Diesel-Electric Pullman Trains

On Monday the first of the British Railways diesel-electric Pullman services will be introduced on the London Midland Region between Manchester (Central) and London (St. Pancras), and between St. Pancras and Leicester. At an early date Pullman services with similar rolling stock will operate on the Paddington–Wolverhampton and Paddington–Bristol routes of the Western Region. The rolling stock designed and built for these services is described below.

FIVE trains have been built by the Metropolitan-Cammell Carriage and Wagon Company, Ltd., to the requirements of the British Transport Commission, for the new diesel-electric Pullman services on the London Midland and Western Regions of British Railways. The principal sub-contractor for the traction equipment was The General Electric Company, Ltd. Two of the trains are six-car, first class only, sets for the Manchester–Leicester–London route, and the other three are eight-car formations (Fig. 1) with first and second class accommodation for Bristol–London and Wolverhampton–Birmingham–London services. The trains have a 1000 h.p. power car, also containing a guard's compartment and passenger saloon, at each end, and include two kitchen/parlour cars for the service of meals to passengers at their seats. The other vehicles are centre-gangway parlour cars (Fig. 2). All the stock is air-conditioned. A six-car train in working order weighs 299 tons, and an eight-car train 364 tons.

The car bodies are of integral tubular construction, largely of low-alloy corrosion-resistant steel and with extensive use of spot welding. Roofs, sides and floor are heavily insulated against heat and sound, and the floor actually "floats" on the underframe on rubber blocks. There are two forms of suspension on the bogies. In the motor bogies the bolster centre pivot takes the whole of the body weight and transmits the traction and braking forces. Side bearing surfaces are provided on the bogie frame and underframe but these are not normally in contact and serve only to prevent body roll. In the trailer bogies, on the other hand, the centre pivot acts only as a guide, the body weight being taken on spherical bearings at the ends of the bolsters, enclosed in oil baths. Traction and braking forces are transmitted by horizontal rod links between the bolster and the bogie frame.

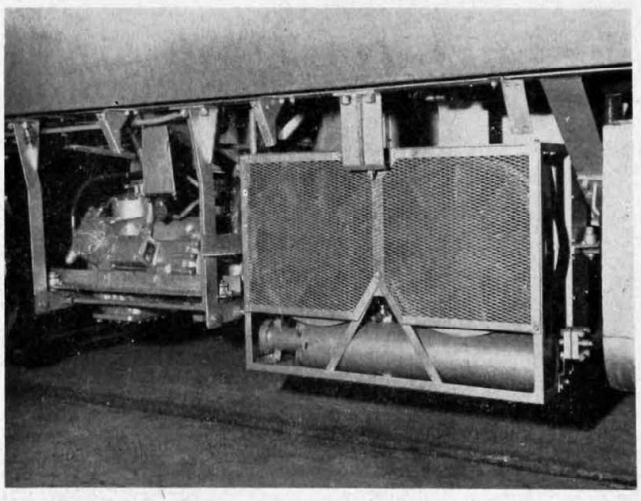
Fig. 1—Eight-car set of first and second class Pullmans. External finish is Nanking blue.

Both forms of bogie are of the Metro-Schlieren all-welded pattern specially developed by Metropolitan-Cammell for these trains. Primary and secondary suspension is by coil springs, the bolster being carried on the spring plank by pairs of springs at each end, while the primary springs carrying the axle-boxes from the bogie frame incorporate the Schlieren telescopic guiding and damping assembly within the spring housing to control axle movements. Inclined swing links carrying the spring plank from the bogie frame allow the bolster a sideways movement of 1in in each direction, after which it is checked by rubber buffers. Bolster movements are also damped by shock-absorbers. The passenger access gangways between vehicles are mounted on pivots at the end of each coach so as to form semi-floating units between pairs of cars and provide a level platform free from oscillation.

Air Conditioning and Auxiliaries

Stone-Carrier air-conditioning equipment, supplied by J. Stone and Co. (Deptford), Ltd., provides for circulation in the vehicles of air which is controlled for temperature and humidity within established comfort limits regardless of outside conditions. The airflow and refrigeration systems of the conditioning system in each vehicle are shown schematically in Fig. 4. Outside air *M* is introduced through filter *J* and mixed with a proportion of return air *L* which has been filtered through filter *H*. This mixture is then blown over the cooling coils of evaporator *F* by centrifugal fans, delivered to the air duct and distributed to all parts of the car. Part of the air escapes to atmosphere through static ventilators, but a slight pressure is always maintained inside the car. The fan and evaporator form the air-conditioning unit, mounted above the car ceiling. Moisture in the air is condensed in passing over the cooling coils of the evaporator, which are at a temperature below the dew point of the air. When heating is required the cooling coils are inoperative, but a group of heating elements in the unit is energised. Floor heating units are also fitted in the cars.

The refrigeration system associated with the evaporator is carried on the vehicle underframe (Fig. 3) and consists of the



Figs. 2 and 3—(Left) Interior of first class car. Conditioned air is admitted through apertures concealed by the longitudinal mouldings at each side of the fluorescent lighting panel in the ceiling. (Right) Arrangement of compressor and condenser on vehicle underframe