

RECENT LOCOMOTIVES OF THE BELGIAN STATE RAILWAYS.

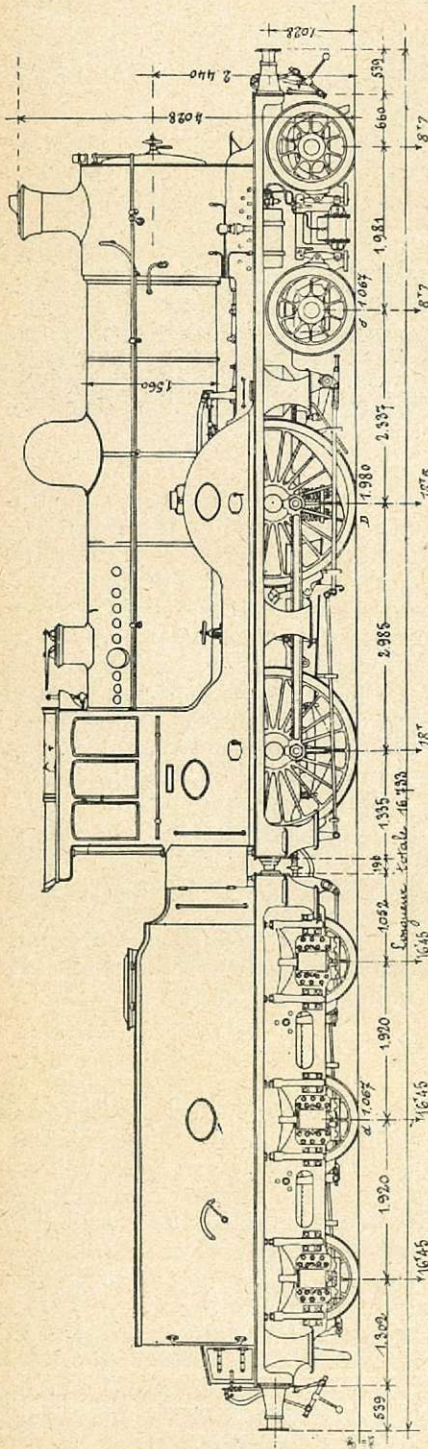
DURING the ten years from about 1890 to 1900, that is to say between the completion of the last Belpaire locomotives and the introduction of the well-known "Dunalastair II." type designed by Mr. J. F. McIntosh of the Caledonian Ry., the locomotive practice of the Belgian State system showed no very noteworthy characteristics.

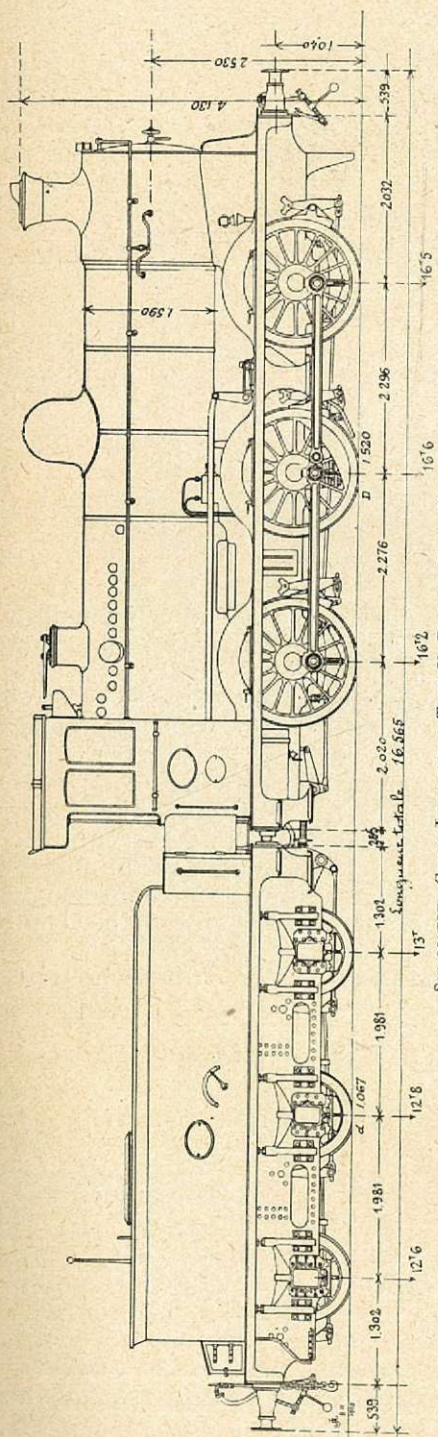
In 1900 three new classes were introduced, respectively, Type 17 of the "Dunalastair II." pattern, Type 30, similar to the standard Caledonian six-coupled goods engines, and Type 15, ten-wheeled tank engines. Strictly speaking, Type 17 was introduced two years earlier, for Messrs. Neilson, Reid & Co., Ltd., of Glasgow, supplied in 1898, Nos. 2411-2415, the five prototypes of a numerous class, which were illustrated and described in Vol. IV, page 41. It was in 1900, however, that locomotives of this type were first built on the Continent, 40 being built in that year bearing Nos. 2463-2502. These were followed in the same and next year by a further series of 50, Nos. 2622-2671, making altogether a total of 95 engines of that class. Of Type 30, which was illustrated and described in Vol. VI, pages 92-3, no less than 82 were built in 1900, bearing Nos. 2503-2514, and 2823-2892. Type 15, also illustrated and described in Vol. VI, page 12, is represented by 107 locomotives built during the years 1900-3, bearing Nos. 2515-2621. Of the three classes mentioned, the last is the only one examples of which have been built during the last two years. The other classes, successful though they proved, have gradually been replaced on the fastest and heaviest main line services by more powerful locomotives of the same general design, particulars of which, with illustrations, we are able to present to our readers through the courtesy of our valued Brussels correspondent, M. Albert Jacquet.

The express locomotives which have replaced the original "Dunalastair II." type, and which were illustrated in Vol. VIII, page 81, are known as Type 18, and form a total of 140 engines differing only in respect to details. They were built as follows: Nos. 2672-2691 in 1902, Nos. 2692-2721 in 1903, Nos. 2722-2750 in 1903-4, and Nos. 3190-3200 and 3243-3292 in 1904-5. Nos. 3190 and 3288-3292 are fitted with the Schmidt superheater, and those built within the last year have been provided with six-wheeled tenders in place of those on double bogies, of the Caledonian pattern, which were previously in vogue. This new tender is now standard on the system. Fig. 1 shows an engine of this class, provided with the Schmidt superheater and the new six-wheeled tender.

There are certain differences between the engines equipped with superheaters and those without, as the following tabulated statement will show:—

TYPE 18.	With Superheater.		Without Superheater.	
	ft.	in.	ft.	in.
Diameter of cylinders	20		19	
Stroke of cylinders	26		26	
Total wheelbase	23	10½	23	6
Length over buffers	32	8½	32	4¾
Number of tubes, 2-in. in diam.	153		265	
Heating surface, firebox	131	sq. ft.	131	sq. ft.
" " tubes	967	"	1242	"
" " total	1098	"	1373	"
Grate area	22.3	"	22.3	"





In the engines provided with superheaters there are, in addition to the 153 flue tubes, 18 larger ones of 5-in. diameter containing the superheater tubes which have a surface of 263.8 sq. ft. These engines weigh 55 tons in working order, of which total 36½ tons are available for adhesion. In both descriptions of engines the ordinary Stephenson link motion is employed, with steam reversing gear as is usual in nearly all Belgian State locomotives, but they differ as regards the slide valves, those engines furnished with the superheater having piston valves, while the others have plain D valves. Among features common to both classes are Wilson-Klotz safety valves, pressed to blow off at a pressure of 190 lbs. per sq. in.; Gresham-Craven injectors and compressed air sanding apparatus; the quick acting Westinghouse brake, with blocks on all the wheels; and steam heating apparatus for warming the train. Engines of this type work trains of from 325 to 375 tons over the sections of the line having moderately easy gradients at speeds varying from 53 to 59 miles per hour.

A need for greater hauling power has resulted in the original six-coupled goods locomotives of Type 30, above referred to, being followed by others of the same general design, but more powerful. These, which are known as Type 32 and were illustrated in Vol. IX, page 64, now total 250, their numbers being as follows: 2893-3142, all built between 1902 and 1904. No. 3143, one of a new series, is shown in Fig. 2, and is provided with the Schmidt superheater, as will be a large proportion of those now in course of construction. The leading dimensions of the two series are here tabulated:—

TYPE 32.	With Superheater.		Without Superheater.	
	ft.	in.	ft.	in.
Diameter of cylinders	20	18½		
Stroke of cylinders	26	26		
Diameter of driving wheels	5	0	5	0
Wheelbase, leading to driving	7	6	7	6
„ driving to trailing	7	5	7	6
„ total	15	0	15	0
Length over buffers	31	0	30	2½
Height of boiler centre above rails	8	3	7	11
Number of tubes, 2-in. in diam	154		254	
Heating surface, firebox	119 sq. ft.		119 sq. ft.	
„ „ tubes	916	„	1133	„
„ „ total	1035	„	1251	„
Grate area	27.17	„	27.17	„

The superheater tubes are contained within 18 tubes of 5-in. in diameter and have a surface of 231.5 sq. ft. As in the locomotives last described, D valves and piston valves are employed in the ordinary and the superheater locomotives respectively. The fittings, safety valves and accessories, are according to Belgian State standards, and they are equipped with the Westinghouse quick acting brake. The earlier engines weigh approximately 48½ tons, and those with the superheater about 51 tons. The tender, which has a capacity for 2860 gallons of water and 7 tons of coal, weighs about 39 tons. These locomotives are employed principally in working goods traffic on the main lines, where they have replaced the older Type 25, but they also run passenger trains on the sections between Brussels and Antwerp, Termonde, Mons, Charleroi and Tournai, on the Luxembourg line and on heavy gradients. On account of their greater haulage capacity, allowing of the despatch of heavier trains, they have effected a distinct gain in transportation facilities on over-crowded lines.

(To be continued.)