worlds largest motive power unit, the 530-ton steam-turbine-electric locomotive . . .

JAWN HENRY



1958:

The problem of finding a satisfactory substitute for an orthodox steam locomotive is not merely a matter of improved thermal efficiency; it is largely governed by considerations of economy and the traffic conditions to be met. In this respect, the situation in America is especially interesting at the present time (1958). More than 90% of American railway motive Power is obtained from diesel-electric locomotives—less than 5% is purely electric—while the rest is made up of a few experimental machines of which the gas-turbine-electric is the most prominent. It is interesting to recall that as far back as 1915, when the *Pennsylvania R.R.* produced the worlds largest electric loco, it was hailed as the solution to all motive power problems. *Thomas Edison* saw fit to proclaim it represented the locomotive of the future, that steam could no longer have a look-in, as electrification was so obviously *the* thing. Since that time, the Pennsylvania has been the only U.S. railroad to become electrified to any great extent.



Another alternative is the enormous *Jawn Henry* of the *Norfolk and Western R.R.* This machine is the present largest locomotive in the world and is best described as an attempt to combine steam and electricity together in one unit. In short, it is a steam-turbine-electric loco of colossal size and was built in 1955 by the *Baldwin-Lima-Hamilton Corporation*. The wheel arrangement is 6-6-6-6; all the wheels are drivers; the rated horsepower at the turbine shaft is 4,500, the starting tractive effort is 175,000lb. and the rated maximum speed is 60mph. The weight of this prodigious machine is impressive, the engine alone weighs 365 tons, the tender, loaded, weighs 163 tons. The boiler is a *Babcock and Willcox* water-tube type with natural circulation; it works at 600psi. The firing is by a standard type BK mechanical stoker. I understand that in spite of the coal and the mechanical stoker, the boiler is remarkably clean in working. The coal bunker holds 20 tons, and the water capacity is 22,000 gallons. The turbine, generator and motors are all by *Westinghouse*, and the whole unit is equipped with roller bearings, *Timken* on the engine, *SKF* on the tender. Incidentally, *Jawn Henry* commemorates, in Southern pronunciation, the American folk ballad hero John Henry, who wielded a sledge hammer in each hand and tried to outdo a steam hammer. **(A similar loco, but oil-fired, had already been built for the *U.P.* in 1939. Although successful, the war, and the advent of the diesel, halted its further development. However, in 1948, a 4500 h.p. gas-turbine powered version was much more successful and *U.P* had a further 25 built by the *G.E.C.* These were followed, in 1958, by fifteen 8,500 h.p. versions to replace the "Big Boy," 4-8-8-4 articulated steam locos.)**

1959:

BRITAIN'S FIRST 2,000 H.P. DIESEL

C. R. TEMPLE lists a few facts for modellers in search of details

SUPERSTRUCTURE of the locomotive shown here is semi-streamlined with a cab behind each nose-end compartment, within which the power unit, radiators and the main control cubicle are mounted. The radiators for water and lubricating oil are located on each side of the locomotive. They are cooled by a fan mounted on the roof and driven from the free end of the diesel engine through carden shafts and a gearbox.

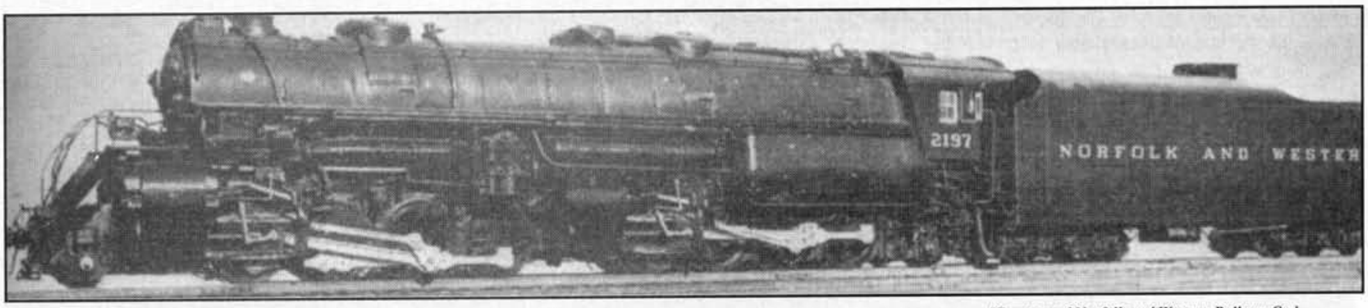
The driving cabs have large front and side windows and an entrance door at each side. Access doors to the engine compartment are provided from outside the locomotive and from each cab. The locomotive under frame and body is formed of rolled steel sections welded together to form a single stress unit.

The engine fuel tank is located in the radiator compartment the space between the bogies being used for underslung tanks carrying fuel and water for the train heating boiler. The power unit consists of an *English Electric 16 SVT Mk II diesel engine* with the main generator bolted solidly to the engine, the whole forming a compact and rigid unit. The auxiliary generator is overhung on the free end of the main generator. The unit is supported on resilient bearers so that normal flexing of the locomotive underframe does not set up stresses in the power unit.

Principal data: wheel arrangement, 1-Co-Co-1; weight 133 tons; adhesive weight 108 tons; max. axle load 18 tons; length over buffers, 69 ft 6 in.; overall width 9ft 6in.; overall height 12ft 10in.; bogie wheelbase, rigid 16ft 0in.; wheel diameter 'pony truck, 3 ft; driving wheel dia. 3ft 9in.; brakes, air (locomotive), vacuum (train); rating 2,000 h.p. at 850 r.p.m.; max. tractive effort 52,000 lb.; continuous tractive effort 30,900 lb.; max. service speed 90 m.p.h.; fuel tank capacity, engine 700 gallons, train heating boiler, 200 gallons; min. curve negotiable 4~ chains; train heating boiler capacity 2,500 lb. per hour; water tank capacity, 800 gallons; water pick-up fitted.

By 1961 steam working will have disappeared at Liverpool Street station (except for some engines working in from the country) and completely at Stratford motive power depot (formerly the largest steam depot in the country). The Great Northern lines (suburban) into King's Cross will be changed from steam to diesel working by about 1963, pending electrification.

FAMOUS LOCOMOTIVES OF THE WORLD

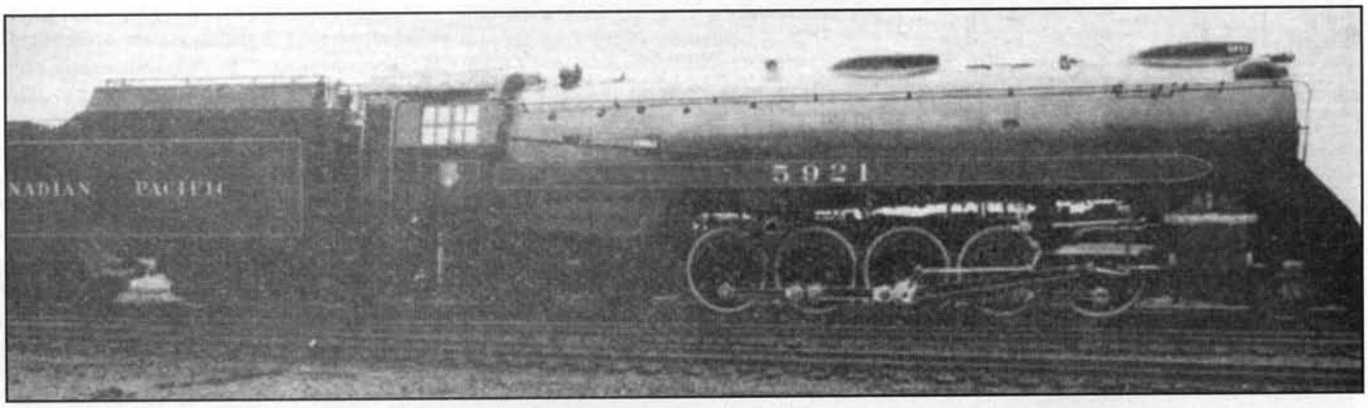


[Courtesy of Norfolk and Western Railway Co.]

NORFOLK AND WESTERN RAILWAY, USA, CLASS Y 66

THE *Norfolk and Western Railway's* class Y66 2-8-8-2 articulated locomotives are among the world's largest and heaviest. They are normally worked as compounds but when worked as a simple they rank as the most powerful steam locomotive running today on a purely tractive effort basis. Although these engines are now gradually being replaced by diesels, many will be kept in reserve. Somewhat unusually for American locomotives, these fine engines were built in the *Norfolk and Western's* own shops at Roanoke. The main details are as follows: cylinders 25in. and 39in. bore x 32in. stroke; driving wheels 4ft 10in. dia.; total wheelbase 103ft 8¼in.; working pressure 300p.s.i.; heating surface 4,915sq. ft; superheater 1,478sq. ft; grate area 106.2sq. ft; weight of engine only 611 520 lb; weight including tender 990 120 lb; tender. capacity 22,000 gallons of water, 30tons of coal; tractive effort, com pound 126,838lb.; simple 152,206lb. Locomotive and tender axles run in roller bearings and needle roller bearings are used in the valve gear.—R.M.E.

CANADIAN PACIFIC RAILWAY, 2-10-4 CLASS T-1-6

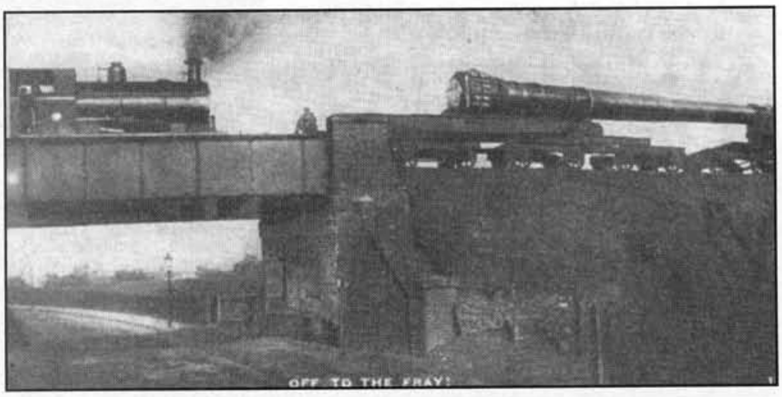


THE 5900 series was designed for passenger and freight trains of up to 1,050 tons over the Canadian Rockies between Calgary and Rivelstoke, British Columbia, where gradients as severe as 1 in 46 are encountered. Thirty-seven of the class were built, between 1929 and 1949, No 5936 being the last steam locomotive built for the *CPR*. Thirty of these engines have now been scrapped. The leading dimensions of these fine engines are as follows: cylinders, 25 in. bore x 32 in. stroke; working pressure 285 p.s.i.; driving wheels 5 ft 3in dia.; tractive effort 76,900lb., with booster—89,400 lb. Total boiler heating surface is 7,086 sq. ft of which 2,032 sq. ft an contributed by the superheater. The grate area is 93 5sq. ft and weight of engine and tender in working order 731,000lb. Fuel capacity is 4,100 gallons oil, 12,000 gallons water. The neat layout of the Walschaerts gear may be seen in the picture.

I am indebted to *Mr. J Hewitson,* of Montreal, for the technical details of these locomotives.—R.M.E.

GREAT GUNS

SIR,—Just to show that the photograph with the caption "Coventry Guns," (Postbag, November 30) is not unique, I submit another. It shows, I think, the bridge over the Stony Stanton Road in Leicestershire. I bought the card at a stationers in Broadgate in the autumn of 1916, and posted it to my sister in Brighton. The guns were supposed to be intended for the battleship *Queen Elizabeth.* **(An extract from a letter from a Mr. G. Goldring, Jan. 11 1962. I wish I had come across it earlier, when I was doing 1916. I can't find room for it back there, and I just had a gap to fill here).**



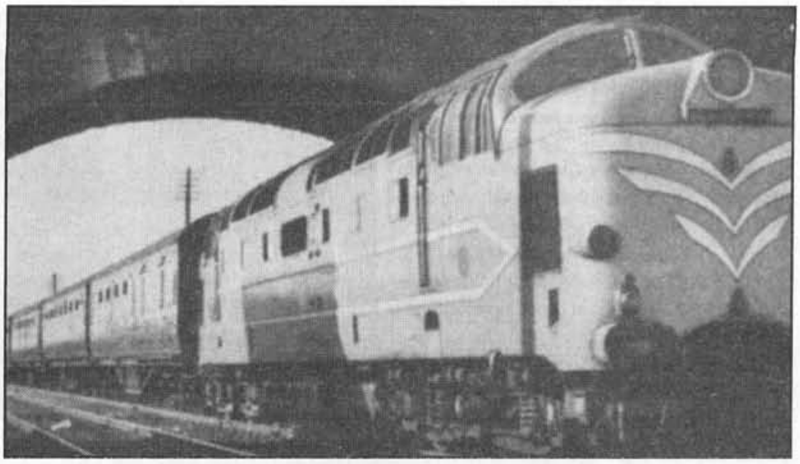
Postcard of* 1916*: Apparently the gun was for the battleship QUEEN ELIZABETH

OFF TO THE FRAY!

RAILWAY TOPICS

By Martin Evans

who discusses performance figures of English Electric's 3,300 h.p.



Reproduced by courtesy British Railways

Deltic diesel-electric locomotive

IN view of the increasing use of diesel-electric locomotives on *British Railways*, a few performance details of the most powerful of these, the *English Electric Deltic*, may be of interest. The *Deltic* locomotive was built by *English Electric* in 1955, utilising the new lightweight engine developed by *D. Napier and Son*, originally for marine purposes. Before being ordered in quantity, one locomotive was delivered to *British Railways* for trials. A comprehensive test programme was arranged by BR using their mobile test plant over the Carlisle-Skipton route during August and September 1956.

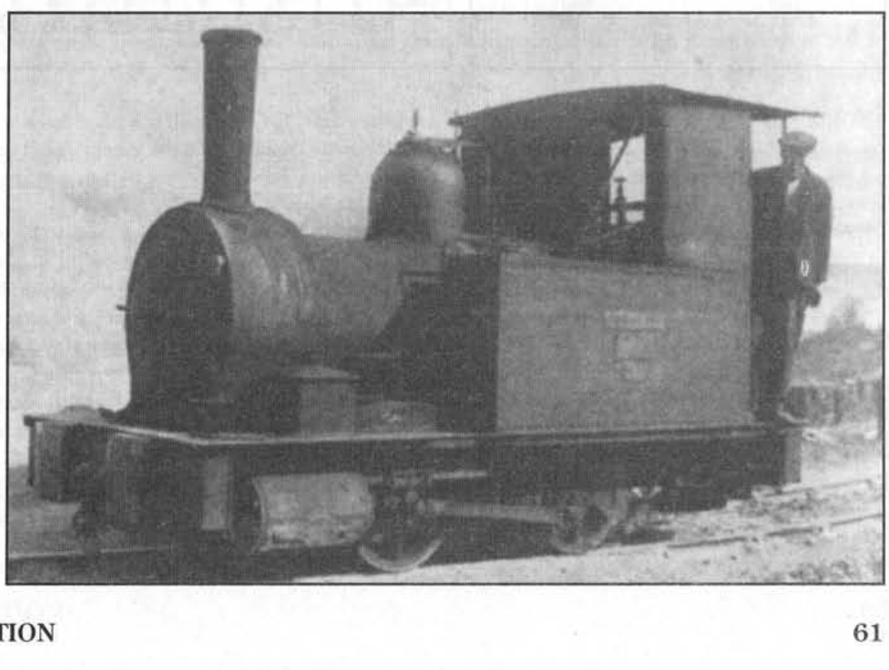
The *Deltic* locomotives were designed to give a maximum of 3,300 b.h.p. for an overall weight in working order of 106 tons, i.e. 32 b.h.p. per ton, the maximum axle loading being only 18 tons. The two engines are of the two-stroke compression-ignition type, each driving its own main and auxiliary generators and having its own cooling system. The engines each have 18 cylinders, disposed in three banks of six cylinders. Each cylinder contains a pair of opposed pistons, one of which controls the inlet ports, the other the exhaust ports, the space between the two forming the combustion chamber. Scavenge air is supplied by an engine driven centrifugal type blower driven by flexible shaft and spur gearing from the two upper crankshafts of the engine. Each engine is fitted with a *Napier Bryce* hydraulic governor mechanically and pneumatically linked with the generator controls in such a manner as to allow accurate control of engine speed between 700 and 1,000 r.p.m. The electrical equipment comprises six traction motors connected in three parallel pairs across the two outer feeders of two main generators in series. The motors are geared 59 to 21 to the wheels, allowing a maximum speed of 105 m.p.h. (This speed has been achieved exactly in practice). All the auxiliaries except for the radiator fans are supplied with power from the auxiliary generators, mounted on top of the main generators and driven through a train of gears from the engines. The actual combined output of the two engines is determined by the position of the drivers' controller through air pressure actuators operating on the engine governors. The controls are duplicated to allow the locomotive to be driven from either of the two cabs. A torque regulator in the generator field circuit of each power unit ensures that the main generator field excitation is automatically regulated by the engine governor to match the generator loading to the available engine horse power. Changeover switches are provided so that either power unit can drive all six traction motors. Thus any tractive effort obtainable with two engines can also be achieved with one engine, of course at reduced speed.

The British Railways' test programme was designed to cover the outputs obtainable both with two engines and one engine separately. The range of power output was investigated by conducting tests at eight different controller settings. Each of these settings was maintained for the whole of a particular test run, the first 15 minutes being devoted to warming up, when the engine r.p.m. would remain constant. During each test, the Mobile Test Units were employed to control the road speed in increments of 5 m.p.h., continuous records of speed, drawbar tractive effort, drawbar horse-power, r.p.m. and fuel consumption being taken in the dynamometer car. In addition electrical and diesel engine data were recorded, the former by continuous oscillograph recording, the latter by logged readings and electrical recordings.

During the tests, a maximum draw bar tractive effort of 45,550 lb. was sustained for two minutes without slipping, this effort being just below the value at which the overload relays operate to limit the total current in the traction circuit to 2,700 amp. Other figures obtained for tractive effort were as follows: 46,20016lb. at 19.5 m.p.h.—momentarily; 31,50016. at 31.0 m.p.h.—for 20 minutes; 24,50016. at 41.5 m.p.h.—continuously. The maximum drawbar horsepower at constant speed on the level was 2,580 at 40 m.p.h., also 2,410 at 70 m.p.h. was recorded. At 40 m.p.h. the overall thermal efficiency worked out at 27.5 per cent.

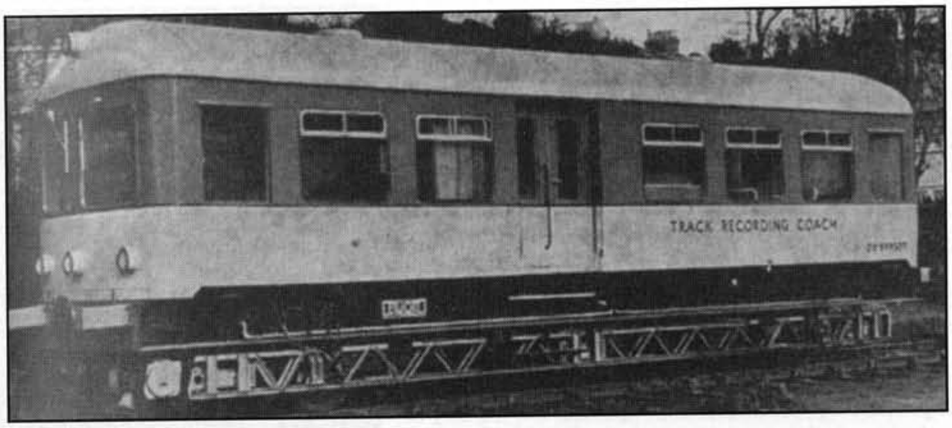
These figures are substantially higher than any recorded for steam locomotives of similar weight in this country, but in a future article I hope to try to compare the performances of these diesels with some steam engines.

1960: TOWNSEND HOOK. *The Dorking Loco Preservation Group* is trying to save a 3ft. 2in. gauge, 0-4-0T from being scrapped. It was built by *Fletcher Jennings & Co. Ltd*, of Whitehaven in 1880, and is believed to be the only surviving loco, of that gauge, and the only one from that company, in the South of England. It is named *Townsend Hook*, after one of the directors of the *Dorking Greystone Lime Co. Ltd*. Their quarries, at Betchworth had a railway system that the company is going to close, and build a road. If successful in purchasing the engine, they hope to find a home for it at the *Bluebell Line*. Only £75 is needed, and they are asking for donations. **(Does anyone know if they were successful?)**



TOWNSEND HOOK, the 0-4-0T built by Fletcher Jennings in 1880, at work in the quarry at Betchworth, in Surrey.

RAILWAY TOPICS
BY MARTIN EVANS



BR recording coach ensures a smooth run

A TRACK recording coach, which will help to give passengers smooth travelling; has provision for assessing track conditions under a loaded vehicle while it is moving at speed over the track. It will show where improvement in track condition is needed and assist in the economic utilisation of permanent way staff.

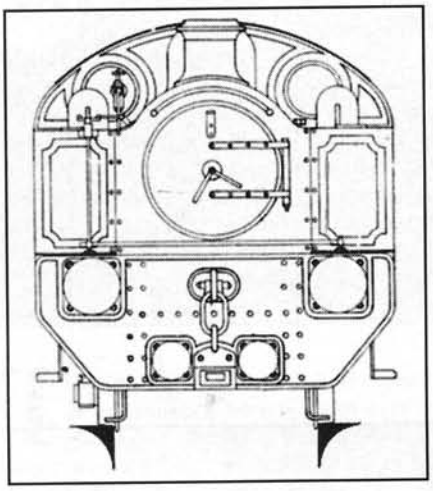
A four-wheeled vehicle is employed, capable of being driven at either end. It can travel at any speed up to 30 m.p.h. when recording and is capable of 55 m.p.h. when not recording. It is completely self-contained in respect of power supplies, and of lighting and heating. For the measurement of super-elevation, a datum is provided by a high-speed gyroscope which enables the coach to operate accurately at any speed within the limits mentioned previously, regardless of curvature or gradient.

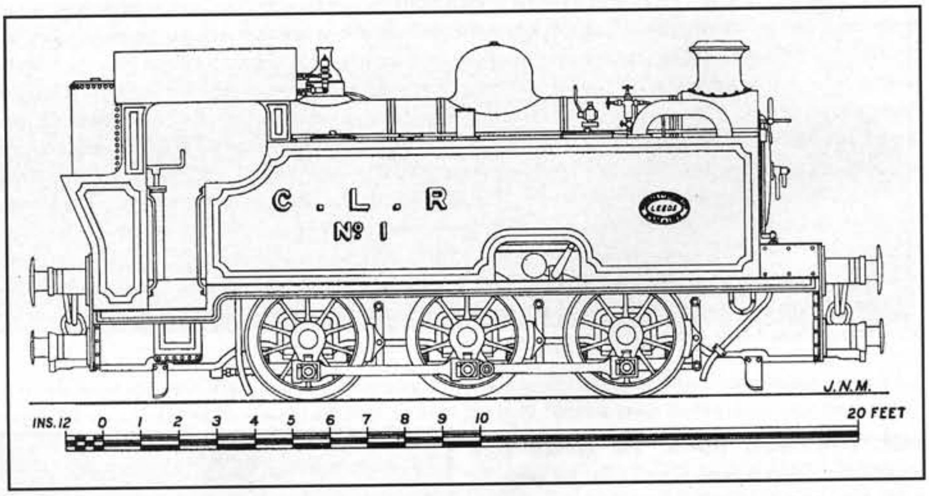
Curvature and gauge are obtained by measuring the movements of a system of probes which contact the inside edge of the head of the rail. Provision is made for lifting the probes clear of the rail when not in use. Measurements are presented as traces on photosensitive paper in the recorder which employs reflector type galvanometers. The special paper used gives a record which is immediately visible. At the same time as the record is being made, a previous chart, taken over the same length of track can be viewed on an adjacent display. This comparison enables deterioration to be seen immediately.

When operating, the probes are held down by compressed air, raising and lowering being controlled by electric solenoids; there is also an emergency switch which enables the probes to be retracted by the observer if obstructions are seen on the track. Measurements of curvature, gauge and super-elevation are obtained as alternating current signals from synchro- type pick-off. These signals are linearly demodulated and the resulting direct current signals applied to mirror galvanometers. The record includes the speed of the vehicle, distance marking, and facilities to indicate stations, etc.

The coach itself was sub-contracted by *Elliott Brothers (London) Ltd,* to D. Wickham and Co. Ltd, of Ware, the railcar manufacturers. Propulsion is by a Meadows horizontal under-floor diesel engine developing 97 b.h.p. driving through a centrifugal clutch and epicyclic gearbox. Compressed air and hand-brakes are provided.

LOCOMOTIVES I HAVE KNOWN *BY J. N. MASKELYNE* *No. 14 Central London Railway Nos. 1 and 2*





I WONDER how many readers ever saw either I of these two extraordinary little engines. If it comes to that how many readers even know that the *Central London Railway*, originally the "Tuppenny Tube" and now the *Central Line* of the *London Transport Executive*, ever possessed steam locomotives at all?

When I was going to school, between 1905 and 1911, I used thc Metropolitan and Great Western joint line to Hammersmith, and passed the *C.L.R.* power generating station at least twice a day, and rarely failed to see one or other of these two little engines.

At a later date I had the opportunity of inspecting and riding on both of them, during a private visit to this power station; as I am over six feet tall, standing in the cabs of these engines involved a working knowledge of the "knees bend" exercise which was the sole form of athletics at which I acquired: my notable proficiency!

The two engines, which were Nos. 1 and 2 on the *C.L.R.* books, were specially designed and built by the *Hunslet Engine Co. Ltd*, Leeds, in I899, and carried makers' numbers 635 and 636. Due to the fact that the working clearance in the tube tunnels was only 10ft 6in. dia., the dimensions of these engines were extremely "compressed" externally; the cab had plenty of width, but was severely restricted in height and depth. This did not matter very much as the driver was provided with a seat of sorts. Usually, there was only one man in the cab., The engines were oil-fired and normally, there was no need for a fireman. .

The design of these engines is not without interest because though they were used chiefly above ground, shunting wagons of coal from the reception sidings to the powerhouse bunkers, they were also used for working maintenance and engineers' trains through the tunnels. Therefore an inside-cylinder design was essential, simply because there was absolutely no room for outside cylinders.

The diameter of the cylinders was 14½ in., and the stroke was 18in; the steamchest was arranged between the cylinders, and the flat valves were actuated by normal *Stephenson* valve gear.

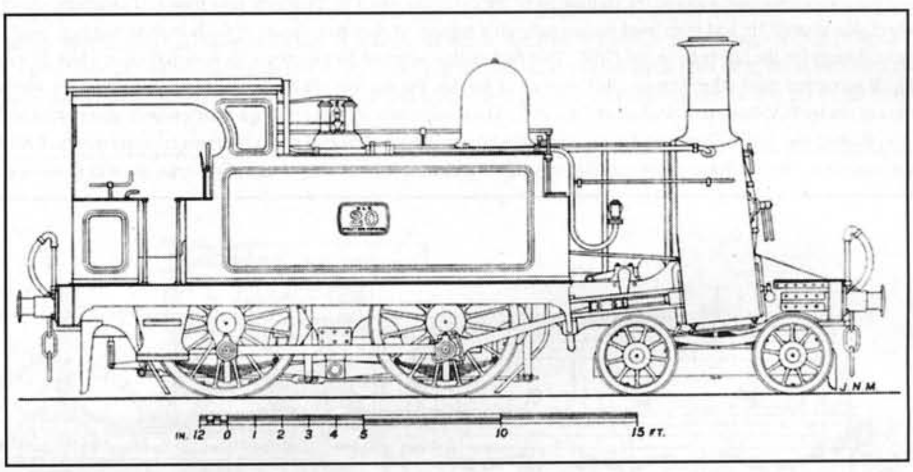
The wheels were 3ft 3in. dia., the leading and trailing pairs being 5 in. wide with flanges, while the middle pair were 6 in. wide without flanges. The wheelbase was 8 ft 6in., equally divided, and the minimum curve the engines could negotiate was 150 ft radius. The diameter of the boiler was 3ft 8½in. externally, and 4ft 0½in. over the lagging; the length of barrel as 7ft 9in. between tubeplates. There were 129 brass tubes of 1-⅜ in. outside diameter, the heating surface of which was 511 sq. ft; the firebox heating surface was 51 sq. ft, making the total 562 sq. ft. the grate area was 8.5 sq. ft.

It is obvious that when the engines were working in the extremely confined space of the tunnels, the presence of any quantity of exhaust steam was to be avoided. To meet this requirement, condensing apparatus was provided and part of the side tanks was reserved for 1,000 gallons of water supplied for use in the condenser alone. For the boiler feed a separate supply of 250 gallons of water occupied the rear portion of the tanks.

The fuel tank in the bunker carried 50 gallons of oil, but there was also space in the bunker for 20 cu. ft –approximately ¾ ton—of coal for use when the engines were at work above ground. I am not certain when these two very interesting little engines were broken up.

The last I saw of either was when No. 2 replaced the old *District Railway engine No. 33* at Lillie Bridge depot, West Kensington, for a few months in 1925.

LOCOMOTIVES I HAVE KNOWN



By J. N. Maskelyne
No. 18 North London Railway's 4-4-0T No. 20

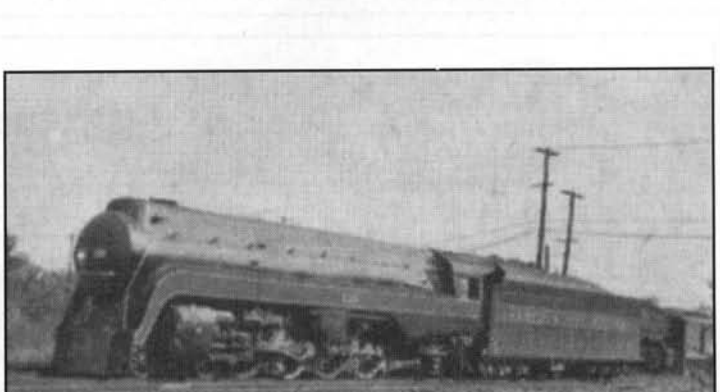
T HE OLD *North London Railway* was one which in some ways, resembled the *District* and the *Metropolitan Railways*. It was, essentially, part of London's own railway system; its locomotive stock consisted entirely of tank engines, and its passenger rolling stock was in sets of close-coupled four-wheeled coaches. It was all very clean, however, and in my young days, I used to regard my rare trips in a *North London* train as quite important adventures.

Perhaps my most vivid memory of the line is the piercing, high-pitched squeal of the *N.L.* locomotive whistle. Fifty years ago the whistles of *Great Western, London and South Western, London and North Western, Great Northern, Metropolitan and District engines* were all high-pitched; but the *North London* beat them all, by what could not have been less than a fifth in the musical scale! And it was the only locomotive whistle known to me in which the "bell" portion was literally bell-shaped; I have shown it in my drawing.

With the exception of a curious and ancient crane engine used at Bow Works, the engines of the North London line were of two types: 0-6-0 tanks for goods work and 4-4-0 tanks for passenger traffic. The latter were sub-divided into two different classes, one with inside cylinders and the other of the more usual outside-cylinder variety: My two drawings on these pages depict No 20, and it can be taken as typical of the outside-cylinder passenger engines as they were when I knew them. They were neat, trim little engines with, I recall, quite remarkable pulling power, as the following incident shows. One afternoon, many years ago, I was out on Wormwood Scrubbs when a heavy goods train, coming up from the Chelsea direction on the *West London Extension Railway*, attracted my attention because of the laboured exhaust of its engine, a *London and North Western Webb* 0-6-0 coal locomotive. Up the incline from North Pole Road to the big girder bridge carrying the *W.L.R.* over the *Great Western Railway*, this train gradually came to a standstill, and the engine was unable to re-start it. After about 40 minutes, *North London* 4-4-0 tank engine No 20 arrived from Willesden Junction; she was duly coupled up to the *Webb 0-6-0* and with both engines working flat out the train was successfully hauled up the gradient, over the bridge and disappeared: It was obvious that the *N.L.R.* engine was doing the greater part of the work in re-starting.

The principal dimensions of these engines were: Cylinders: 17in. dia. x 24in. stroke; diameters wheels, coupled 5ft 5in., bogie 2ft 9in.; wheelbase; 5ft. 8in. plus 7ft 0¼ in. plus 8ft, totalling 20ft 8¼in.; leading overhang 1ft 4in.; trailing overhang 5ft. 6¼in.; total length over buffers, 31ft 4in.; the oak bufferbeams were 8ft long, 1ft 5in. deep and 6in. thick, each having a ½in. flitchplate on the out face; the width across the tanks was 7ft 7in., at the height from rail to the top of the chimney was 12ft 11½in. In working order, the weight was 44 tons, while the working pressure was 160 p.s.i. The original design was prepared. in 1868 by William Adams and it was so far up-to-date that only slight, superficial modifications were afterwards mad right up to 1929 when the last of the class was scrapped.

A very fine model of one of these engines stands in a glass case in the circulating area of Broad Street station, the old *North London Railway's* principle terminus. 'The model was built, exactly to the prototype working drawings, by apprentices at Bow Works more than 60 years ago and it is one of the finest of the official collection of locomotive models.



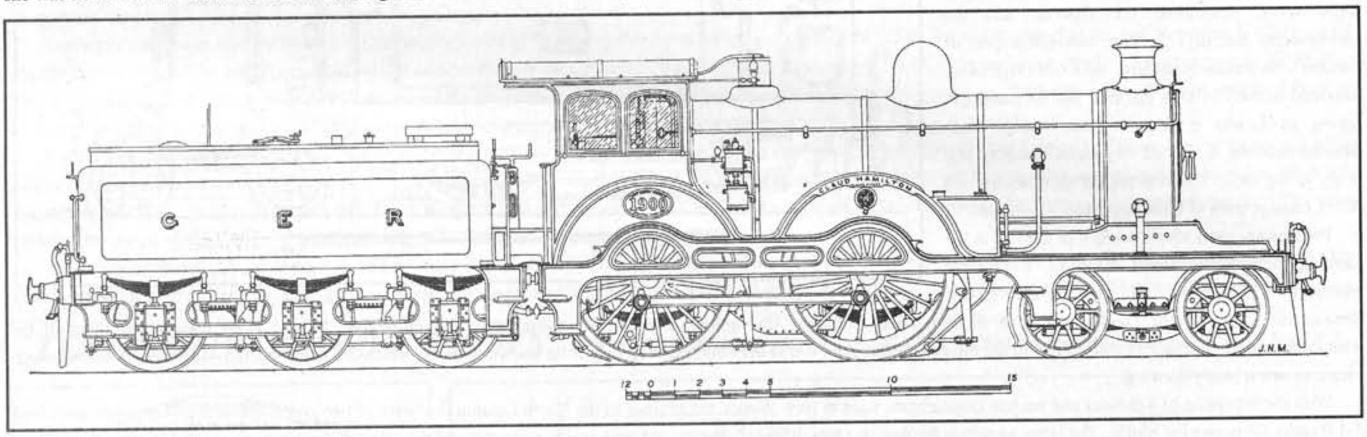
NORFOLK AND WESTERN'S K2V CLASS ENGINES. By A.J. Richards. Of the various classes of American 4-8-2 type locos the K2A were among the noteworthy. They originated in 1916 when the company's Roanoke Shops produced the first five engines, as class K1. Over the years they were modified and became K2 and K2A with; cylinders 28 by 30in., wheels 70in., pressure 220psi, weight 147 tons, tractive effort 63,800lb. In 1940 the N & W carried out experiments with regard to the streamlining of its locos, which later resulted in these engines being so treated, which has led to greater engine efficiency on fast through passenger trains. In 1941, the K2A class was superseded by the big J class engine sent out from Roanoke. The 14 engines were built between 1941 and 1950. They have 27 by 32in. cylinders, 70in. coupled wheels, 300psi boiler pressure, 202.5 tons, and a tractive effort of 80,000lb. Like the K2 class they have a streamlined cowling, and have been used extensively in fast heavy duty passenger service.

LOCOMOTIVES I HAVE KNOWN

No. 34 by J.N. Maskelyne

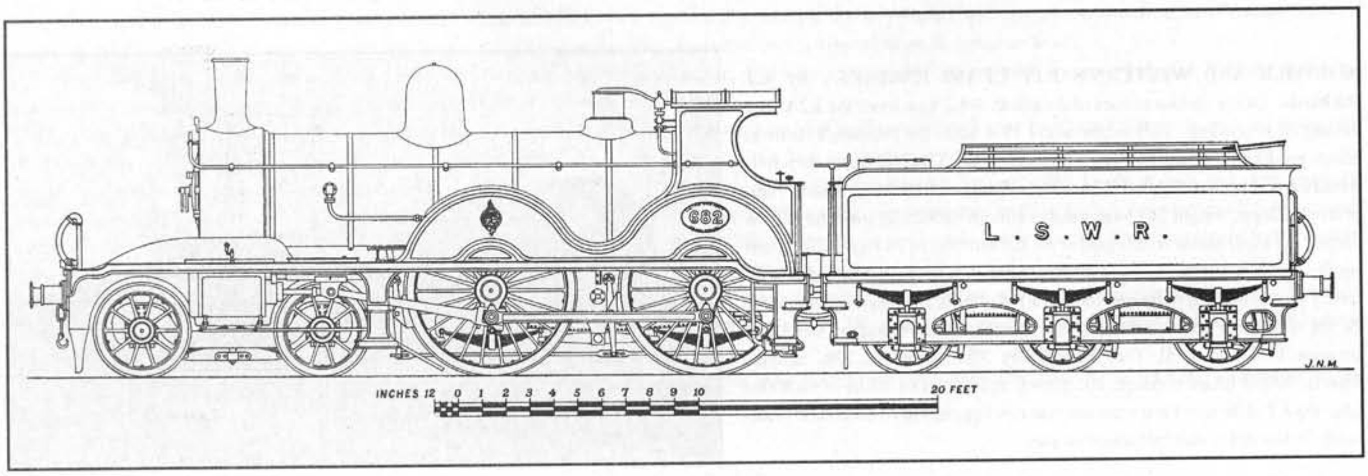
GREAT EASTERN RAILWAY No. 1900—CLAUD HAMILTON

IT WAS in the summer of 1901, that a younger brother and I were taken by our nurse spend a fortnight's holiday at the then almost unknown, and decidedly remote village of *Blakeney*. It was my first journey on the old *Great Eastern* main line and I vividly recall catching sight of No.1900, *Claud Hamilton,* as we slowly drew out of Liverpool St. station. *Claud Hamilton* was the first of a class of no fewer than 111 fine 4-4-0 express passenger engines designed by *James Holden* for working the principal express trains of the *G.E.R.*, and these splendid engines were destined to become known all over the world for the outstanding quality of their performances. In fact it was not until 1911 that they were displaced by a 4-6-0 type, 1500 class, on the heaviest trains. A Claud at the head of the 400 ton *Norfolk Coast* Express, climbing the Brentwood bank, provided spectacle and sound effects that can never be forgotten. *Claud Hamilton* was the only one to have a name, a distinction it shared with only two other *GER* locomotives. The cylinders of No.1900 were 19 by 26in. stroke and had the steamchest below. Balanced slide valves were used and were operated by a well laid out *Stephenson* link motion; the inclination of the cylinders was 1 in 16 which gave plenty of clearance above the bogie. The boiler pressure was 180psi. A driving wheel diameter of 7ft. had been used successfully on a number of previous classes of GER express engines, single and coupled, and was adopted on the Claud Hamilton class, though for the last time on the *GER*. This fine engine weighed 50 tons 6cwt. in working order, while 37 tons 3cwt. rested on the coupled wheels, giving adhesion which surpassed most other four-coupled engines of the day, the tractive effort was 17,100lb. *James Holden* was responsible for the general design, but the details were worked out by W.V. Russell, *A.M. Bell and A.J. Hill.* The result was a veritable triumph which won its due reward at the Paris Exhibition; for *Holden* was awarded the Grand Prix, *Russell and Bell* a silver medal each, and *Hill* a bronze. *Claud Hamilton* was withdrawn from service, as LNER No.2500, in May 1947; like the majority of her class, she was never rebuilt. Some of the rebuilds, together with later *LNER* developments of the type, are still in service. (1957).



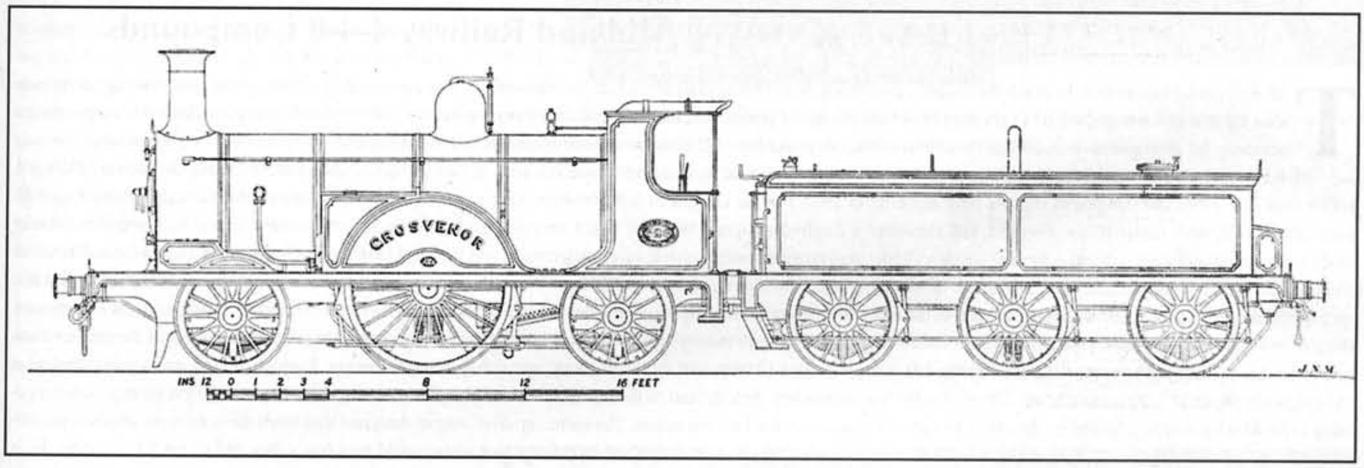
London and South Western Railway 'T-6' Class.

WILLIAM ADAMS of the *L.& S.W.R.* was a strong advocate of the 4-4-0 type passenger locomotive, and designed several series of such engines. His usual custom was to build two series at a time, one with 6ft. 7in. driving wheels for working over the heavily graded routes west of Salisbury, and the other with 7ft. 1in. wheels for working east of that town. This custom began in 1883 and it terminated, so far as the *Adams* engines were concerned, in 1896 with the building of Classes T-6 and X-6. Engine No. 682 was one of the T-6 class which, to my mind, were the finest of all the *Adams* engines. They were designed on the massive scale; their proportions were excellent and they were very solidly built. On the road they were speedy and powerful, and they well-merited their nickname of *Adams Flyers*. I have shown No.682 in the *Adams* style because she was like that when I first knew her, and I copied it from her official photograph. It was plain, neat and simple, and I rather preferred to the *Drummond* livery. However, no matter what the livery, the T-6 class remained unchallenged on their home road until Drummond's celebrated T-9 class appeared in 1899. The T-6 had; cylinders 19 by 26in., wheels 7ft. 1in., pressure175psi, weight 50 tons 2 fi cwt., tractive effort 16,426lb. The withdrawals began in 1933, but No. 681 survived until 1943. The last mentioned gave me a pleasant surprise one afternoon in 1937; I happened to be on Wimbledon station when she came through at a good 65mph, at the head of the up Atlantic Coast Express. I cannot think of many other engines which at the age of 42 years, would tackle a train like that, non-stop from Salisbury to Waterloo. Finally, I would suggest that, even at this late date, an *Adams T-6 would make a fine model*, especially in 5in. or 7¼in. gauge. Many years ago, models of Adams 4-4-0 engines were fairly numerous; but curiously enough, never a T-6, and I have often wondered why.



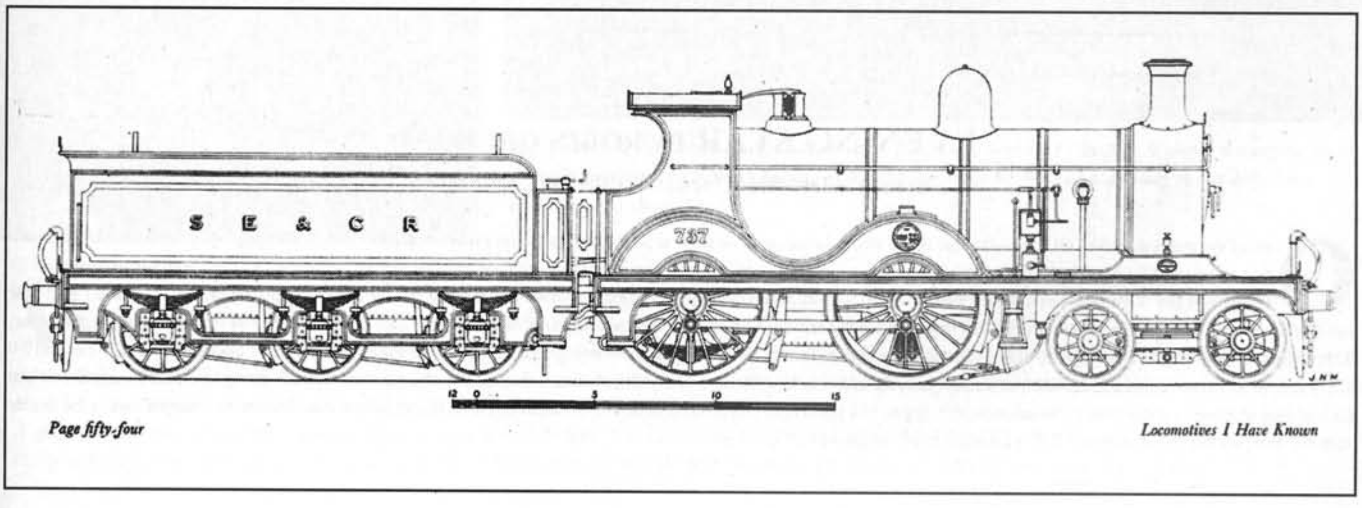
London Brighton and South Coast Railway No. 326, Grosvenor.

IN my young days, the old *L.B.&S.C.R.* was still in possession of 26 very attractive 2-2-2 type express engines which were universally referred to as the *"Stroudley singles."* They were great favourites among locomotive enthusiasts of those days, mainly because of the steady reliability of their work; years later, when I came to know some of the older drivers of the Brighton line, I discovered that these engines were well liked by the men who had charge of them. Originally, the 26 engines had been divide into three separate classes, officially designated B, F and G; B and F consisted of one engine only, *Grosvenor* and *Abergavenny*, respectively, while G was made up of 24 engines that were built about five years later than class F. This chapter deals with No.326, *Grosvenor*. She was built at Brighton in 1874, and for that period she was a very fine engine, one of the largest of her type in the country, and every detail of her design was, at least up to date if not actually in advance of the times . Her principle dimensions were: cylinders 17 by 24in., wheels 6ft. 9in., pressure 150psi, tractive effort 10,918lb. Incidentally, it was Grosvenor that worked the first through train from London to Portsmouth in 1875; the train was a Royal special conveying the then Prince and Princess of Wales to a naval occasion. The 87 miles from Victoria to Portsmouth were run in 110 minutes at an average speed of 48mph. Two months earlier, however, this fine engine was her owners representative at Newark, where some trials of various braking systems were held. As a result of the Newark trials, the LBSCR decided to adopt the expensive, but very effective, Westinghouse air brake, which remained standard practice at Brighton ever after. I always associate her with that most amusing collection of headboards which signified "Victoria to Eastbourne via Quarry Tunnel." This consisted of a plain white disc above the left-hand buffer, another, often a square shaped board with a pair of horizontal parallel black lines on it, set over the middle of the buffer beam, and a third with a black vertical cross mounted above the right hand buffer. To all and sundry, this glorious combination, read across the buffer beam, announced that "nothing equals plus."

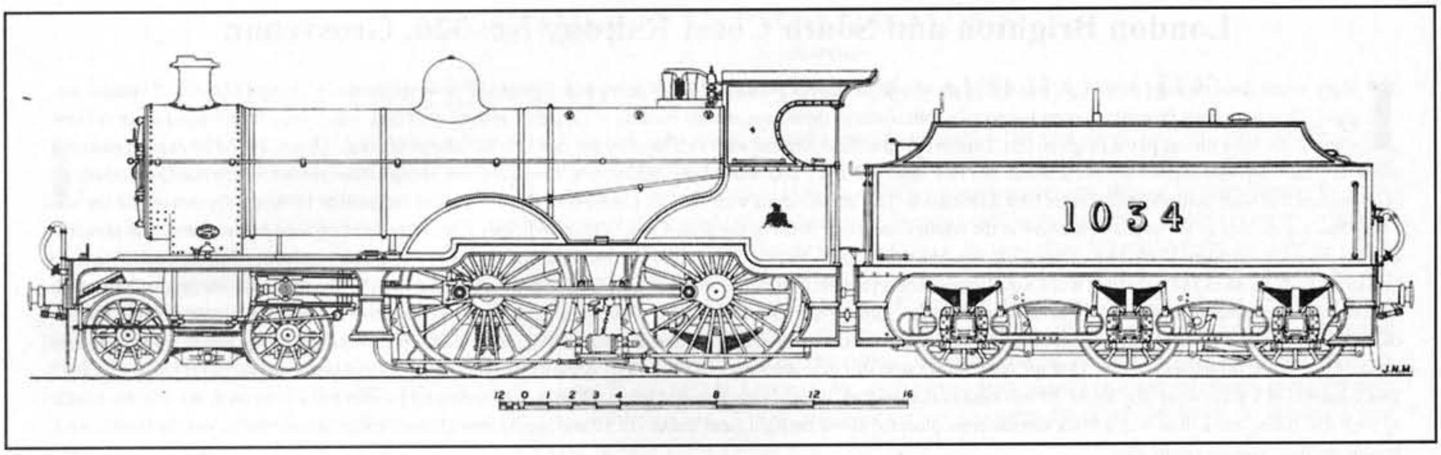


H.S. Wainwright's D-class 4-4-0's.

HOW well I remember the sensation that was caused when the first of these beautiful engines was put into traffic in 1901. In the previous year the *South Eastern and the London Chatham and Dover Railways* were combined under a management committee to become the *South Eastern and Chatham Railway*. The two former locomotive superintendents of the separate companies, James Stirling and William Kirtley, retired, and the combined departments were placed under the charge of *Harry S. Wainwright,* who had been carriage and wagon superintendent of the former *S.E.R. under Stirling*—but was not then regarded as a locomotive man. Yet within 18 months he produced, first, some 0-4-4 tank engines for local work followed by his C-class 0-6-0 goods engines and then, the pioneer examples of his truly spectacular 4-4-0 express passenger engines of Class D. The drawing can do no more than give a bare idea of the graceful outline and extremely pleasing proportions of this design. Painted and lined out in the elaborate livery adopted by *Wainwright*, and additionally embellished by the provision of copper caps to the chimneys, the whole was kept spotlessly clean. These engines, and the very similar E class that followed, were almost the last examples of Victorian and Edwardian finery. The modern generation can have no conception of the effect produced by the sight of a locomotive finished in this style; it was almost breathtaking, but not in the least garish or flamboyant. I am glad to be able to add that engine No. 737 has been saved from the scrap heap and is being restored to her original condition. When new, these engines, of which there were 51, at once took over the working of the best express trains of the SECR, including all the continental traffic between London, Dover and Folkestone. The original dimensions were quite typical of the practice of those days: cylinders 19 by 26in., wheels 6ft 8in., pressure 180psi, weight 50 tons, tractive effort not recorded.



Page fifty-four *Locomotives I Have Known*



LOCOMOTIVES I HAVE KNOWN: Midland Railway 4-4-0 Compounds

THE compound locomotive, in which the steam is used twice before being discharged into the atmosphere, was never widely adopted in Britain. Among several reasons for this apparent neglect of a very attractive form of motive power, the chief was that coal was plentiful and comparatively cheap, so there was no paramount necessity for any rigorous economy in its use. Nevertheless, a number of British locomotive engineers experimented with compounding for its own sake, but only one—*Richard M. Deeley* of the *Midland Railway*—can be said to have achieved an outstanding success with it, though he had an excellent foundation on which to work, in five very fine 3-cylinder compound engines built at Derby in 1902-3 to the designs of *S.W. Johnson.* These five engines were based on the principle adopted by *W.M. Smith* of the *NER*, who, under *Wilson Worsdell*, had converted a 2-cylinder engine, No.1619, into a very successful 3-cylinder compound with one high-pressure cylinder inside and two low-pressure outside. *Johnson's* inside cylinder was provided with a piston valve underneath, and the outside cylinders had vertical slide valves. The inside cylinder was 19in. and the outside 21in., the stroke of all being 26in.; the boiler pressure was 195psi. While the outside cranks were set at 90deg., with the left-hand one leading, the inside crank was set at 135deg. to each of the other two, all on the leading coupled axle, which had six eccentrics for the three sets of *Stephensons* link motion. The h.p. and l.p. cut-off controls were independent. There was no receiver between the h.p. and l.p. cylinders, the h.p. exhaust passing directly into a large steamchest common to the l.p. cylinders. The engine could be worked as a simple, a semi-compound, or a compound, according to requirements. Simple working was usually applied at starting, boiler steam at full pressure being admitted to the h.p. steamchest directly, and to the l.p. steamchest through a reducing valve controlled by a spring-loaded regulating valve which could be adjusted by the driver to vary the pressure in the l.p. steamchest. The reducing valve was so designed that when the maximum pressure permitted in the l.p. steamchest was attained, boiler steam was shut off automatically. Non-return valves ensured that steam could pass into either end of the h.p. cylinder. If, in starting, the h.p. piston valve was in a position that closed its ports, the non-return valve to allow steam to pass to either end of the h.p. cylinder; if the ports were open, the non-return valve was kept shut by the pressure in the cylinder exceeding that in the l.p. steamchest. In 1905, *Deeley* simplified and modified this rather complicated arrangement by designing a special regulator valve through which the changes from simple to semi-compound, or compound working could be effected, according to the drivers manipulation of the regulator handle. He also abandoned the dual reversing gear and used only one for varying the cut-offs in the h.p. and l.p. cylinders; his scheme was highly ingenious, but the drivers took some time to get used to it. The boiler pressure was increased to 200psi., and the regulator was provided with an additional chamber and port from which a pipe gave direct connection to the l.p. steamchest. The cylinder arrangement, with its non-return valve, was the same as before, except for minor alterations in some of the details. In starting, regulator handle was pushed over to an angle of about 20deg.to open the additional port, allowing boiler steam to pass direct to the l.p. steamchest. At the same time, the pilot valve opened a small port through which steam flowed to the h.p. steamchest, and the engine worked as a simple. After the lapse of the few moments required to get the train well started, the driver pushed the regulator handle further over; this closed the auxiliary port and opened the main port, causing the engine to work as a compound. Semi-compound working could only be brought into use when the engine was running. For this, the regulator was placed in the starting position; but owing to the speed, there was a big drop of pressure in the pipe connecting the auxiliary port to the l.p. steamchest, and the engine worked as a semi-compound, useful in climbing a heavy gradient. But there must have been times when differential h.p. and l.p. cut-offs would have been an advantage. *Deeley* built 40 of these grand engines, they were all excellent workers, very popular with their drivers, and could indulge in some very high speed when they had the opportunity. Their long sleek outline was suggestive of nothing but the racehorse; and I have endeavoured to capture something of this effect in my drawing, basing it on a photograph I took of No.1034 at Kentish Town in August, 1920, when she was still in her original condition. In 1924, *Sir Henry Fowler* began the construction of further batches for the LMSR until, in 1927, the total reached no fewer than 240. The first of the class, No.1000, has been beautifully restored and preserved by the *BTC*.

EVENING STAR By ROBIN ORCHARD

Britain' s last steam loco starts the long, long run...

One of the greatest eras of all time—the age of the steam locomotive—ended at Swindon Works, on Friday, March 18, when *Evening Star*, the last steam locomotive to be built by *British Railways*, was put into service. The ceremony of naming the locomotive marked the end of a 156-year era which had begun on 21 February 1804 at Penydarren Colliery, near Merthyr Tydvil, when the Cornish engineer *Richard Trevithick* ran the first full-size steam locomotive on rails. The age of steam locomotion had begun and from that day it expanded rapidly, reaching its zenith at the turn of the century and in the decade that followed. At the same time, other forms of traction, notably electric, began to replace the steam locomotive, until *finally Evening Star*, the 999th of the standard line of engines, a class 9 B.R. 2-10-0 heavy freight locomotive, No.92220, was put into service. Besides marking the end of the British steam locomotive, the completion of *Evening Star* also brought to a close the building of steam locomotives at Swindon, which began 114 years ago. To commemorate the historic occasion, *Evening Star* was fitted with a copper cap to the double chimney and painted in the standard R.R. passenger livery of green.

The naming ceremony was held under the shadow of the famous *North Star* broad gauge engine, in a corner of the vast "A" erecting shop, which had been specially decorated for the occasion. Among those present were members of the BTC and the Western Area Board, regional representatives, and former railway officers, including famous designers, and other guests. Welcoming the guests, *Mr, R.F. (Reggie) Hanks*, chairman of the Western Area Board of the BTC, praised the work of the men of Swindon and the way they had switched without hitch from building steam locomotives to diesels. Referring to past glories, he recalled the names of famous designers associated with Swindon, including *Daniel Gooch, George Armstrong, William Dean, G.J. Churchward, and C.B. Collett.* These were the men, he said, who had made the old Great Western great. Although No. 92220 was not of Great Western design, *Mr. Hanks* said she had been "Swindonised" by the addition of the copper cap to the chimney. He paid special tribute to the famous designers present. They included *Mr. R.A. Riddles*, the designer of No.92220, Sir William Stanier, *Mr. Oliver Vaughn S. Bulleid, Mr. H.G. Ivatt, and Mr. F.W. Hawksworth* former C.M.E. of the GWR and the Western Region.

The ceremony was performed by *Mr. K.W.C. Grand*, a member of the BTC who paid tribute to the way railwaymen everywhere had served the industry. Then turning to the locomotive behind him, he pulled two gold curtains aside to reveal the rectangular brass nameplate and a commemorative plaque which said:

No. 92220 BUILT AT SWINDON MARCH 1960.
The last steam locomotive for British Railways.
Named at Swindon on March 18th, 1960, by
K.W.C. Grand Esq. MEMBER OF THE BRITISH TRANPORT COMMISION

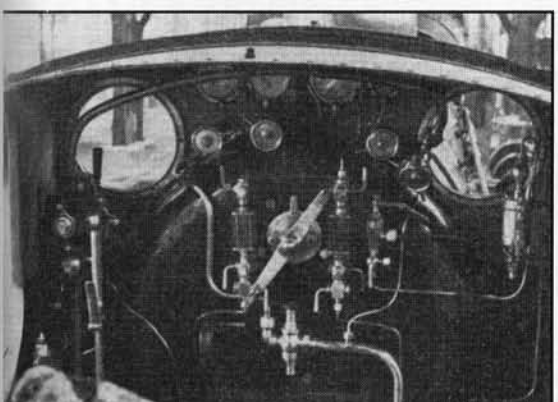
There was a renewed burst of cheering which was drowned out as the whistle of *Evening Star* echoed through the shop for the first time.

It is to be hoped, that when the time comes for No.92220's withdrawal, she will not end her days on the scrap road, but will join the other great locomotives from Swindon, such as the *Dean Goods, City of Truro, Lode Star* and, I hope, a King and Castle in permanent preservation. For she is truly a magnificent locomotive.

LIBRARY OF LOCOMOTIVES

By ROBIN ORCHARD

Caledonian No.123



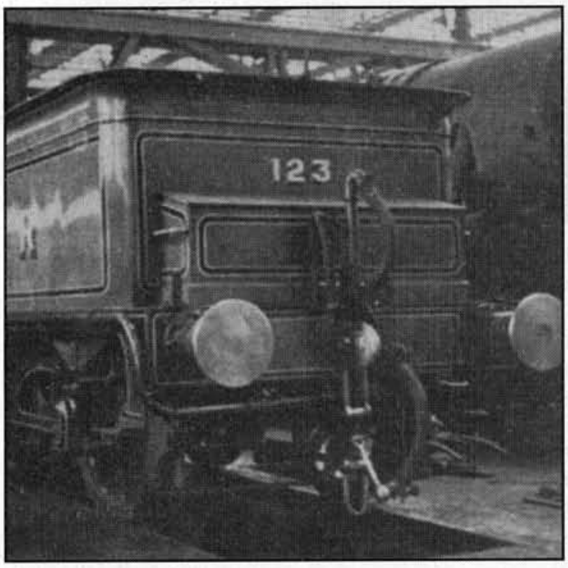
This picture of No.123 in service was taken by Mr W.A.C. Smith, of Glasgow. It shows the engine on a Scottish Industries Exhibition Special at Renfrew (Fulbar St). No.123 is piloting the ex-Highland Railway 4-6-0 Jones Goods.

WITH large scale electrification and dieselisation, the steam locomotive is rapidly disappearing from the British railway scene. Already some 3000 have been replaced by diesels, leaving only 14,231 in service. By 1963, this total will have reduced to 7,000. It is, therefore, only a matter of time before it will be difficult to obtain information on the steam locomotive. In this new series, I propose to discuss a selection of locomotives which would make interesting live steam models. I shall give as much information as possible, but the main object will be to present close-up pictures of details and fittings which most modellers would find it hard to obtain. It will be a kind of library of locomotives for the guidance of modellers.

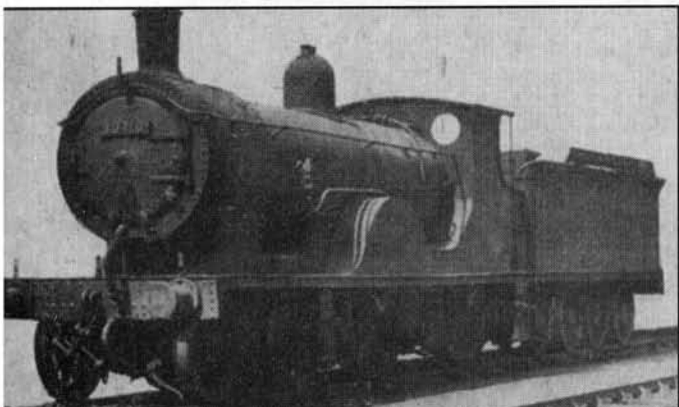
My first choice is one of the most elegant designs ever seen in Britain. It is the famous Caledonian Railway 4-2-2 No.123. She was built in 1886 by *Neilson & Co.*, of Glasgow, for the great Edinburgh Exhibition, to the design of *Dugald Drummond*. In 1887, the engine was purchased by the *CR* for use on its race trains.

When racing ceased, it regularly worked the West Coast postal, and was also used as pilot engine on the Royal trains conveying Queen Victoria to Balmoral. Soon after the turn of the century No. 123 was withdrawn from active service and used only for hauling directors specials. In 1930, rather surprisingly, it was put back into regular service on the Perth-Dundee expresses and in 1935, was finally withdrawn. It was preserved at St. Rollox Works, Glasgow, until 1953 when it was brought to London for the Royal Journey exhibition at Battersea. In 1957, it was renovated and put back into service for hauling special trains.

Undoubtedly No.123 would make a very fine model, mainly due to its well balanced lines. It would not, however, be so successful at hauling passengers as many engines of a smaller size. This is, of course, due to the single driving wheel which results in a certain loss of adhesion. In $\frac{3}{4}$in. scale, the loco would be approximately 22in. long and the tender 17$\frac{1}{2}$in. This would be a convenient size for transporting but would make it a little too small. The minimum scale to be considered should be 1in., for in this size the loco would be 28$\frac{1}{2}$in. long and the tender 23$\frac{1}{4}$in. The model would still be small enough for just one person to lift and yet have that extra power to turn her into a real hauler. In 1$\frac{1}{2}$in. scale, hauling a train round a track like that at Thames Ditton, she would make a fine sight. In this scale, the loco would be 42$\frac{3}{4}$in. long and the tender 34$\frac{3}{4}$in. Too much for one person to lift but there should be little difficulty for two. **(Provided that one of them is not me!).**

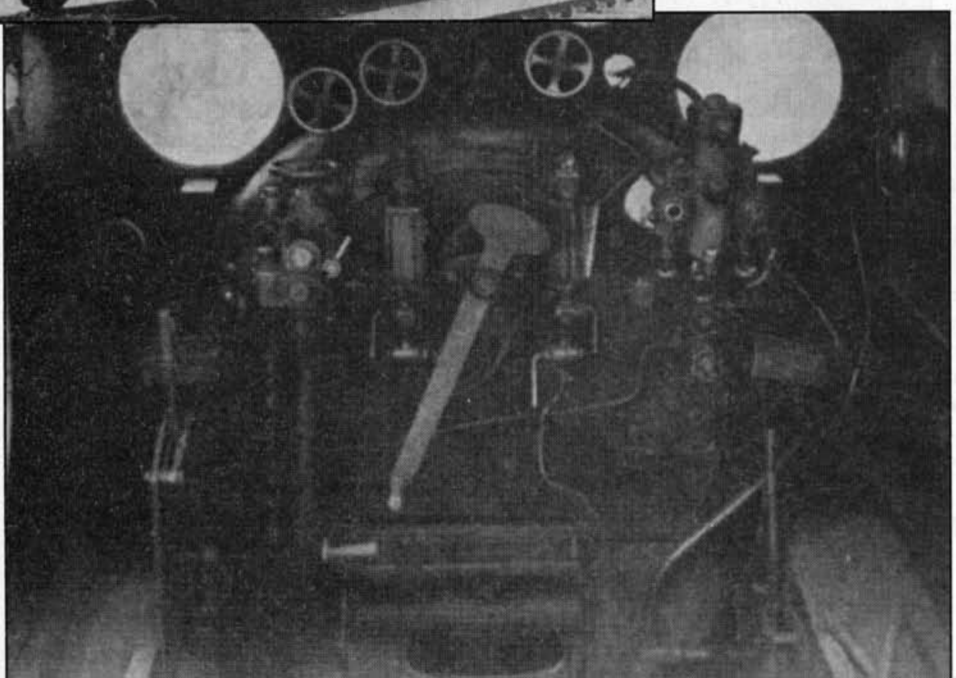


Drummond's 'Greyhounds' for the LSWR.



Rebuilt T9, No. 30310. The engine has large splashers enclosing the driving wheels and the throw of the coupling rods, and an 8-wheel "watercart" type tender. It was one of the engines built at Nine Elms and fitted with water tubes. Painted in the older type BR livery.

ABOVE: Head-on view of T9 No.30287. A detail worth particular attention is the step at the base of the smokebox. This enables the fireman to reach the lamp bracket in front of the chimney.



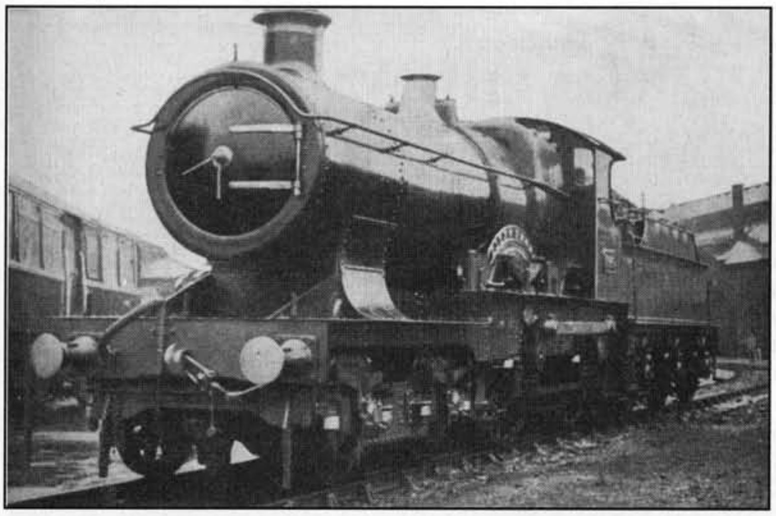
LEFT: The neatly arranged cab so typical of Drummond's design. The regulator is long and sturdy, giving easy control at high speed. Another point of interest to model engineers is the shape of the handwheels.

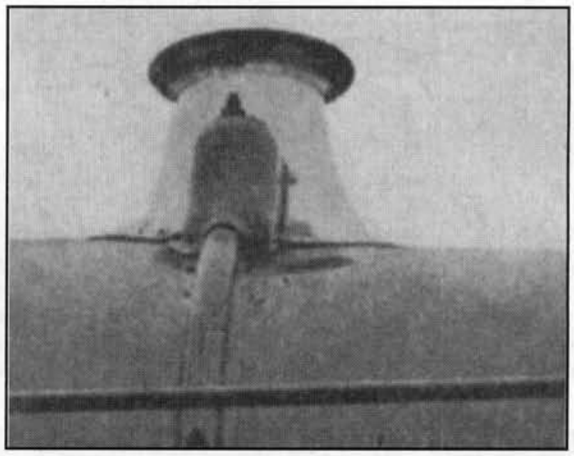
THE T9 or Greyhound class 4-4-0's of the *LSWR* were the first coupled-wheel express engines designed for the *South Western* by their new CME, *Dugald Drummond*. The first of the Greyhound class appeared in 1899 and at the time of its introduction its 10ft. wheelbase was the longest of any locomotive in Britain. Over a period of three years, 66 were built. Like many other classes of locomotive, the T9's were not identical. There were three different types. The first, consisting of 20 engines, had separate splashers to enclose the throw of the coupling-rods, and six-wheel outside frame tenders; the second, consisted of 30 engines identical with the first type, were fitted with *Drummond's* firebox, water-tube scheme. The third consisted of 15 engines fitted with wider cabs, splashers enclosing the throw of the coupling-rods, firebox water-tubes, and the famous double bogie inside frame watercart tenders. The last engine of the class, No.773, was built by Dübs and Co. of Glasgow, for the 1901 Glasgow Exhibition, and later taken into *LSWR* stock. In 1922, *R.W. Urie,* who had taken over after the death of *Drummond* in November 1912, experimentally rebuilt No. 314 with an extended smokebox, stovepipe chimney, and Eastleigh superheater. He also brought the boiler clacks from their old position on the back of the smokebox to the more usual position on the side of the barrel and dispensed with the water-tube idea. It is interesting to note that they were all in service in 1948, and that they have since outlived all the later *Drummond* 4-4-0 designs. At present (1960) 14 remain in service.

When originally built they were, of course, the *South Western's* top express engines and worked all the principal expresses on the Exeter and Bournemouth lines. One train regularly worked at the turn of the century was the 11am Waterloo-Exeter-Plymouth express. At that time it was the fastest train on the *South Western*, the schedule from Waterloo to Plymouth North Road was 5 hr. 53min. Today the same journey takes 5hr. 25min. The times can hardly be compared because trains have become considerably heavier. Nevertheless, it is interesting to note that schedules have not changed much in over 60 years. Gradually, however, they were ousted by the later, larger 4-4-0's. In the 1920's, they began to appear on the Portsmouth line. These expresses were run on a tight schedule and their weight was often far above the recognised load for this class, but they rarely let the *South Western* down. The advent of the *King Arthur* class in large numbers resulted in the larger 4-4-0's being transferred to the Portsmouth line, and again the T9's were relegated to semi-fast duties.

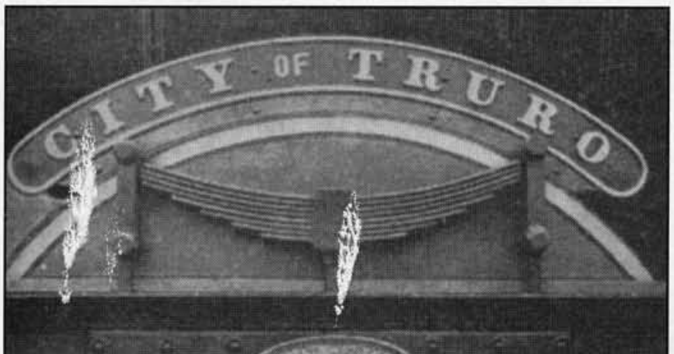
During WW2, T9's were to be seen hauling trains far above their normal loading, all over the system. A few were loaned to the *LMS* for service on the particularly difficult Somerset and Dorset line. When the engines arrived, *LMS* men were sceptical of their chances of success. Their fears were soon dispelled, to be replaced by a deep respect for the T9.

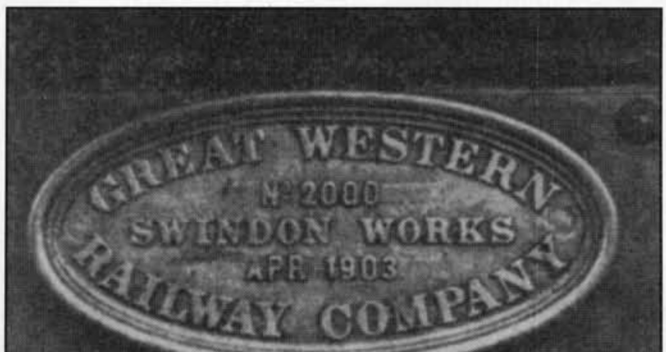
FASTEST OF THEM ALL, 1904. By ROBIN ORCHARD Photos by BRIAN WESTERN





Polished brass safety valve bonnet, hallmark of a GWR engine. Originally there was no top feed on the TRURO.





FANTASTICALLY fast and powerful machines: that is how I have always thought of the City class of the old *Great Western*, because these ten locomotives revolutionised running times on that railway. Their greatest feat, of course, was to secure the first recorded run of 100mph—on 9 May 1904. *City of Truro* was the locomotive that reached this speed, and she was, at that time, the fastest vehicle in the world.

George Jackson Churchward succeeded the great *William Dean* in 1902, at a time when Swindon was turning out the beautiful *Atbara, Bulldog, and Aberdare* class engines. Late in 1902, *Churchward* decided to carry out an experiment with an *Atbara*: No.3405, *Mauritius* was selected as a guinea pig and had its Swindon No.2 boiler replaced by a newly designed No.4 boiler. This boiler was the same length in barrel and firebox as the No.2, but the diameter was enlarged by 6in. and the firebox was made wider by the adoption of throat and backplates, as used on the No.1 boiler for *Dean's* No.100 and later as the basis of the boilers of *Churchward's* 4-6-0's.

The result of this experiment was the first locomotive with the specifications which were soon to be those of the Cities. *Mauritius* was an instant success and *Churchward* decided to build ten new locomotives, using the rebuilt *Atbara* as a pattern. You may be wondering why *Churchward* had wanted larger 4-4-0's. Well, the reason was that, up until the introduction of the Cities, the 4-4-0's had only been able to keep a small amount of steam in reserve when working in the West Country, and they were a little too light for some of the heavier trains: hence the enlargement of the *Atbara* boiler on *Mauritius*.

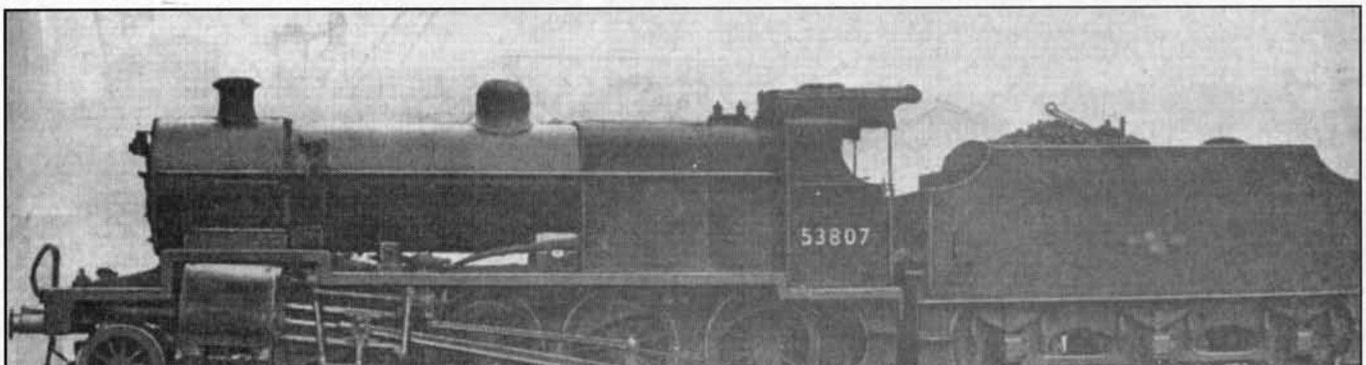
The new type was called the *City* class and its names were from cities which the GWR served. The last, No.3443, *City of Exeter*, was out of alphabetical order; it was originally intended to call this engine *City of York*, but some bigwig protested on the ground that York was not served by the *GWR* and so the name was altered in favour of the West Country. It did not take the Cities long to start making headlines, on July 14, 1903, No. 3433, *City of Bath* broke the world speed record for steam locomotives, The Royal Train was taking King Edward and Queen Alexandra to Plymouth, and the complete journey of 246 miles was made without a stop, the longest non-stop run in Britain at that time. Within 30 minutes of leaving Paddington, *City of Bath* was romping through Reading, that 38 minutes later Swindon Works flashed by, and that within an hour and a half of leaving London, the locomotive was grinding round the sharp curve at Bath. Moreover, remember that this was at a time when the railway-minded public were saying that it would not be possible for the *GWR* to reach Bath in two hours. The best was yet to come, for *City of Bath* managed to cover the 52 miles from Exeter to Plymouth in 61 minutes; and this over those formidable obstacles named Dainton and Rattery, together with the intricacies of the murderous junction at Newton Abbot. Within four hours of leaving Paddington, *City of Bath* was simmering quietly in Plymouth North Road. The run could only be summed up in one word—fantastic. To my mind, it is at least as important as City of Truro's 100mph because until then the GWR had been content to take 85 minutes from Exeter to Plymouth, and even that was not slow by 1903 standards. Another point to be borne in mind is that the run was made in the days of the Great Way Round, as the *GWR* was nicknamed, when trains to Exeter and the West had to go to Bath and then around the tortuous curve at Pylle Hill junction, in the days before the Westbury link was completed.

Then came the magic day that railway enthusiasts will always remember—9 May 1904, the day when *City of Truro* did the trip from Millbay Dock, Plymouth, to Paddington in 3hr. 46min. 48sec. The 100 was actually touched when descending the Wellington side of Whiteball. The top speed recorded by *Charles Rous-Marten* was 102.3mph. and, although this figure has been doubted on many occasions, it is definite that for half a mile *City of Truro* ran at 100 m.p.h. and for a mile, between Wellington and Norton Fitzwarren, averaged 96.

Cities continued to work the semi-fast services for many years until 1927, when the withdrawal and scrapping of the class began. All were scrapped by 1931, with the exception of 3440, or 3717 as it then was. This locomotive was repaired, restored to its earlier livery, and put into York Railway Museum. York remained her home until 1956 when she returned to Swindon and was renovated and put back into service for hauling special trains. We hope that she will continue this work for many, many years.

These 2-8-0's were---- WORTH THE WAIT

PHOTOGRAPHS of the 2-8-0 freight locomotives working on the old *Somerset and Dorset line* had determined me to see these elegant monsters.In consequence, I stood one morning on the platform of that beautiful covered station at Bath Green Park waiting for a train to Templecoombe. I hoped to begin the day perfectly in a train pulled by one of the engines. But I had to make do with a *Midland 2P* 4-4-0. As I had never travelled over the line from this end, I was not sure on which side the MPD was, and so I decided to look out on the right. It turned out to be the wrong side. Looking back while the train swung round at the exit of Bath Station, I realised that the dim shapes discernible in the smoke haze were the engines I sought. I decided to get out at the next station and go back, but I did not know that the station was so far and the return service so bad. Having alighted at Midford I set out to walk the two miles back to the top of the downs so that I might spend the day watching the trains come out of Devonshire tunnel. For what seemed like an eternity sat, straining my ears for any hint of a steam loco. Suddenly I could make out the sound of an engine snorting far away in the distance. Judging by the slow beat, it was at the head of a heavy train. As I listened its exhaust note intermingled with that of another loco; the train was being banked I thought, or it might be double headed. My excitement grew as the engine came nearer.



Was I going to see a 2-8-0? The noise ceased, the train was entering the tunnel. I craned forward; and then, in a great flurry of white smoke, No. 53808 emerged from the dark hole, shining as the early morning sun caught the gleaming black of her paintwork and the vivid splash of vermilion on the buffer beam. She was working extremely hard, and as she moved along a plume of smoke 20 ft. high rose over the cutting. I saw a cloud of white steam, and another engine—she was No.53800—came out of the tunnel. Together, the two stormed off towards the portal of the tunnel at Coombe Down, hauling what seemed an unending stream of coal wagons. It is a sight I shall long remember.

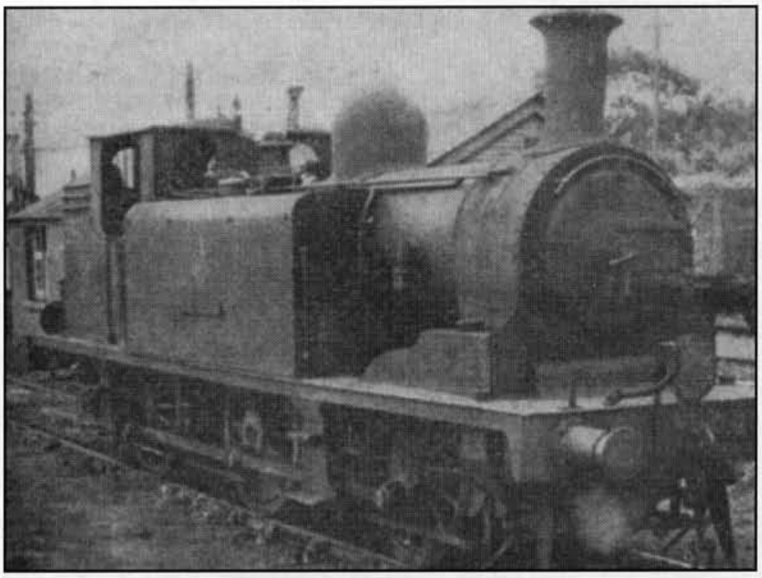
Let us consider why it was necessary to build these 2-8-0's. The principle traffic on the line is not passenger but freight, particularly the very heavy coal trains from the Midlands. Until 1914, it was left to locos of 0-6-0 or 4-4-0 type which had tremendous difficulty moving heavy trains across the more formidable stretches of the line. Formidable they are. Of the first 18 miles, 7 are at an average grade of below 1 in 70—and not for short stretches. One of the lengths of 1 in 50, commonest grade on this section, is a mile and another is a mile and a quarter. Along the whole line there are many stretches of steep gradient. None is so severe as the climb to Masbury Summit, and in the other direction, Masbury is even worse as it contains 5 miles out of 8 at 1 in 50.

In 1914, *Henry Fowler* directed the construction of a batch of six 2-8-0 engines at Derby. They had two outside cylinders of 21 by 28in., fitted with piston valves operated by *Walschaerts* motion., wheels 4ft. 7½in., pressure 190lb.weight 64¾ tons, tractive effort 35,932lb. Another batch was made in 1925. The life of these engines is now drawing to a close. Two have already been scrapped.

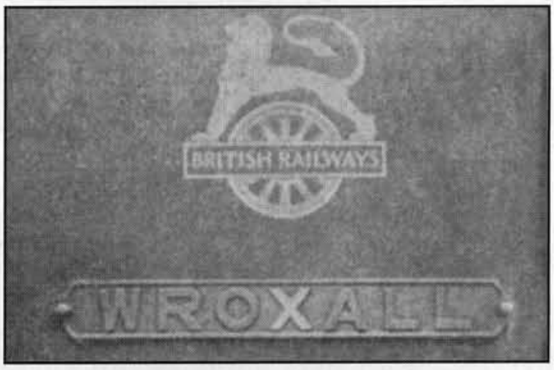
A rather unusual feature of the *S&D 2-8-0's* is that the brake blocks are fitted with *Ferodo* linings. I believe they are the only steam locos in Britain so fitted. Cast iron blocks of the conventional type would be worn out in one journey. The problem of replacing the locos has not been easy. The obvious thing was to use redundant 2-8-0's from other regions, but this did not work. In fact, the *Midland 8F's* were a failure. They habitually shed their tyres when braking heavy trains on gradients. This led to a suggestion that *BR class 9,* 2-10-0's be tried. They were very successful and towards the middle of the year, two have been shedded at Bath and have since been working over the line.

1961: WHEN STROUDLEY WENT TO BRIGHTON By ROBIN ORCHARD Pictures by Brian Western

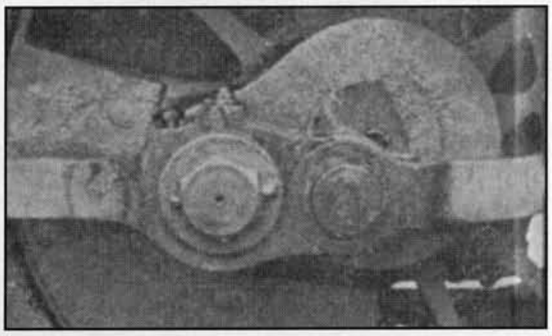
ASK the railway enthusiasts interested in the old *LBSCR* who was its greatest engineer and nine out of ten will plump for *William Stroudley*, locomotive superintendent from 1870 to 1889. He was born on March 6, 1833 in Sandford, Berks. After working for several companies he became loco superintendent at Brighton in 1870. When he arrived at Brighton, the locomotive men must have been at their wits' end. They had 73 different types of loco with little or no standardisation. By the time *Stroudley* died in 1889 he had provided the line with a new list of engines conforming to nine standard types. Of these, two are still in service, the *A1 or Terrier class* and the E1 or *Black Tank class*. It is the E1 which concerns me here. The first came from the works in 1874. In the following 17 years a further 78 were built. Like most of the Brighton engines, the E1's were named. Most of them were of continental towns and villages, but every now and then they would switch back to the UK. So you suddenly jump from *Berne, Brest and Rhine to Calbourne, Fishbourne and Shorwell.* **(The only ones I can recall are *Wroxall* and *Barcelona*, and the latter only because of Phil Hains beautiful model)**. Sadly, most of them lost their names back in 1911 when Marsh took over. He changed the goods livery from green to black, the names vanished and they became known as "Black Tanks." When *Brian Western* and I went to the Isle of Wight to snap W4, *Wroxall*, the last E1 on the IoW, we went to the Medina coal wharf near Cowes, where we found W4. We had just finished the detail shots when the relief crew arrived. The loco reversed along the track and disappeared round a corner. After a short walk, we could see the whole yard and a mile and a half of the main line. The E1 had vanished. In those minutes old W4 had built up speed, negotiated the bends and the points, raced up the line, and nipped over the summit, without leaving a puff of steam or any hint of its passage.



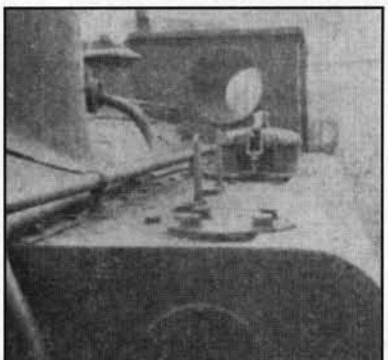
W4 WROXALL at Medina Wharf. It was built in 1878 as No.131 GOURNAY. In 1933 it went to the Isle of Wight.



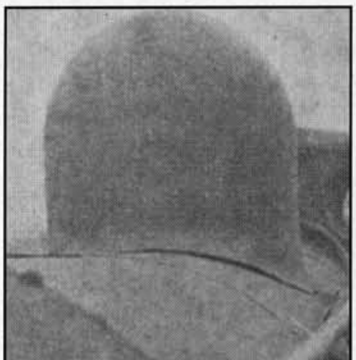
The cast brass nameplate.



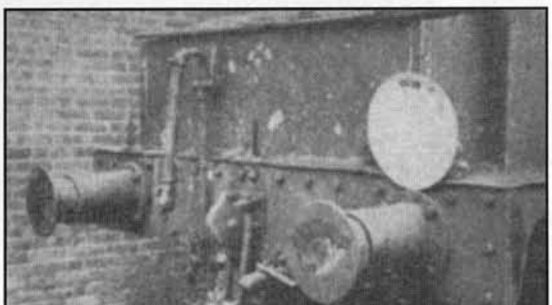
Knuckle joint on WROXALL.



Here are the tank-top details, cab window, whistle and safety valves

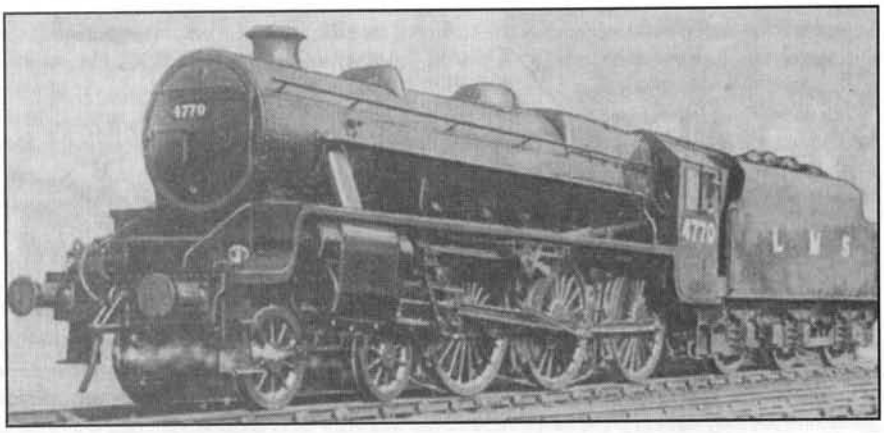


Well proportioned dome. Note the Gap between the boiler and dome casing.



Buffer beam with the wooden toolbox. Observe the cock on the vacuum pipe.

RAILWAY LIVERIES LMS– began with crimson lake.



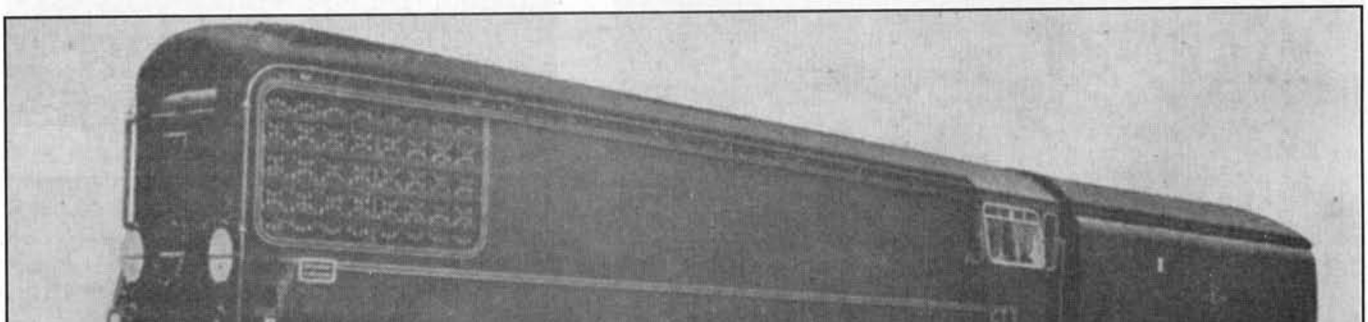
THE *London, Midland and Scottish Railway* was formed in 1923 from the *LNWR, the Midland, the L&Y, the North Staffordshire, the Furness, the Caledonian, the Glasgow and South Western, the Highland, and the Maryport and Carlisle Railways.* General colours adopted by the *LMS* were based on the old *Midland Railway*. The well-known crimson lake was used in a slightly darker shade. Painted red were the boiler and firebox and any details thereon, the cab sides; footplate edging, sides of outside cylinders and steps, tender sides and back. All other parts were black except buffer beams and buffer stocks, which were signal red. Lining was in yellow, a single line painted around the first boiler band, and the band next to the cab. There was also a single line along the footplate edging, around the steps and around the cab sides and tender sides and coal sheets. A cast-iron number plate was mounted on the smokebox door just above the door handles. The letters *LMS* at first appeared in small serif characters on the cab sides, and the engine number in the old Midland style on the tender sides. Tank engines had the letters LMS on the bunker sides and the number on the tank sides. Goods engines were painted all black with yellow lettering and no lining.

About 1925, *LMS* goods engines in the black style had the letters *LMS* on a vermilion background panel. From 1928, only first class express passenger engines were painted in the red colours, Royal Scots, Claughtons, Prince of Wales, Hughes 4-6-0's, and three-cylinder 4-4-0 compounds. The lettering was then reversed, the numerals being placed on the cab sides, and the letters on the tender. The engine number also appeared in small figures on the back panel of tenders. Tank engines also had a reversal with a few exceptions, such as the Fowler 0-6-0T dock shunters. A further small change was made in 1934. The Royal Scots, Baby Scots, Claughtons, the new Stanier 4-6-0's, the Horwich 4-6-0's, and the compounds were still painted red, but all other 4-6-0's and 4-4-0's were now painted black with red lining and gold lettering. The first of the *Stanier* "Jubilee's," named *Silver Jubilee*, in honour of the jubilee of King George V, was painted glossy black, the boiler bands, the dome and several other parts were chromium plated, and the lettering and numerals were in cast-iron, chromium plated.

During the war, all engines were painted plain black as they came from the shops. From 1946, important express engines were in black, with lining of maroon and pale straw, edged all round with maroon.—MARTIN EVANS.

SOMETHING NEW
on British Railways

To ROBIN ORCHARD the English Electric
GT3 gas turbine seems more living than diesel



RECENTLY a very interesting locomotive appeared on *British Railways* for the first time. It looked like a diesel with steam outline, but was in fact a gas turbine—the third to operate on *British Railways*. The earlier two were 18000, an AlA-AlA unit built in 1949 by *Brown Boveri* for the *Western Region*, and 18100, a Co-Co unit built for the same Region in 1951 by *Metropolitan Vickers*. No 18000 has only recently been withdrawn (I understand that it is not to be scrapped) and No 18100 was converted to a 25 kV AC locomotive some time ago.

The new locomotive is *GT3*, a 4-6-0 produced by English Electric as a private venture. Unlike the former engines, GT3 does not appear to be merely experimental. Five years have been spent on its development, and English Electric are confident of its success.

In looks it is a welcome change from the variations on a Theme of Box which have been the trend of late. GWR enthusiasts will look with surprise at the front bogie. Shades of *Dean*; it has outside frames and axleboxes!

On the technical side it is very different from the earlier locomotives as it employs mechanical transmission. It is fitted with an *English Electric EM 27* type gas turbine capable of 9,000 r.p.m. and 2,750 b.h.p. There are really two turbines, one to drive the compressor and one to drive the locomotive.

GT 3 has already been on test at the famous Rugby testing plant and also on a special length of track on which it had to scale a gradient of 1 in 44 and traverse curves down to 5½ chains radius with two dead 2-8-0s as ballast. It is reported to have performed exceedingly well. Soon after the trials it was being tested over the Shropshire lines of the *London Midland Region*. It will later enter service on the Marylebone - Nottingham line hauling normal service trains, and if it is successful it will be used on the Euston - Glasgow run. It weighs 123.4 tons, of which 59.25 tons are available for adhesion. The starting tractive effort at 29 per cent adhesiois38,000 lb.

Travelling at 90 m.p.h. the unit develops 2,260 h.p. at the wheelrim, while at 60 m.p.h. the figure is 2,570 h.p. and at 20 m.p.h. is 1,540 h.p. The tractive efforts at these speeds are 9,400lb., 16,100lb. and 28,000 lb.

Shall we see any of the gas turbines in regular service on *British Railways* if they are successful? This is a question that only time can answer. At present *British Railways* are not prepared to comment. But if the new engines provide a cheaper form of transport, as they are reputed to do because they burn cheaper grades of fuel, then they could be used. *GT 3* unit is probably a little too large for our system; I should imagine that a 1,000 h.p. unit would be more versatile and, therefore, of more use in Britain.

The locomotive has rather unusual livery, a change from dirty green, maroon and black. It is painted light brown with dark green frames and wheels, and the body is lined in dark green orange. Somehow it seems to live more than a diesel locomotive. The cause, I think, is the coupled wheels. Perhaps this is what makes steam locomotives appear to live as well.

RAILWAY LIVERIES

GREEN FOR THE SOUTHERN

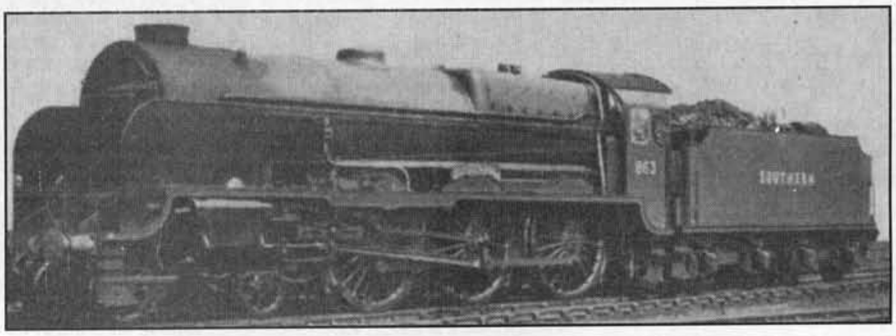
By MARTIN EVANS

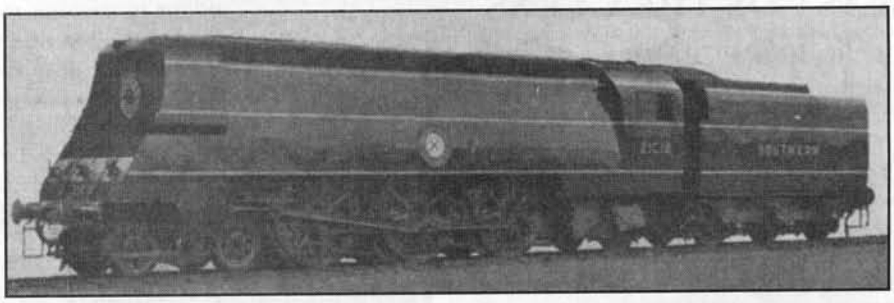
THE *Southern Railway* was the result of the amalgamation of the *London and South Western, the -London, Brighton and South Coast and the South Eastern and Chatham Railways*, together with some minor lines. From 1924, all passenger locomotives were painted sage green, very similar to that used by *Urie* on the old *LSWR*. Parts which were painted green included the boiler and firebox, cab sides and front, side edging of foot plate, smoke deflecting plates (if fitted) and sides of outside cylinders and wheels. All other parts were black, except, of course, the buffer beams and buffer stocks which were vermilion.

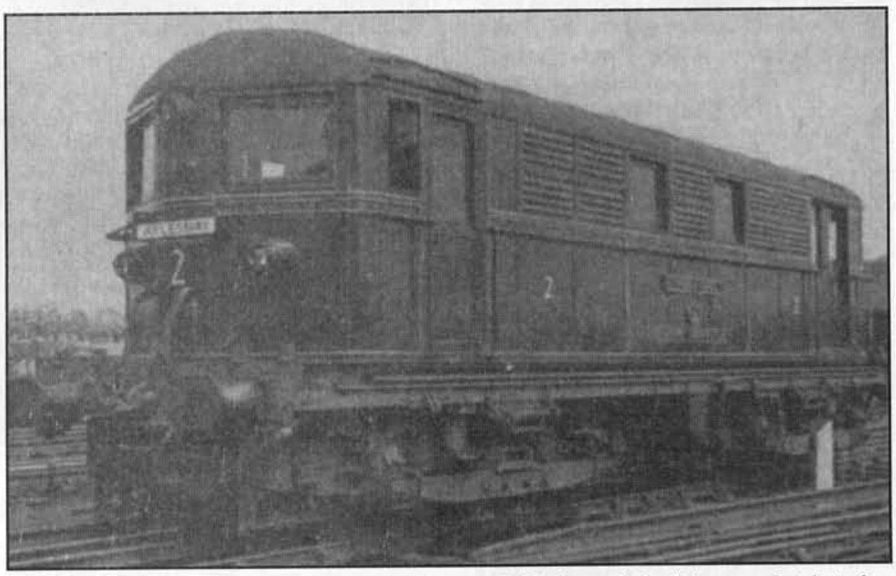
The nameplates had a vermilion background. Lettering, in gilt, was *Southern* on tender sides with the number underneath, and a small letter A, B or E, according to the pre grouping section between the two.

Lining was in black and white and was painted on the boiler bands, on the vertical edges of outside cylinders, around the edges of the cab sides and tenders, and along the footplate edging.

The small letter denoting the pre-group section was dispensed with in about 1936. Later in 1938 the Malachite green livery appeared. The word *Southern* was painted on the tender sides in plain yellow characters, and the number was placed on the cab sides. Goods engines were painted plain black. A new style of livery was introduced with the *Bulleid* Pacifics. The lettering *Southern* was shaded, and horizontal chrome-yellow lining was arranged the full length of engine and tender. A flat ring bearing the word *Southern* against a red background was fitted on the smokebox front. Special nameplates were used for the *Merchant Navy* class. The centre bore the house flag of the appropriate shipping company in full colours.





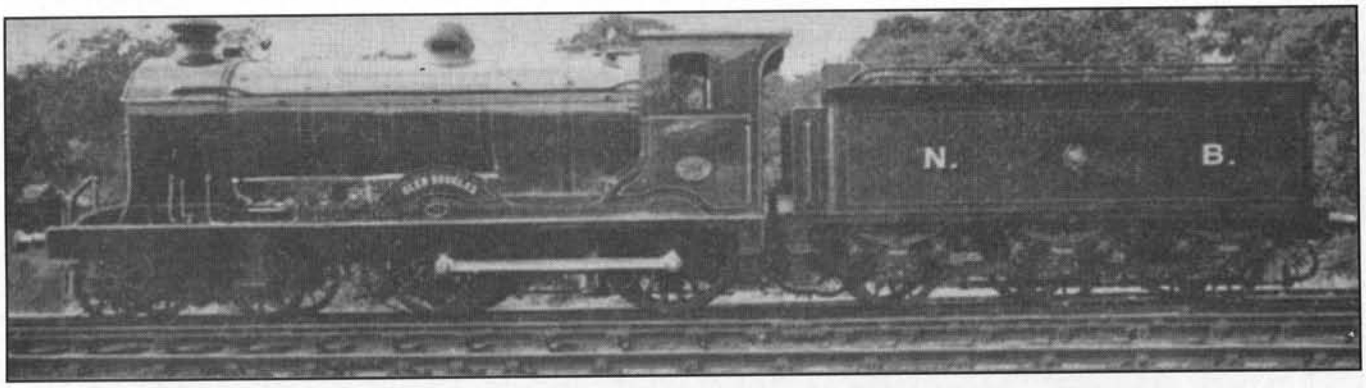


The Met. "Growlers"

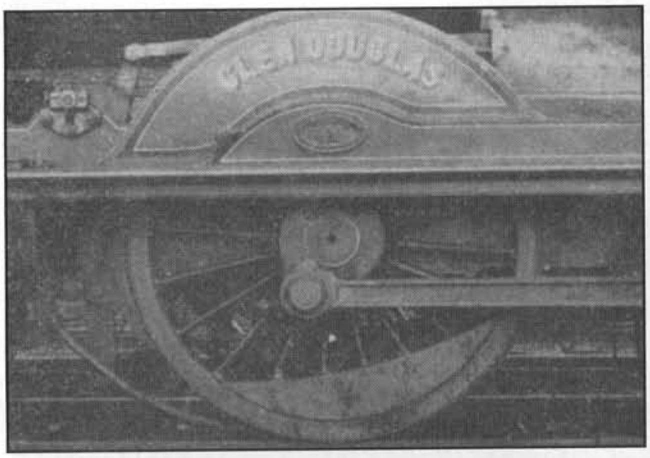
SOME TIME this year the new electric stock for the Aylesbury section of *London Transport's Metropolitan line* will make its debut.

Form then onwards the electric locomotives which haul the six-coach Aylesbury trains will gradually disappear from service. Of the original 20, only 16 remain, one of which, No.9, is used solely for shunting. Present versions are rebuilds of the peculiar steeple-cab electrics which replaced the condensing steam locos. In 1927, they were named, mostly after famous people associated with the line.

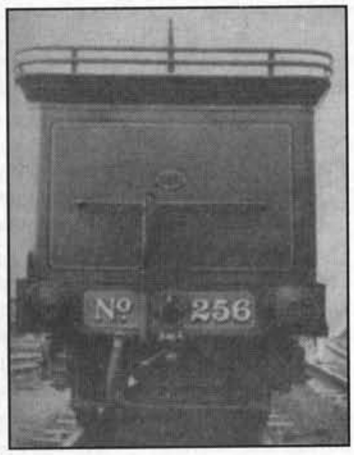
With the arrival of the new electric trains, which will be in the fashionable silver livery of *LT*, the distinctive teak-coloured compartment stock will no longer be seen, but the purply-maroon electric locos will not all be scrapped.



GLEN DOUGLAS restored to her former glory of dark olive green, and not brown, as is sometimes believed.



Crest of the NBR, as on GLEN DOUGLAS. How many M.E. readers know the mosaic crests set in the floor of the booking office at Waverley Station, Edinburgh?



Rear view of the tender, showing panelling, handrail, numberplate and buffer beam panels clearly.

LAST OF THE GLENS

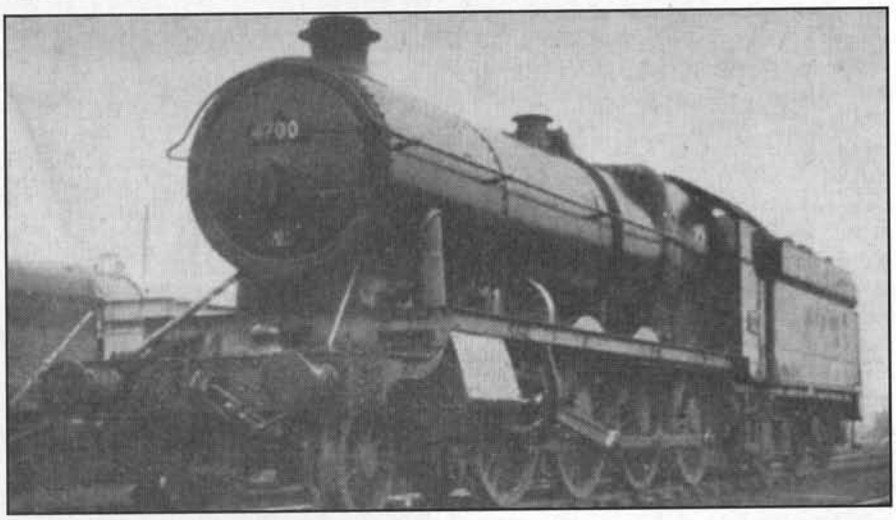
By ROBIN ORCHARD

WITHDRAWAL of the Glens began soon after the war, but it was a slow process and by 1950 only five had vanished. Seven are now left (1961). In 1959 one of the Glens "went to the works" and returned. This remarkable event occurred to No.256, *Glen Douglas* which has been preserved in original livery and working condition. It was used extensively during the Scottish Industries Exhibition and hauled specials in company with other famous locos. Earlier this year, Brian Western and I went to see this fine loco. What a beautiful engine *Glen Douglas* was. They pulled her out of the gloom at Dawsholm, and even with a layer of dust, dull brass and thick grease on her handrails she looked a thoroughbred. She is virtually as built save for the *Westinghouse* pump, which was replaced by vacuum apparatus many years ago, and other slight variations. And what a livery.

I have seen many colour plates which show *NBR* locos as brown, and it is easy to see why. From a distance *Glen Douglas* appeared brown, but on examination it turned out to be very dark olive green. The letters *N and B with the NBR crest* are on the tender sides. No more do the Glens storm up the embankments and dart through the cuttings overshadowed by the sombre purple and black: crags of the `West Hieiant'. No more does the characteristic beat re-echo again and again from the foothills of mighty Nevis. The era of the Glen has passed, but let us hope that in the days to come old *Glen Douglas* may take a nostalgic trip up this line. The Glens were truly a remarkable class.

CHURCHWARD'S CONSOLIDATIONS

By ROBIN ORCHARD



BENEATH the architectural splendour and grace of Brunel's Paddington roof, the long line of brown and cream coaches stretches away into the distance—coaches of that king among trains The Bristolian. Silently they stand, waiting for the off and their headlong dash to the old merchant city of Bristol. But just a minute! The time is only 6.30 a.m. and The Bristolian does not start until 8.45. Besides, today is a Saturday and the train runs only from Mondays to Fridays. Am I seeing things, or is that steam at the head? As you will have guessed, the train is a special.

This is the day when the 1961 *Talyllyn Special* runs from Paddington to Towyn, and the Bristolian stock, for a change, travels to Wales via Birmingham, Wolverhampton, Shrewsbury, Welshpool and Dovey Junction, instead of Bristol. It is usual for specials to be hauled by unusual motive power—steam, more often than not.