

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."

Science News Letter, December 2, 1944

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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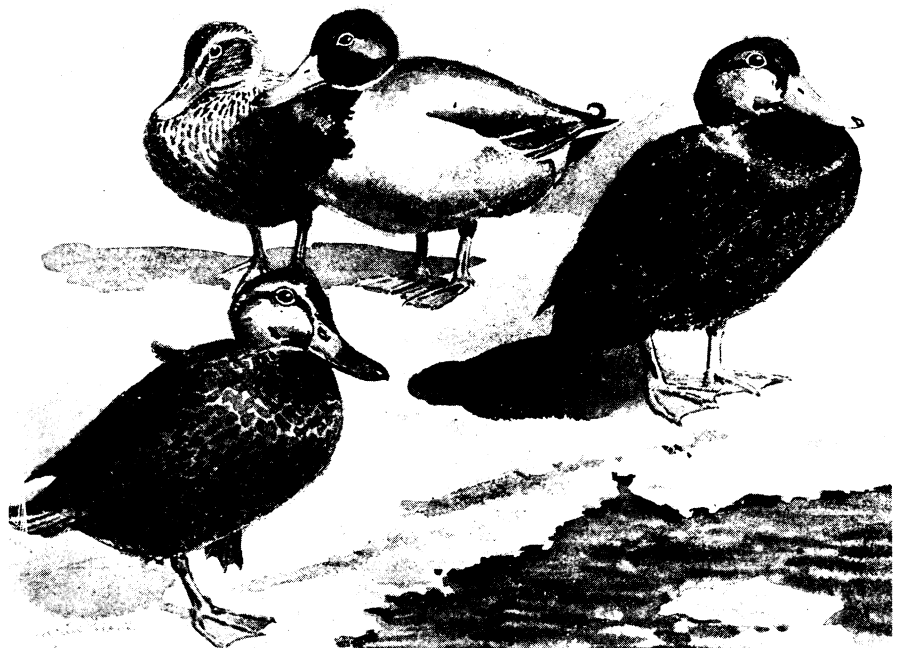
Postwar Industry Problems

► 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.

carbides and some other carbides cemented together with cobalt have revolutionized the machining of metals.

"Synthetic rubbers have been developed, which, in certain respects, surpass natural rubber," Mr. Black declared. "Production of these rubbers has reached a point sufficient to take care of all domestic requirements under ordinary conditions; no longer are we dependent

on imported rubber. Entirely new plastics have appeared, each with its own special characteristics, some having exceptional clearness resembling crystal, others can stand temperatures that run far beyond boiling point of water. Plastics, reinforced with glass threads, are being used experimentally for airplane construction."

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ENGINEERING

Should Stay on the Job

Regardless of their understandable desire to fight, technical men are urged to remain on the industrial and research fronts where they are most needed.

➤ YOUNG technical men, regardless of their understandable desire to fight, must not be siphoned off to the armed forces but must remain where they are most needed—on the industrial and research fronts. This is one of the great lessons learned in the present war and it must not be forgotten in the future, declared Col. Bradley Dewey, former U. S. Rubber Director, at a joint meeting of the American Section of the Society of Chemical Industry and the New York sections of the American Chemical Society and the American Institute of Chemical Engineers.

At this meeting, Col. Dewey was awarded the annual Chemical Industry Medal in recognition of his work in colloid chemistry, especially pertaining to rubber, and for his accomplishments in the government's synthetic rubber production program.

In accepting the Chemical Industry Medal, Col. Dewey spoke on the role of organized research and business in American national defense.

"How was it possible," he asked, "for this peace-loving nation to leap from a standing start into a global war and to surpass quickly in both volume and quality the material of war which our dictator enemies had spent years in scheming, planning and producing? It was possible, I think, because American free enterprise in time of peace had given us for the time of war the needed teamwork of scientists and technical men and business men which was able to work the miracles of large scale."

Col. Dewey, speaking of the synthetic rubber program, gave credit to the work of government agencies, the Baruch Committee and the experts of the Office of the Rubber Director, all of which, he

said, had made valuable contributions.

"But, when all is said and done," he continued, "the actual work—the job itself—was done by the research chemists and chemical engineers, the mechanical engineers, the construction and production men of industry."

Most of these men were working in teams in the laboratories and organizations of large units of American business, he said.

"I emphasize that the big job," he said, "was done by men with background and experience gained on their jobs with big chemical companies, big rubber companies, big oil companies and big engineering and construction companies."

"Thanks to the American competitive system, we had men of resource and intellectual daring, trained and fitted to cope with the new and ever-changing problems of war. We had men out of laboratories and offices accustomed to facing real problems realistically."

We who know the part that business men, scientists and engineers have played in this technological war must see that the lessons are not forgotten, he declared; "the government itself must in the future accept the full responsibility for seeing to it that our vitally needed young technical men . . . remain where they are most needed, on the industrial and research fronts."

Dr. Vannevar Bush, president of the Carnegie Institution of Washington, preceded the medalist on the program and presented some of the scientific and technical accomplishments of Col. Dewey. Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, spoke on the medalist's part in educational matters.

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AGRICULTURE

Buy Cotton by Variety, Is Advice of Experts

➤ THE VARIETY of cotton is important in buying cotton for specific uses, as the spinning value depends mainly on the crop variety, U. S. Department of Agriculture experts report. The spinning quality and strength of the yarn are likely to be about the same, irrespective of weather. Dry weather, which shortens the fibers, usually makes them stronger.

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