

The first of the series of fourteen Ruston 275-h.p. diesel-electric locomotives for Southampton Docks, brought into service in June, 1962, to supersede steam shunting

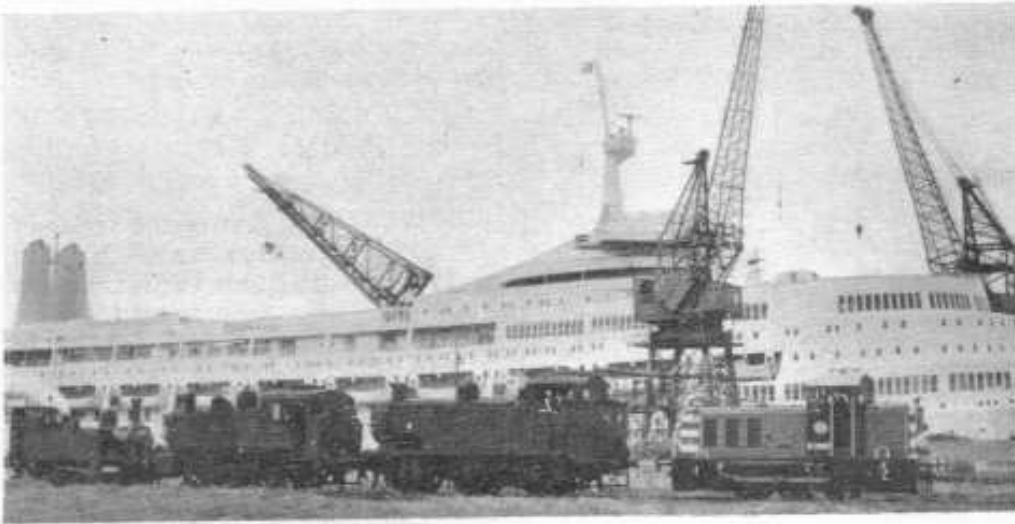
## Diesel shunters for Southampton Docks

**A**FTER ninety years, diesel motive power is replacing steam on shunting at Southampton Docks. In 1872 the Southampton Dock Company purchased six 0-4-0 tank engines for service in the docks; three of these locomotives were sold in 1879. Five more were purchased and added to the stock by 1892, when the London & South Western Railway bought the docks and added a further 14 Adams class "B4s" to the stud. These locomotives were of the 0-4-0 wheel arrangement with a short wheelbase and weighed 33 tons, compared with the 18½ tons of those built in 1872. All were named after places associated with the cross-channel railway-owned steamers and included such names as *Alderney*, *Brittany*, *Dinard*, *St. Malo* and *Honfleur*. They had open-sided cabs, and were among the very few named engines possessed by the L.S.W.R. in its later days. Of the last five locomotives purchased by the Southampton Dock Company, two were built in 1890 and named *Clausentum* and *Ironside*, and from 1908 were used to haul the passenger trains from Southampton Terminus Station to the Royal Pier station for Isle of Wight passengers.

*Ironside* was withdrawn from service in 1954 and was the last survivor of the Southampton Dock Company's locomotives.

The 14 class "B4" locomotives, together with *Clausentum* and *Ironside*, formed the docks locomotive stock until the New Docks were opened and the stock was then increased by the addition of a number of *ex*-L.B.S.C.R. class "E2" 0-6-0 Stroudley tanks, six of which are still working at the New Docks. Strangers on the eighty miles of dock tracks were the 14 *ex*-United States Transportation Corps locomotives, introduced after the second world war to replace the 14 old engines bearing channel place-names.

When the railways and their dock interests became nationalised, a report submitted by the General Managers of British Transport Docks and British Railways, Southern Region, referred to the economies to be effected by the use of diesel power in the dock area, a comparison being made between the B.R. 350-h.p. diesel-electric and the Drewry 204-h.p. diesel-mechanical shunter. It was finally decided that a locomotive with a maximum power output of 275/300 h.p., an adhesive weight of about



Four generations of dock shunting locomotives at Southampton, including an Adams "B4" 0-4-0 tank (1891-1946), U.S.A. 0-6-0 tank (1946-1962), former L.B.S.C.R. 0-6-0 tank (1934-1962) and a new diesel-electric shunting locomotive. In the background is the P & O liner "Canberra" in the "King George V" dry dock

45 tons and a fixed wheelbase not exceeding 10 ft. was desirable—something larger than the Drewry engine and with a shorter wheelbase than the B.R. 350-h.p. locomotive for the negotiation of the small radius curves.

A design was finally evolved incorporating a Paxman six-cylinder "RPHL" diesel engine developing 275 h.p. at 1,360 r.p.m., an A.E.I. main generator providing 160 kW and a single axle-suspended traction motor, a double reduction gearbox (ratio 19.79 to 1) and with a fixed wheelbase of 8 ft. 7½ in., with 3 ft. 6 in.-diameter wheels. The first of 14 0-6-0 diesel-electric shunters have now been supplied to the Southern Region by the Ruston Paxman Sales Division. The Paxman engine has cylinders of 17 in. bore and 7¾ in. stroke with three-bore unit cylinder heads, engine speed governing being effected through a flyweight-type governor driven by the fuel pump camshaft. Engine starting is achieved by motoring the main traction generator. The cooling radiators for water and oil are forward mounted, with a fan providing the cooling air; a 300 gal. fuel tank is located to the rear of the cab.

The traction generator is solidly coupled to the diesel engine and is fitted with a series winding for motoring for engine starting; a separate field supply is provided by a belt-driven exciter mounted above the generator. Electric overload devices are not used, an inherent limit being provided by the selection of a short-circuit current which corresponds to a suitable "stall" tractive effect of the motor. The sensitivity of the generator in relation to speed makes it impossible to overload the diesel engine beyond its

maximum pre-determined output and the same speed sensitivity feature is used to provide the lowest running "notch" when the engine is at idling speed.

The axleboxes are fitted with phosphor-bronze bearings and conventional laminated springs are used. The steel coupling rods are fabricated. Vacuum for train braking is provided by a Westinghouse three-cylinder exhaustor and a dead-man's system applies the brakes on both locomotive and train. Compressed air rail sanding is fitted at the outer ends of the wheelbase. Particular care has been taken to give maximum visibility from the cab in all directions and a two-way radio telephone enables the driver to contact the dock traffic control offices or *vice versa*.

A distinctive livery has been adopted. Southern Region green—similar to that used on the 2,500-h.p. Bo-Bo electric and electro-diesel locomotives—is used for the superstructure, lined red and off-white. On the radiator surround and wrapper plate and the rear end are black and amber chevrons; the cab roof and horns are finished in grey. All below the platform is finished in black, with the exception of the coupling rods, lubricator driving gear and buffer beams, which are in red.

Principal dimensions and other particulars of these new diesel shunters are as follow:—

Length over buffers	...	...	26 ft. 9½ in.
Total wheelbase	...	...	8 ft. 7½ in.
Wheel diameter	...	...	3 ft. 6 in.
Weight in working order	...	...	42 tons 5 cwt.
Radius of minimum curve	...	...	2 ch.
Maximum service speed	...	...	20 m.p.h.
Tractive effort:			
Nominal max.	...	28,240 lb. at 30% adhesion	
Continuous	...	15,950 lb. at 4.38 m.p.h.	