

ENGINEERING

Railroad Gas Turbines

May be widely used in future locomotives; engines can haul 15 cars weighing 1,000 tons as fast as 95 miles-an-hour when two units are used.

► GAS TURBINES in railroad locomotives may be widely used in the future. Investigations show that they have sufficient natural advantages to assure them a place of recognition for such use, declared J. T. Rettaliata of the Allis-Chalmers Manufacturing Company at the meeting of the American Society of Mechanical Engineers in New York.

The speaker gave details of a 4,800 horsepower electric-drive locomotive, powered by two gas-turbine units. Its top speed when hauling 15 cars weighing 1,000 tons is 95 miles per hour on a tangent level track. Its maximum speed with a single engine in operation, he said, would be approximately 70 miles per hour.

Operation of the locomotive is economical. "The absence of water in the cycle is a natural advantage for railroad service," Mr. Rettaliata said. "The low maintenance record associated with the oil refinery gas-turbines of similar design encourages the present contemplation that the service charges on locomotive units will be correspondingly moderate. As is characteristic with all equipment of the turbine type, lubrication costs should be exceedingly small and it is estimated that they will be less than one per cent of the fuel costs."

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Air-Cooled Condensers

► THE USE of air-cooled steam condensers on mobile electric power plants where water cooling is impossible was described at the same meeting by R. A. Bowman of the Westinghouse Electric & Manufacturing Company. In connection with the rehabilitation of wartorn areas of the world, he said, there is need for power plants that can be moved easily from one locality to another and put in operation in a short period of time. In some places where they will have to operate where water for cooling will not be available.

To meet this condition a number of power trains have been built to use air as a cooling medium rather than water. "Tests on the air-cooled condenser for the power train indicate that such a

condenser is entirely practical," the speaker declared. "Because of the poor heat transfer properties and the low specific heat of air, such a condenser in general requires higher auxiliary power, greater investment and higher back pressure on the turbine than would the usual water-cooled condenser." For these reasons its use will probably be confined to places where water is not available.

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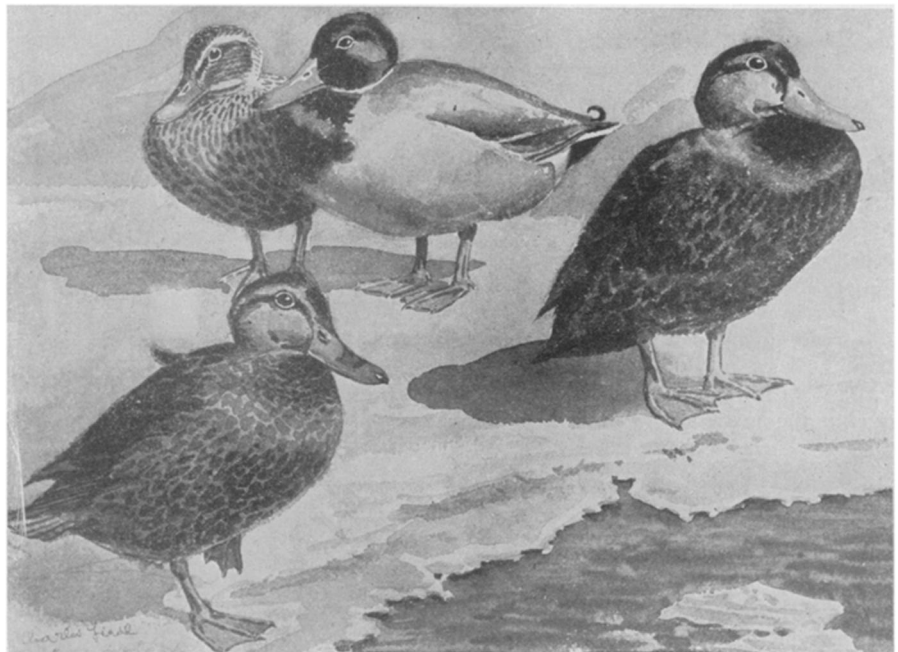
Postwar Industry Problems

► INDUSTRY will face a problem in postwar days to determine which of the many substitute materials developed and used to meet war shortages are of permanent advantage, declared Archibald Black of Simmonds Aerocessories, Inc., at the meeting. This will be particularly true in the metal fields, he told the meeting.

"When these war shortages have passed into history—a condition that is very close to attainment already—we may expect to see extensive jockeying for position on the part of producers of widely different materials," he stated. "In some cases the substitutions have come to stay, for unexpected advantages have resulted; in others we will revert to the time-tried ones; in still others it may take years to decide which wins out. Some materials are 'naturals' for certain applications, just as others are inherently substitutes and still others are thoroughly satisfactory alternates deserving of equal consideration."

Pointing out some of the new developments, Mr. Black said: "The developments of the past ten years have included new methods of heat treating that revolutionized the hardening of steel. It is now possible greatly to improve the ductility of steel without loss of strength by merely interrupting the quench and holding the metal at a suitable intermediate temperature until its transformation is complete."

Some of the powerful new magnetic alloys are ductile, he continued, and some new aluminum alloys have over one-third more strength than the ordinary steel of 30 years ago. Magnesium has now appeared as a serious competitor for light strong metals. Tungsten



DUCKS IN WATER COLOR—Among the paintings by Charles Liedl now on display in a one-man show at the Heads and Horns Museum Gallery, Bronx Zoo, New York City, is this one of mallard and black ducks. The paintings will be shown until January 1.