ENGINEERING

New Type Locomotives

New powerful high-speed coal-burning steam turbine engine has been designed. The cab and boiler section is between coal and water compartments.

➤ A NEW type of steam turbine locomotive, a coal-burner with great power and high speed, has been designed in an unusual arrangement having its coal compartment at the forward end, a combination cab and boiler section, with the smokestack at its rear, for its central part, and a water compartment following. The coal and the cab-boiler sections are supported by a single cast-steel frame mounted on two swiveling trucks, one under the coal compartment and the other under the boiler. Behind the boiler is coupled the water compartment.

This new turbine locomotive, which will be known as the "Triplex", is a development of the Pennsylvania Railroad, which recently put into service the first direct-drive steam turbine locomotive built in this country. The Triplex is approximately 137 feet in length, with a wheel base of 122 feet, but because of its swiveling trucks will be able to operate around any curve that a standard passenger car can negotiate.

The new locomotive, like the steam turbine already in use, does not have the familiar piston rods and other reciprocating parts of the conventional steam engine. This makes it possible to use smaller driving wheels, which permits larger boiler capacity for the same road clearances, and improves the locomotive's efficiency.

A unique feature, to maintain weight in the coal compartment over its driving wheels as coal is consumed, is an arrangement by which water from the water compartment automatically flows to a tank in the coal compartment, and returns to the water tender automatically when a new supply of coal is taken on. Mounting the coal compartment on the same frame as the boiler keeps alignment between the boiler and the coal pile and thus simplifies the operation of the mechanical stoker.

An electrically driven locomotive powered by a coal-burning steam turbine engine has been designed, and three of them will soon be constructed for the Chesapeake and Ohio Railway by the Baldwin Locomotive Works and the Westinghouse Electric & Manufacturing Company. No electrically driven locomotive powered by steam turbine is in operation in the United States at the present time.

In the new locomotive, in a single self-contained unit, the coal is carried in the head instead of in a tender, the engineer's cab is next, then the boiler, and last the electric motors that drive the wheels. The engine is designed to develop 6,000 horsepower and the locomotive will be capable of running more than 100 miles an hour under full load even on grades. Smoothness of operation is one of the results fully expected.

Science News Letter, April 7, 1945

GENERAL SCIENCE

Franklin Medal Will Go to Dr. Harlow Shapley

➤ The FRANKLIN medal, the highest award of the Franklin Institute, will be presented to Dr. Harlow Shapley, director of the Harvard College Observatory, at the Medal Day dinner on April 18. The award is made for his valuable contributions to the science of astronomy, and especially for his work "in the measurement of the vast distances necessary for the determination of the nature and extent of our galaxy, as well as those of other galaxies external to ours."

Walter J. Coppock of Moyland, Pa., and Greer Ellis of Chicago will receive Franklin Institute certificates of merit at the same dinner. Mr. Coppock designed a novel and theoretically sound motor base which gives automatic belt tension under varying load conditions, and Mr. Ellis developed brittle lacquers for strain measurement and a technique for their use.

Science News Letter, April 7, 1945

EDUCATION

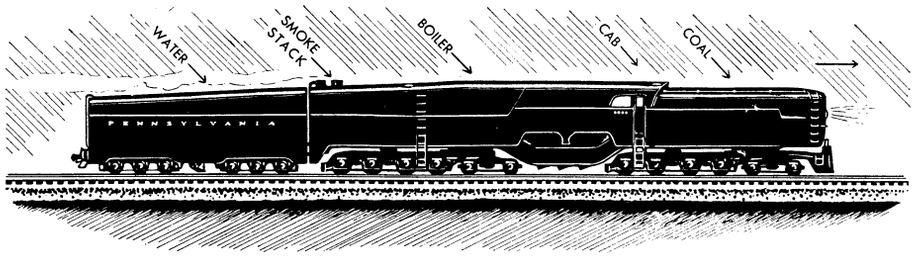
Rockefeller Grant for Postwar Graduate Degrees

➤ WAR RESEARCH workers in and out of uniform will be able to go back to graduate school through a Rockefeller Foundation grant of $335,000 to the National Research Council, recently announced.

This temporary, nation-wide program for postwar pre-doctoral fellowships is intended to encourage resumption of graduate study in the natural sciences by those who had to interrupt their education to engage in war work. The money value of the fellowships will be sufficient so that those given them will be able to devote essentially full time to working for their Ph.D. degrees.

"The almost complete cessation of consecutive professional training which has occurred in scientific fields will make impossible for some time the normal accession of additional highly trained personnel," the announcement explained. "These losses, in the face of sharply increasing demands for such personnel, will inevitably retard to the danger point the resumption of scientific progress after the war. The resulting handicap to postwar industrial recovery, public health, and military security is a matter of national concern."

This program as announced is intended to help alleviate the very serious set-back to American scientific competence resulting from the war's interference with normal educational processes.



THE "TRIPLEX"—This ultra-powerful type of steam turbine locomotive has been designed by the Pennsylvania Railroad for fast, heavy duty freight and passenger service. Coal will be carried in the front, shown to the right of the picture, and water supply in the rear. The cab will be ahead of boiler and smoke stack, reversing the usual order.