

## PHYSIOLOGY

**Effect of Radar's Waves Studied by Army and Navy**

► RADAR, the radio echo device that can pick up targets through the clouds and spot airplanes miles away, may confuse homing pigeons and cause mild headaches among men who operate the device. Studies of the effects of micro-waves and ultra-high frequency short waves upon pigeons and men are being made by Major Otto Meyer, the Army's top authority on pigeons, and Lt. Comdr. L. E. Daily, a Navy doctor.

While no evidence of physical damage has been discovered among the men who operate the Navy's radar devices, some of the men reported mild headaches and the feeling that their faces were flushed. These symptoms are reported to have ceased when they were more than four feet from the radio wave emissions of the transmitting equipment or the receiving antennae. These studies have disproved the theory that radar waves might cause baldness, and that radar emissions interfere with the ability of men to father children. Periodic physical examinations of radar operators are being continued, as is the practice of shielding the men from the radar waves.

The long waves of ordinary radio do not seem to bother pigeons, but they appear to be somewhat upset by the short radar waves. The Signal Corps is investigating the matter because officials hope the study may show why pigeons can find their way home.

*Science News Letter, May 12, 1945*

## AERONAUTICS

**Ten Men Fly in Tanks on P-38 Lightning Fighters**

► FIVE MEN equals 300 gallons may sound like unusual mathematics; but five men can fit into each of two special wing tanks, each of about 300-gallon fuel capacity, and be flown for long distances underneath the wings of a P-38 Lightning fighter plane. The versatile war-planes were turned into troop and cargo transports to help solve a major combat problem encountered by the rapid American advances in the Pacific war. The task is to fly ground crews and equipment to newly captured airfields so that they can be enlarged to permit big planes to land.

The nose of the new personnel tanks is of transparent plastic, to give the occupants light and to counteract their

feeling of confinement during long hops. Structural strength to carry the weight of five men in the tanks, which are similar in size and shape to jettisonable fuel tanks, has been achieved by braces that leave the tank interiors free of obstructions. The rear section of each tank can be removed instantly, for a quick exit. Successful parachute jumps have been made from the wing tanks.

The personnel tanks are attached underneath the wings of the P-38 by the same drop shackles used for fuel tanks, bombs or torpedoes. No special attachments are necessary. Dropping a transport tank by mistake is made impossible by the installation of a safety device inside the tank. If it becomes necessary to drop the tanks in battle, the last man to bail out of the tank pulls the safety catch, which permits the pilot to jettison the empty container.

Air vents controlled from within the tank provide ample ventilation. Telephone connections permit conversation between pilot and tank occupants.

In addition to ground crews and cargo, the tanks can be used to help evacuate wounded soldiers from forward areas, and to carry paratroopers to their objectives on combat missions.

*Science News Letter, May 12, 1945*

## ENGINEERING

**Instrument Tells Pilot Of Engine Efficiency**

► A NEW, but important, instrument has been added to the already confusingly crowded instrument panels of multi-engine aircraft. Known as the engine performance calculator, it merits its position because it can show the pilot or flight engineer by a glance at a plastic dial how any engine is performing. It eliminates complicated mathematical computations which, if not accurate, might result in the plane's failing to reach its destination, since the distance a multi-engine plane can fly depends largely upon the efficient operation of its engines.

Developed by H. B. Riggs, a flight engineer with Consolidated Vultee Aircraft Corporation, the calculator is set in accordance with engine speed and manifold pressure instrument indications. From this it computes such important information as fuel consumption, horsepower and cylinder pressure.

The idea for the calculator came to Mr. Riggs while he was trying to keep a malfunctioning patrol bomber engine in operation during a long flight over the Pacific.

*Science News Letter, May 12, 1945*



## ORDNANCE

**Tanks on Road in Germany Have Rocket Launchers**

See Front Cover

► SOME SHERMAN M4 TANKS, like the ones shown in the photograph on the front cover of this SCIENCE NEWS LETTER, operating on roads inside Germany, are equipped with rocket launchers on top.

The rocket-launching tubes were manufactured by General Electric in a peacetime home laundry equipment plant. The tubes were mounted by other manufacturers.

*Science News Letter, May 12, 1945*

## GENERAL SCIENCE

**Bureau of Science at Manila Totally Destroyed**

► SENSELESS and suicidal fury of the trapped Japanese in Manila vented itself on scientific treasures as well as on historical and religious monuments. Word has reached Prof. E. D. Merrill, head of the Harvard University botany department and director of the Arnold Arboretum, that the Philippine Bureau of Science, of which he was once director, was completely destroyed.

The Bureau of Science, which was the principal center of research work in the Philippines, housed the most important scientific library in the islands, was publishing headquarters for the Philippine *Journal of Science*, and contained thousands of specimens of Philippine and other Asian plants, birds, mammals, insects and other animal forms.

Prof. Merrill states: "In the same general area important buildings that are totally destroyed or very badly damaged include the School of Medicine, the School of Hygiene and Public Health, the entire plant of the University of the Philippines, the Philippine General Hospital, the Weather Bureau and the Philippine National Library. These buildings, for the most part of modern reinforced concrete construction, were especially designed for their specific purposes. My informant states that in short the Japanese obliterated everything of scientific value, the loss of the important libraries being particularly serious."

*Science News Letter, May 12, 1945*

# CE FIELDS

## ELECTRONICS

### Bomber Gunners Can Talk Without Ceasing Fire

► DURING critical moments in air battle a slight movement of the thumb on the gun controls of a 50-caliber machine gun aboard a Flying Fortress now permits the gunner to switch on his throat microphone and talk to other members of the crew without ceasing fire on the enemy. The new gun-mounted microphone switch can be built with existing materials aboard a standard-equipped B-17 and saves about 40 feet of rubber covered electric cable.

Developed at the Cheyenne, Wyo., modification center of United Air Lines with the cooperation of the Air Technical Service Command, the method simplifies the layout of the intercommunication system in a bomber, saving up to 21,600 man-hours a year in speeding bombers to the fighting fronts.

The new microphone switch unit eliminates the connecting jack box for the microphone cable, and all its component parts. The switch is mounted on the gun adapter and wiring is run directly to the plane's master intercommunications system. Previously, five separate junctions, including jack boxes and intricate wiring, were required on each B-17.

*Science News Letter, May 12, 1945*

## CHEMISTRY

### Fruit Juice Concentrated Without Affecting Flavor

► CONCENTRATED and sterilized fruit juices can be prepared by a process that does not unfavorably affect their flavors, as happens sometimes in the current practices that involve heat treatment. U. S. Patent 2,374,219 has been issued on the new process to Royal Lee, of Milwaukee.

Instead of heating the juice to get rid of excess water, Mr. Lee freezes it. This converts most of the water into ice, at the same time trapping pulp and other undesired solids. The icy mass is then crushed, and the unfrozen, concentrated juice is centrifuged out.

The inventor proposes several methods for sterilizing the juice. One of the most ingenious is the addition of germ-killing chemicals like toluene or methanol. These

are poisonous, but they never reach the consumer, for they are also volatile, and they are evaporated out by gentle warming in a vacuum pan or a spray chamber before the final product is bottled or canned. The low-temperature evaporating step may be carried to the point of preparing a solid instead of a concentrated liquid or syrupy product.

*Science News Letter, May 12, 1945*

## CONSERVATION

### Regional Development Of Great River Basins

► DEVELOPMENT of the nation's great river basins on a regional basis, along lines suggested by the successful experiment in the Tennessee valley, was indicated as a possible way of escape from the threatening drift towards over-centralization in government and the growth of monopoly in business, in an address by Vice-Chairman Leland Olds of the Federal Power Commission before the Washington Academy of Sciences.

Mr. Olds pointed out that although authorization for a valley development originates with the national government, the actual work is carried out within the region, by its own people, and controls are immediate and on the spot, not in the hands of a remote bureau in Washington.

Benefits of a well-worked-out regional development are manifold, the speaker stated. Flood prevention and soil conservation go hand in hand for reforestation and contour-cultivation farming are relied on even more than the dams for preserving and regulating the water supply. This land-use improvement is almost inevitably followed by a rise in the standard of living within the region, as farming becomes at once more diversified and more productive.

Cheaper freight transportation results from the formation of man-made lakes and the improvement of stream channels. This has its reflection in the encouragement of manufacturing within the valley, with raw materials drawn from regional sources and finished products going first to regional markets. Power from hydroelectric plants at the dams, combined in some of the regions with steam-generated electricity from cheaply obtained coal, gives special encouragement to small business, because current is easily carried to practically any desired spot and concentration of manufacturing plants near power sites is no longer necessary.

*Science News Letter, May 12, 1945*

## AERONAUTICS

### Sweden Develops Air Force With American Planes

► LEADING all Scandinavia in the development of military and civilian flying, Sweden may become one of the important nations in postwar aviation. Most of the flying these days over Sweden is being done in American-built airplanes, and the outlook for the sale of our aircraft is good for the future.

Within a short time, 50 North American P-51 Mustang fighter planes, purchased for the Swedish air force by the Riksdag (Swedish Parliament), will be in service. Most of these planes, purchased at a cost of 34,000,000 kronor (\$8,500,000) will go to the Skane wing of the air force.

Sweden's own light-airplane manufacturing company, Skandinaviska, has recently announced the development of an all-wood sports monoplane. Known as the BHT-1A, it is thrust through the air at a maximum speed of 150 miles an hour by a 62 horsepower in-line engine built by Walter Mikren. It has a wingspan of 22.4 feet and a range of 560 miles.

Operating converted Boeing B-17 Flying Fortresses, Douglas DC-3 transports, and Junkers JU-52 transports, the Swedish airline A.B. Aerotransport now operates a service between Sweden and England. Passenger fare for the hop is a little less than \$175. After the war, this airline plans to resume its prewar operations, which were suspended in 1939, by extending service from Stockholm to Riga, Velikije Luki and Moscow to the east, and from Stockholm to Malmo, Copenhagen, Amsterdam, Brussels, London and Paris to the southwest.

*Science News Letter, May 12, 1945*

## PHYSICS

### Choice of Colors in Fluorescent Lighting

► If you don't like the bluish-white light you get from the standard fluorescent lighting fixtures, there is a possibility of a choice of colors, in the invention on which patent 2,374,640 has been granted to Leslie R. Paul of Philadelphia. Around the fluorescent glow-tube he places a second tube, which bears longitudinal bands of various colors—is, in effect, a series of light filters. This can be turned by a remote-controlled low-speed motor, until the desired color effect is obtained; then the motor is stopped. A curved metal shield around the back of the color tube prevents undesired light-mixing.

*Science News Letter, May 12, 1945*