

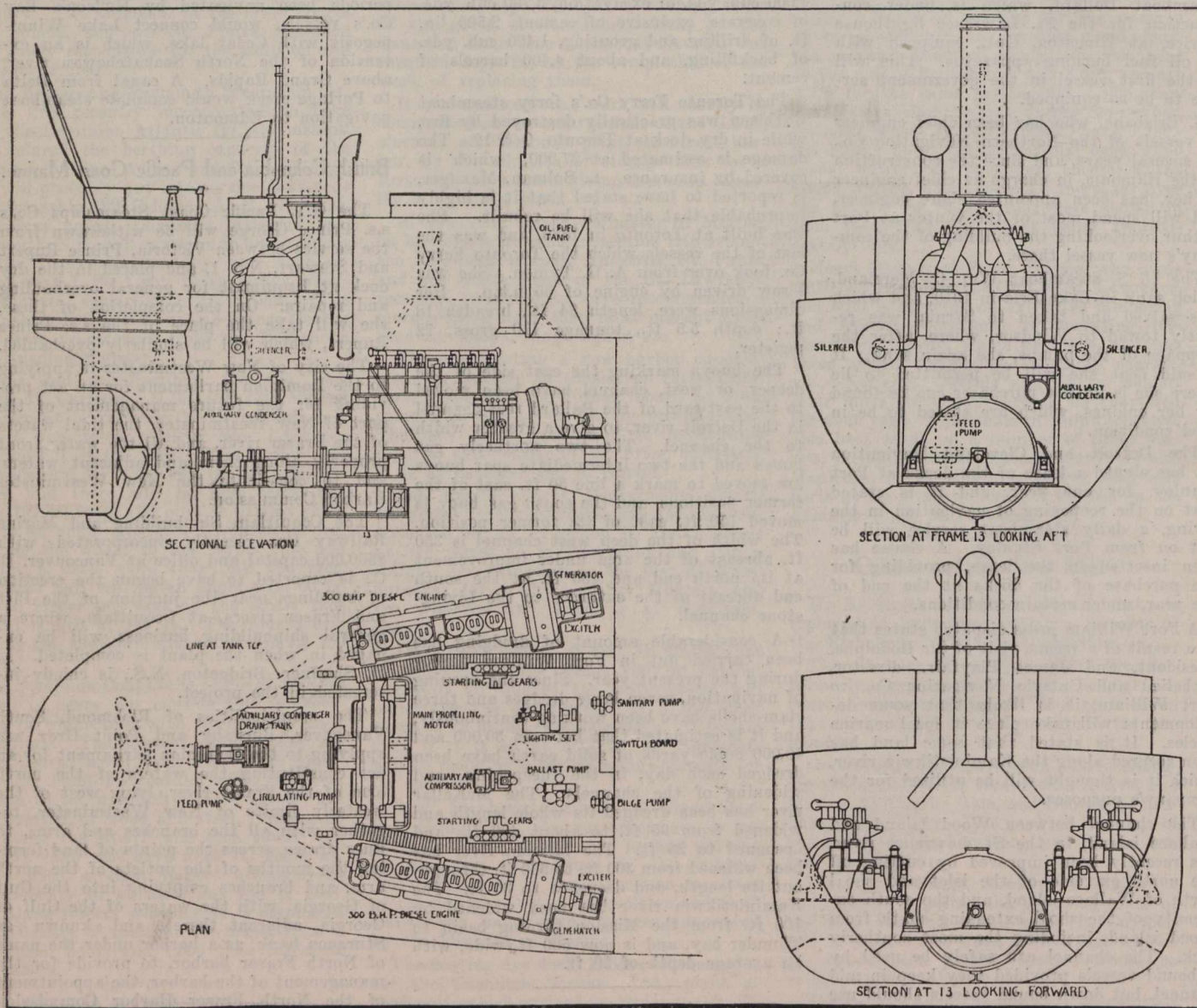
An Electrically Propelled Vessel for the Canadian Lakes Trade.

Canadian Railway and Marine World for September, contained some details of the vessel, which is to be electrically driven, and which is under construction at Newcastle, Eng., for the Montreal Transportation Co. The following additional details will be of interest:—

The engine, which is of the Diesel four cycle principle, has six cylinders 12 in. diam., and a stroke of 13½ ins., giving 400 revolutions a minute. The cylinders cranks are so arranged that the firing occurs at equal intervals. The engine is entirely enclosed, and the forced lubrication is arranged for by a valveless pump driven from an eccen-

compressor on the engine, which also supplies the compressed air for forcing the fuel oil into the cylinders. A patent arrangement for the prevention of the accumulation of fuel oil in the valves is provided. A small fly wheel is used, sufficiently heavy to ensure steady running, etc. Cooling water is circulated through the cylinder and compressor jackets by a rotary pump drawing directly from the sea, and is driven by mitres geared from the compressor end of the crank shaft. The air for the main cylinders is taken through the bed plate. Under normal operation the engines will run under governor control at 400 r.p.m., but

electrical connections, apart from its attachment to the propellor shaft. The stationary part of the motor has two separate windings for 30 and 40 poles respectively, which are mutually non-inductive, thus exercising no influence on one another, and they work independently on the magnetic circuit of the motor. When these windings are connected respectively to the appropriate generator, the synchronous speed due to each is 80 r.p.m. when at full speed. By changing the connections the rotation is reversed, and by connecting the 40 pole winding to the 6 pole generator, the synchronous speed drops to 60 r.p.m., thus giving about three-quarters speed. One generator may be stopped and the other



Arrangement of Machinery in Diesel-Engineed Ship with Electric Drive for the Montreal Transportation Co.

tric on the crank shaft at the compressor end. The second motion shaft is driven by a worm wheel on the crank shaft midway between the centre cylinder through a vertical shaft, which carries the governor at the upper end. This second motion shaft, which is at the front of the engine, and carries the cams for working the valves, also carries the eccentrics driving the two fuel pumps. This enables the power to be evenly divided between the cylinders. The compressor is driven from the main crank shaft, and is mounted on the bed plate extended for the purpose. The engine is started by compressed air stored in receivers placed near the engine, supplied by the

the speed can be adjusted by the governor so that it may maintain a rate considerably below this if required.

The electric equipment consists of two three-phase generators giving 235 kilovolt-amperes at 500 volts alternating, each. They have six and eight poles respectively, giving frequencies of 20 and 26.6 per second. An exciter is connected to the shaft of each generator, which when working normally gives about 30 amperes at 100 volts, and is arranged for a considerable overload. Coupled direct to the propellor shaft is a single three phase motor, developing 500 shaft h.p. The motor is of the simple squirrel cage type without any mechanical or

left running at full speed under governor control, giving approximately its full economy, as the power required to drive at three-quarters speed is about half what is required to drive at full speed. If either of the generators be left attached to its own winding, the other being shut down intentionally or by accident, the vessel is propelled by either engine at a little over half speed, the speed of the vessel dropping with the rotation of the engine until an automatic adjustment of power and speed is reached, which occurs at about half speed. The control gear, which will not be operated from the bridge as a regular thing, but which is being so arranged that such opera-