



SHINING THEM UP

Pistons for 2,000 horse-power Diesel-electric locomotive units on the production line, being polished prior to being fitted with piston rings and being placed on the engine.

ENGINEERING

Diesel-Electric Motors Are Built on An Assembly Line

Powerful Locomotive Engines Similar to Those in Submarines Expected to Speed Defense Program

WORK on the largest order for Diesel-electric passenger locomotives ever placed began in La Grange, Ill., on a 24-hour basis when employees of the Electro-Motive Corporation started production-line operations on the 18 2,000-h.p. units ordered by the Atlantic Coast Line Railroad.

America's industrial preparedness will be speeded greatly by powerful locomotives of this type, say railroad officials, who point out that war requirements tax transportation facilities to the limit.

The locomotives are powered by motors similar to those now used in Uncle Sam's latest submarines. But it is only since 1935 that motors of this type have been used in passenger locomotives. They are the most compact, powerful, and economical engines ever devised by man for these purposes. Capable of 600-mile runs without refueling, the locomotives can make the 1,160-mile trip between Washington and Miami without change.

They embody all the latest developments of Electro-Motive and General Electric engineers for fast, luxurious transportation with safety and comfort.

Due to the greater inherent ability of Diesel locomotives to accelerate and decelerate quickly, and the fact that they do not have to be stopped for servicing as often as steam locomotives, they are expected to shorten the running time between New York and Florida.

The power in each unit is supplied by two 1,000 h.p. V-type, 12-cylinder Diesel motors. The locomotives are equipped with electric transmission. This consists of a 600-volt direct-current generator, coupled to the front end of each of the Diesel motors, from which the current is delivered by cables to 4 traction motors mounted on the trucks, two in each truck. The traction motors are geared directly to the driving axles. Power reaches the rail at 8 wheel points.

Controls of the new locomotives are

as simple as those of an automobile despite the enormous power and weight at the command of the engineer. Astonishingly enough, the actual manual effort exerted to start and stop a Diesel locomotive is less than is used in driving an automobile. An illuminated annunciator box on the control panel flashes the operator by red, green, and orange lights should a "hot engine," "low oil pressure" or a "heating boiler" develop.

Science News Letter, October 26, 1940

PHYSIOLOGY

Cats Have One Blood Type Instead of Four As in Man

BLOOD transfusion problems in cats are greatly simplified by the apparent fact that cats have only one blood type, J. L. Rowland and Glenn McElory of Central College have discovered. In their experiments, they even mixed blood samples taken from seven different cats, and when a part of this mixture was introduced into the veins of another cat no ill effects followed.

Transfusions are not often called for in veterinary practice, but if a sick cat is so valuable as to make it worth while, there would appear to be no need for the troublesome and time-consuming job of "typing," necessary in human medicine because of the four human blood types, which get into physiological quarrels if they are mixed, with distressing or even fatal results to the patient. Among cats, any other cat can be the blood donor, with no fear of consequences.

The two physiologists did have some trouble in their first transfusions, because the cats receiving other cat blood showed signs of shock. However, this was readily taken care of by mixing a little glucose solution with the donated blood.

The thing that makes trouble when bloods of alien types are mixed is the phenomenon known as agglutination. Something in the blood serum causes the blood corpuscles to stick together in clumps.

Messrs. Rowland and McElory discovered the curious fact that whereas cat blood serum will not cause agglutination of human corpuscles, human serum will produce the clumping effect on the corpuscles in cats' blood. They also found that the specific gravity of cat and human blood is almost identical.

Science News Letter, October 26, 1940

A new high-speed printing press will print books entirely from *rubber* plates.