

one training device, but as a "training plane" it can handle four times the number of flight and ground crews at a tenth the cost and in a fraction of the time involved in the use of an actual airplane.

One important feature of this new flight simulator is that the entire operating crew, pilot, co-pilot, engineer and

others, are trained at the same time. An instructor behind them operates switches which activate the pilot's dials to indicate trouble with fuel flow, wrong oil pressure, carburetor icing, faulty spark plugs and other difficulties. Pilot response is noted by him, and also the corrective action taken.

Science News Letter, May 22, 1948

NUCLEAR PHYSICS

Future Atomic Advances

► **EXPERIMENTAL** atomic power plants "within a year or two" and ships running on atomic energy "within a decade" were forecast by a famous American atomic scientist.

The scientist is Dr. Edward U. Condon, director of the National Bureau of Standards, who has been under attack from a subcommittee of the House Un-American Activities Committee. Dr. Condon's views on the future applications of atomic energy are given in a report to the American Institute of Electrical Engineers in New York. (March 10)

"Three atomic power plants are now under way—at Oak Ridge, Tenn., Chicago, Ill., and Schenectady, N. Y.—and it should be possible to realize experimental production of power within a year or two," the atomic scientist forecast.

For cars, planes or even railroad loco-

motives, atomic power plants are likely to be too heavy, he believes.

"However, it is reasonable to suppose that within a decade some ships may derive their power from (atomic) piles."

Other atomic advances expected by Dr. Condon include better ways of producing the atomic bomb elements uranium 235 and plutonium, smaller-sized chain-reacting piles, important "special purpose energy sources" and aids in medical and other scientific work.

Whether or not other elements can be used to release atomic energy "can be decided only by future research," declares the scientist.

"At present no means of doing this is in sight, but it should be remembered that in 1938 the atomic bomb would have seemed fantastic to the best nuclear physicists."

Science News Letter, May 22, 1948

CHEMISTRY

Fresh Water from Ocean

► **SCIENTIFIC** research to make fresh water from sea water is proposed by a bill introduced in Congress by Rep. Charles K. Fletcher, R., California, which would place the study in the hands of the Navy.

The measure would authorize the Secretary of the Navy to construct, and operate one or more demonstration plants to produce potable water from sea water, or other liquids, elements or substances. These plants would be of a size to provide engineering data for industries desiring to convert salt water to fresh for manufacturing and other purposes.

De-salting sea water has long been carried out by the ordinary distillation process on shipboard and other places. This of course requires considerable fixed equipment. During the war there

were several de-salting methods developed primarily for use on lifeboats and life rafts which required only such equipment as could be easily stored with other supplies in the boats and rafts.

The outstanding method uses a new chemical de-salter. It is a product of Permutit Company of New York. A briquet of it, the size of a small candy bar, is dropped into a plastic bag containing sea water. It absorbs the chemical salts in the sea water so that they can be filtered out as the water is sucked through a plastic tube. Each briquet weighs only one-sixth as much as the drinking water produced and takes up only one-tenth as much space. One briquet is good for about a pint of drinking water. The entire kit for a life raft is the size of a small hand-bag.

The principle employed in this and other de-salting methods is what is

known as ion exchangers. These cause an interchange of ions between the material in solution and the solid introduced. The process is used in water softeners. The particular type used to freshen sea water is known as anion exchangers or acid absorbers. They absorb the acids formed when a salt containing water is passed through a hydrogen exchanger.

During the war scientists at the Naval Medical Research Institute tested a dozen or so de-salters suggested for downed flyers on life rafts. Most of them were rejected as unsatisfactory for one reason or another.

Science News Letter, May 22, 1948

PHYSICS

Measure Water Vapor in Gases by Improved Means

► **A WARTIME** need for a quick method to determine the dryness of aviators' oxygen led the National Bureau of Standards to develop an improved electrical method for measuring small amounts of water vapor in many kinds of gases and the moisture content of certain liquids and solids.

The method has just been made public. Essentially it depends upon the change in electrical resistance of an electrolytic film as it absorbs vapor. It is a procedure carried out with speed, simplicity, high sensitivity, and wide range. It was developed by E. R. Weaver of the Bureau staff.

The principle utilized has been employed at the Bureau in various devices for some time. A thin film of liquid, which may be phosphoric acid or a solution of sulfuric acid or other electrolytic compounds in a gelatin or plastic binding material, is spread over the surface of a solid insulator between metallic electrodes. The electrolyte absorbs moisture and tends to reach equilibrium with the water vapor in the surrounding gas and to form a solution the electric conductance of which is a measure of the concentration of water vapor in the gas.

In the improved method, the electrical resistance of a film in the gas of unknown moisture content is compared with one in a sample gas containing a known amount of water vapor. By adding measured moisture to one or the other a balance can be obtained, and the moisture content of the unknown quickly determined.

Science News Letter, May 22, 1948

The rare *trumpeter swan* is appearing in southern Alaska in growing numbers.