

Last of the Brighton "D3" Tanks

By H. C. P. SMAIL



L.B.S.C.R. "D3" class 0-4-4 tank engine No. 371, "Angmering," as originally built, at Littlehampton in 1901

THE withdrawal of British Railways, Southern Region, locomotive No. 32390 (formerly L.B.S.C.R. No. 390, *St. Leonards*), after 61 years service, brings to an end the "D3" class 0-4-4 tanks of R. J. Billinton, the first engines to be designed by him on taking up his appointment as Locomotive Superintendent at Brighton in 1890.

The 0-4-4 was formerly the commonest type of passenger tank in this country, and it is remarkable that the London, Brighton & South Coast Railway, with its extensive short passenger routes, should have built only 36 of this class, whereas among its neighbours, the London & South Western Railway had 215, the South Eastern Railway 118, and the London, Chatham & Dover Railway 69, to which the South Eastern & Chatham Railway added a further 66 to replace some of the earlier classes. On the other hand, none of these companies made use of the 0-6-2 wheel arrangement which the Brighton line developed so successfully with its "E3" to "E6" classes.

The ancestry of the Brighton "D3" class goes back to the 0-4-4 side tanks

built by S. W. Johnson for the Great Eastern Railway in 1872. These were not the first tank engines to use this wheel arrangement, as sometimes stated. It had previously been used by the Midland Railway on Kirtley's famous double-framed well tanks of 1868, by Cudworth on the S.E.R. in 1866, and on Craven's solitary example, No. 231, at Brighton in the same year. These, however, were all somewhat archaic types, and the G.E.R. engines were undoubtedly the ancestors of the modern 0-4-4 side tanks. They had 5 ft. 3 in. coupled wheels, 17 in. x 24 in. cylinders, with a pressure of 140 lb., and weighed from 42½ to 44½ tons according to the size of the tanks. They had no cabs, and only a rudimentary weather-board over the firebox. Later a small open cab was fitted, but this gave no protection when running bunker first.

When Johnson went to the Midland in 1873 he took with him the G.E.R. 0-4-4 design to augment the existing Kirtley well tanks. His first ten engines of this class, built in 1875, were almost identical with the G.E.R. engines, and like them had no cabs. In the following year, a

further 30 were built with 5 ft. 6 in. coupled wheels. These at least had cab roofs, but little or no side protection. Later engines of the same class were built with larger side tanks and bunkers, 18 in. x 24 in. cylinders and 150 lb. pressure, but reverted to 5 ft. 3 in. coupled wheels. The weight was increased from 43½ tons finally to 52 tons.

This brings us to the "D3" class tanks of the L.B.S.C.R. Their designer, R. J. Billinton, had been (in company with Dugald Drummond) William Stroudley's assistant at Brighton from 1870 to 1874, when he left to become

than the old Stroudley tank cab, giving a fair amount of protection, and had a curved roof instead of the former straight front and rear eaves. The whistle mounted on a manhole cover over the firebox was clearly a memory of Kirtley's practice on the Midland. Their dimensions were slightly larger than the contemporary Midland tanks, with 5 ft. 6 in. coupled wheels, 18 in. x 26 in. cylinders, pressure 160 lb., and a weight of 48½ tons.

The "D3" tanks were built at Brighton in six groups of six between May, 1892, and November, 1896, except for a period from November, 1894, to November, 1895



Photo]

[O. J. Morris

A "D3" as rebuilt at Ashford with South Eastern dome, safety valves and injectors, No. 2367, at Tunbridge Wells West shed in 1935

Chief Draughtsman on the Midland Railway under S. W. Johnson, finally returning to Brighton in 1890 to take up the position of Locomotive Superintendent, vacant on the death of his old chief.

With the "D3" tanks, Billinton introduced the first bogies to Brighton since Craven's three odd bogie tanks more than twenty years before. As might have been expected, they showed in outward appearance a mixture of Stroudley and Johnson practice. The graceful tapered chimney, front splashers and smokebox mounting were of Midland origin, but the dome with Salter spring-balance safety valves, and the round-topped tanks extending beyond the width of the cab sides, were purely Stroudley. The cab itself was rather larger

(when the "E3" class 0-6-2 tanks were being built). They were designed for fast and local passenger work on the outer suburban areas, mainly between London and Horsham, and London and Tunbridge Wells, and on the Sussex Coast line between Brighton and Portsmouth, and were allocated as follows: Brighton, 15; New Cross, 7; Battersea, 7; Tunbridge Wells, 4; and Eastbourne, 3. No. 394, *Cowfold*, originally shedded at Brighton, was later sent to Three Bridges.

Commencing in 1905, several of the "D3s" were fitted with new boilers, which had columnar safety valves set transversely over the firebox, similar to those on the "E5" and "E6" classes, and a pressure of 175 lb. These boilers were ordered by Billinton as spares, but

were not fitted to the "D3" class until his successor, D. E. Marsh, took office. Among the engines so fitted in L.B.S.C.R. days were Nos. 363, 365, 372, 374, 383, 388, 392, 393, 397 and 398. It is possible that other engines may also have received these boilers. In one or two early photographs, No. 398, *Haslemere*, with the new boiler, is shown also in what appears to be the experimental green livery adopted by Marsh in 1905, with incurved instead of inverted corners to the panelling.

From 1908 onward, many of the "D3s" were rebuilt with the standard Marsh boiler, which had a straight cast-iron chimney, large round-topped dome, Ramsbottom safety valves in a flared casing, and 170 lb. pressure. Most of these boilers were fitted in L. B. Billinton's time, and constituted the normal condition of the "D3" class until the end of the L.B.S.C.R. period, though at one time Nos. 369 and 380 (and probably several others) combined a Marsh chimney with an R. J. Billinton dome and spring-balance safety valves. The fact that R. J. Billinton boilers were fitted by Marsh, and Marsh boilers by L. B. Billinton, makes the history of the "D3s" slightly confusing.

The only major rebuilding of the "D3" class was in 1909, when Nos. 396 and 397

were fitted with "I2" class boilers, and reclassified "D3X." The smokebox was carried on a saddle and the cab floor and roof were raised to clear the increased height of the boiler. The rebuild was not entirely a happy one, and these two engines remained the sole examples of their class.

In this connection it is interesting to note that, although Marsh rebuilt several of his predecessors' tank engines, apparently in no case was there sufficient improvement to justify any extensive scheme of rebuilding. Thus, in addition to the two "D3s" just mentioned, four "E4s" received "I2" boilers, and four "E5s" and two "E6s" received "C3" boilers, while of the Stroudley tanks a single "D1" and an "E1" each acquired a larger boiler of no particular lineage (though the "E1X" rebuild formed the basis for the later "E2" class of L. B. Billinton).

In early Southern Railway days, when boilers and fittings were being exchanged more or less indiscriminately, it was difficult to say what constituted a standard "D3." Thus, No. B365 was still running with a 1905-type boiler and fittings (though not necessarily the original one), Nos. B376, B378 and B389 combined Marsh chimneys with R. J.



Photo]

[R. Russell

The last of the "D3s," No. 32390, between Three Bridges and East Grinstead with an enthusiasts' special train in October, 1953. It was withdrawn from service on October 1 of last year

Billinton domes and spring balance safety valves (the last two also retained the whistle on the manhole cover over the firebox), while 2368, B374, and 2383 had Marsh boilers with tall safety valves mounted on a casing similar to the original Stirling domeless-boiler engines of the S.E.R. No. 2386 had a Marsh chimney and dome with the Ramsbottom safety valves partly enclosed in an ugly short casing of South Eastern origin.

From 1930 onward, the "D3s" were sent to Ashford for servicing, and Nos. 2364 and 2367 emerged with the extremely ugly flat-topped domes as fitted to the "C2X" goods and other classes. In the case of the "D3s" these were entirely unnecessary, as the engines were already within the Southern loading gauge, and L.B.S.C.R. enthusiasts may well have been excused for thinking that the new regime set out deliberately to spoil the appearance of as many Brighton engines as they could.

In 1933, the "D3" class, commencing with No. 366, were fitted for pull-and-push work, to replace the Stroudley "D1s," which were gradually being withdrawn. The expanding electrification of the Southern Railway main and suburban lines suggested that the "D3s" days also were numbered, however. The first withdrawals took place in 1933, with Nos. 369, 381 and 392, followed by No. 382 in 1934 and 375 in 1935. The war years brought a slight reprieve, and in 1946 there were still 29 left, but thereafter they disappeared rapidly. Their last stronghold was the steam-operated Shoreham-Horsham line and the branch from Horsham to Guildford, where No. 32390 continued to work long after the rest of the class had gone. In the latter part of their life many of them returned to Brighton for servicing, and reverted to Marsh boilers and fittings. After the railways were nationalised, Nos. 32364, 32372, 32376, 32380, 32384 and 32390 were all running with the original Marsh chimneys, domes and Ramsbottom safety-valve covers. No. 32365 combined a Marsh dome and chimney with a S.E.R. Stirling-type safety valve.

As the "D3" class were gradually withdrawn they were replaced by the former L.S.W.R. 0-4-4 "M7" class tanks of Dugald Drummond. Although these engines bore only a superficial resemblance to the "D3s," it is of interest that their

derivation can also be traced back by devious routes to Brighton. Drummond had been Stroudley's assistant at Brighton from 1870 to 1875, and on leaving to become Locomotive Superintendent of the North British Railway he took with him the design of Stroudley's famous "D1" class 0-4-2 tank, which in 1877 he repeated almost exactly for the N.B.R. The main differences were the adoption of 5 ft. 9 in. coupled wheels, a distinctive flared cast-iron chimney, and safety valves mounted on top of the dome. Next he lengthened the trailing end and added an Adams bogie, thus producing the first Drummond 0-4-4 tank. In 1882, Drummond went to the Caledonian Railway, and there produced in 1884 a smaller version of the 0-4-4 for branch work, which had 5 ft. 0 in. coupled wheels, 16 in. x 22 in. cylinders, and solid bogie wheels.

On joining the L.S.W.R. as Locomotive Superintendent in 1895, Drummond found that his predecessor, William Adams, had already put in hand two classes of 0-4-4 tanks, the larger "T1" class for suburban work, having 5 ft. 7 in. coupled wheels and 18 in. x 26 in. cylinders, and the smaller "O2" class for country branches, with 4 ft. 10 in. coupled wheels and 17 in. x 24 in. cylinders. In both classes the boiler pressure was 160 lb. Adams had previously been Locomotive Superintendent of the G.E.R., where his first design had been a 0-4-4 tank similar to the Johnson tanks previously described. His South Western engines had stove-pipe chimneys and tank sides flush with the cab side-panels.

On the L.S.W.R., Drummond completed the last batch of his predecessor's "T1" class, and then, in 1897, brought out his own famous "M7" class. By this time the combined Drummond and South Western personality had become so overwhelming that they bore little evidence of their ancestry. They had 5 ft. 7 in. coupled wheels, 18½ in. x 26 in. cylinders, and weighed 60 tons 4 cwt., thus making them the heaviest of the various 0-4-4 tanks so far described. The boiler pressure was originally 150 lb., later raised to 175 lb.

The "M7" class were at first used on express passenger duties between Plymouth and Exeter, but were accused of being unsteady at high speed, notably in the case of the Tavistock derailment in

March, 1898, and in consequence they were relegated to suburban and country branch work. In point of fact, the Board of Trade was inclined to frown upon the 0-4-4 tank for fast passenger work, and on occasions insisted on their running bunker first, thus converting them in effect into 4-4-0 tanks. It is interesting to speculate on what Drummond would have made either of a 4-4-2 or 0-6-2 tank design such as the L.B.S.C.R. operated so successfully.

Meanwhile, on the N.B.R., the original Drummond 0-4-4 tanks were perpetuated

with only minor alterations by Mathew Holmes and finally by W. P. Reid in 1909 and on the Caledonian by John Lambie J. F. McIntosh, and William Pickersgill. The 0-4-4 tanks built for the L.M.S.R. by Nasmyth Wilson in 1925 were based on the McIntosh design of 1897, and in their round-topped tanks and combined leading splashers and sandboxes the original Brighton outlines can still clearly be traced.

The history of these various 0-4-4 tanks illustrates clearly the development of locomotive types by heredity and cross-breeding, which was such a feature of pre-grouping locomotive practice in this country.