

Jet Propulsion is Here

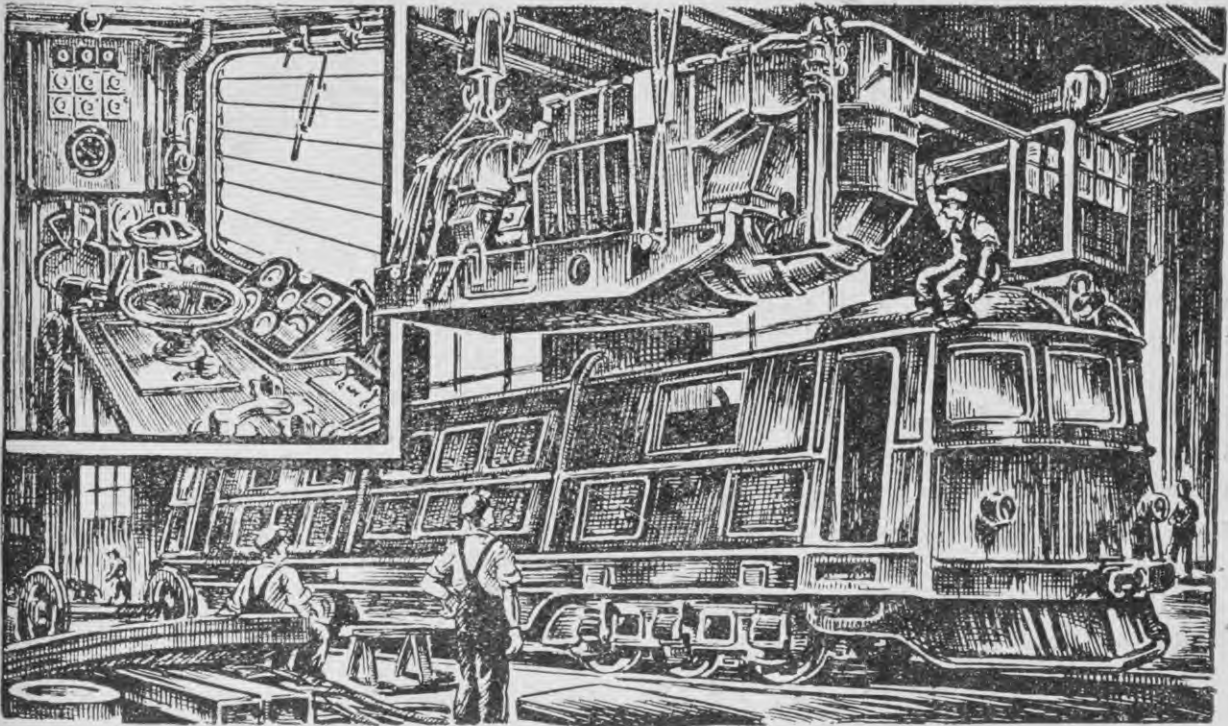
and the more energy it delivers in spinning the turbine. It was found in early experimentation that turbines could not be run at high temperatures because the blades could not stand the intense heat, and today the big problem is to develop blades capable not only of resisting high temperatures, but also of resisting them for several years of constant service.

The United States is putting ships run by gas turbine units of five thousand horsepower or less into service this year. The advantage of the gas turbine as a marine power unit are easy to see: valuable space is saved by the absence of a boiler, no heavy condenser is needed for distilling feed water, and the weight per horsepower produced is only a fraction of the weight range of existing engines. But there is one main disadvantage. Ships have to be reversed quickly, and there is a difficulty in connecting the gas turbine to the propeller. The use of electric drive to make a gas turbine

ship reversible being too expensive, experimentation has been carried out with hydraulic drive and also with propellers with a reversible pitch.

Already there is a gas turbine locomotive in existence, a 2,200-horsepower engine, with electric drive, having been built in 1939 for use on the Swiss Federal Railways. Other than in aircraft, it is in the field of locomotives that the gas turbine appears to have the greatest immediate prospect of successful and economical employment, combining as it does both the desirable operating characteristics of Diesel electric and the economy of steam. It provides fast acceleration and has no water stops or track pound, and in addition it will be much more compact and cheaper to build than either the steam or Diesel engines.

If the gas turbine has not yet progressed far enough to fit it for use in big electric power stations, it can certainly fill the bill where small electric plants are required or even for



Gas turbine locomotive of the Swiss State Railways. The gas turbine and generator being lowered into the locomotive hull. Inset: Driver's compartment