

PUBLIC HEALTH

Triethylene Glycol Vapor May Prevent Epidemics

► A POTENTIAL new weapon for chemical warfare against influenza is announced by Dr. O. H. Robertson, Dr. Theodore T. Puck, Dr. Henry F. Lemon and Dr. Clayton G. Loosli, of the University of Chicago's Department of Medicine (*Science*, Feb. 5).

Triethylene glycol, a chemical relative of automobile and airplane engine anti-freezes, is the new weapon. A drop or two in the form of a vapor of this chemical distributed through a small room (two-tenths of a cubic centimeter in 800 cubic feet of air) protected mice completely against an amount of airborne influenza virus which a short time before had caused the death of all the exposed (control) mice. Similar small concentrations of triethylene glycol vapor in air are also deadly to pneumonia and streptococcus germs, the Chicago experimenters found.

Tests on the possible poisonous effects of this chemical when swallowed, or when inhaled over a long period of time, are now under way.

Previously Dr. Robertson and associates had found that propylene glycol was an efficient destroyer of disease germs in the air and was relatively non-poisonous to laboratory animals. Triethylene glycol, however, is so much more deadly to the germs that if it proves equally safe, it will be a better weapon to use in attempts to stop influenza epidemics by air sterilization.

Science News Letter, February 13, 1943

AGRICULTURE

Record Fumigation Job On Stored Grain in Hawaii

► THE LARGEST fumigation job on record was recently completed.

Successful fumigation of a million-cubic-foot warehouse containing stored cereals, vital to Pacific defense, was announced at the meeting of the Hawaiian Academy of Science by Dr. David T. Fullaway, entomologist at the Board of Agriculture and Forestry, Territory of Hawaii.

After Pearl Harbor, a six months' supply of cereals for the civilian population was shipped to the Territory and most of it was stored in a big new warehouse. Within a few months the wheat and corn became heavily infested with flour-moth larvae, thus endangering the sev-

eral million dollars' worth of rice which already had its own quota of beetles.

A gang of workmen was set to spraying with a modified Flit mixture, the exposed surfaces in the warehouse where the moths rested, but this had little effect. "The larvae," said Dr. Fullaway, "came out of the bags by the millions on account of the heat generated by their crowding. Hundreds of thousands of these were trapped in a sticky barrier laid down around the sacks."

It was decided that fumigation was the only thing that would save the food, which not only had a high monetary value but might become the last bulwark against starvation in case of blockade or invasion.

One of the smaller warehouses was fumigated as a pilot operation and then the big job was tackled. Methyl bromide was led in through quarter-inch copper tubing. Special gas masks for the protection of operators were used.

The gas alone cost \$1,725 which, however, amounted to less than one cent per bag.

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NUTRITION

New Cookbook Tells Army About Dehydrated Foods

► FIRST EDITION of a new American cookbook, *The Dehydrated Foods Cooking Manual*, published by the subsistence branch of the Quartermaster Corps, has just come off the press.

The cookbook gives directions and recipes for making dishes from the new dehydrated foods that are being used for troops overseas because of the saving in shipping space. The book is intended for Army cooks only and will not be available to the public at present.

Dishes prepared according to directions from satisfactory dehydrated foods, the Quartermaster Corps states, usually cannot be told from dishes prepared from fresh materials.

By cooking the foods in the water in which they are soaked for rehydration, vegetable salts, sugars, minerals and vitamins are saved. Proper temperature for rehydration and prompt preparation once rehydration is started are also important for producing a satisfactory dish from the dehydrated foods.

Recipes for preparing and cooking dehydrated apples, beets, cabbage, carrots, white potatoes, sweet potatoes, rutabagas and eggs, and also pies, cakes and puddings from dehydrated foods are included in the new cookbook.

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IN SCIEN

MILITARY SCIENCE

Periscope for Tanks Gives Commander Wider View

► TANKS lumbering across the battlefield have been likened more than once to giant beetles. Unfortunately, to the near-invulnerability of beetles is added also the near-blindness of beetles.

To overcome this handicap an Army officer, Lieut. Col. David J. Crawford, has invented a wide-angle periscope, on which he has just been granted U. S. patent 2,307,759. In it, the slanting mirrors at top and bottom are wide enough to permit the tank commander to use both eyes, seeing nearly as wide a section of the horizon as he would with ordinary outside vision. The upper mirror, exposed to enemy fire, is quickly and easily replaceable if it is shattered during action.

At one side, coming into play if the officer shuts one eye, is a small telescope with aiming cross-hairs. By fixing this on any target that offers and then bringing the gun into alignment, the officer can bring his fire power into action more quickly and accurately than has heretofore been the case.

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PUBLIC HEALTH

Slight Decrease in Meningitis Is Reported

► MENINGITIS cases reported by state health officers to the U. S. Public Health Service decreased slightly to a total of 314 for the week ending Jan. 30. No report has been received yet from Rhode Island, which had 25 cases the previous week, but even if Rhode Island again reports 25 cases, it will not bring the week's total up to the high figure of 354 recorded the week ending Jan. 23.

Influenza increased slightly from 4,387 to 4,852 cases with Texas, Virginia, South Carolina and Alabama reporting the largest numbers of cases.

Measles increased from 8,807 to 10,865 cases. Pennsylvania, New York and Utah had the largest numbers of cases.

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CE FIELDS

AERONAUTICS

Pick-a-Back Glider Helps Big Plane to Take Off

➤ HELPING a big, heavily loaded bomber or transport plane to get off the ground by means of an engineless glider mounted pick-a-back upon it is the novel proposal on which U. S. patent 2,308,764 has been issued to a New York inventor, Vadim S. Makaroff.

The seeming paradox in the idea of getting a boost from an unpowered aircraft disappears when it is explained that the glider is intended simply to lend the plane some additional lifting surface, making it in effect a temporary biplane. The normal engine power of the plane is enough to make efficient use of much more lifting surface than it has, in getting into the air. Once up, the auxiliary wing surface is not needed to sustain it, and the reduced surface represented by the normal wingspread permits higher speed at economical power output by the engines.

Mr. Makaroff provides a simple but strong fastening that can readily be loosened, permitting the glider pilot to detach his craft and coast back to the airdrome once he has helped his big friend to get started.

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ENGINEERING

Anti-Freeze Solutions Containing Salts a Danger

➤ AVOID THE DANGER to your car that may come from the use of calcium chloride or other salt in an anti-freeze solution for its cooling system, is the advice of automotive engineers of the National Bureau of Standards.

These engineers, who made a special study of this matter, call attention to the danger due to hidden corrosion. The use of salt solutions is prohibited in all government-owned motor vehicles.

Salt solutions have been tried ever since automobiles were first driven in freezing temperature. Damage always resulted if the solutions were in the cooling system for more than very short

periods. Salts cause corrosion. Water pumps and cylinder heads, particularly where the latter were of aluminum alloys, developed leaks which showed up only after the damage had been done.

With the present shortage of the more commonly used anti-freeze solutions, salt solutions are now being offered. Some contain inhibitors which it is claimed will protect against corrosion. The Bureau of Standards engineers do not know of any inhibitor effective under ordinary winter driving conditions.

There are a few simple tests that may be made to determine if an anti-freeze solution probably is based on calcium chloride or any other salt. The first is by weight. If a gallon of the solution weighs over 10.5 pounds, it is probably a salt solution.

A half-cupful may be boiled slowly in an iron skillet until dried. If a substantial deposit is left in the skillet it is probably salt. Two spoonfuls of the solution may be put in a glass and a drop or two of silver nitrate added. A whitish deposit or cloud will indicate calcium chloride or other salt.

The advice of the Bureau engineers with regard to any radiator preparation of unknown composition is to analyze it or to avoid it.

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RADIO—AERONAUTICS

Chains of Radio Beacons To Guide Air Traffic

➤ AIR TRAFFIC of the future will be guided by chains of ultra-short-wave radio beacons, as air traffic of past years was guided by chains of light beacons, Dr. Ernst F. W. Alexanderson, consulting engineer of the General Electric Company, predicted in a science forum address in Schenectady. They will cross the continent like highways, the speaker declared, enabling the aviator to fly above the clouds and yet see his way in three dimensions by radio vision, as unmistakably as if he were looking at rows of street lights on a clear night. An adaptation of the system will guide ships at sea, however thick the fog, so that collisions will have no more terrors for navigators.

A revival and perfection of the radio-echo sounding device, tried some years ago on airplanes, was another prediction of Dr. Alexanderson. This instrument was designed to tell the aviator not merely his altitude above sea level but his height relative to the actual terrain he was crossing.

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GEOLOGY

Fossil Remains of Giant Amphibian Found in Texas

➤ THE great-grand-uncle of all frogs, a giant amphibian with a skull more than two feet long and a foot and a half wide, that lived in Texas some 250 million years ago, more or less, is described and given scientific christening (*Journal of Geology*, Nov.-Dec.) by Prof. Alfred S. Romer and Robert V. Witter of Harvard University.

Although the creature is definitely identified as an amphibian, it had a well-developed array of teeth in both jaws, and at least part of its skin was beset with bony scales. Since modern frogs and toads have neither teeth nor scales, the kinship of this ancient giant of their tribe must be regarded as avuncular rather than directly ancestral; though Prof. Romer does state that the frogs are probably related to the extinct group of which this big amphibian is a member.

The fragmentary remains of several of these animals were found in the lower levels of strata known to geologists as the Texas red beds, which gives them a geologic age about where Carboniferous and Permian meet. The animal has been given the scientific name *Edops crageri*.

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CHEMISTRY

Dry-Cleaning Fluid Used In Making Smoke Screens

➤ IF YOU find yourself unable to buy your favorite dry-cleaning fluid, remember it may be concealing a warship or an attacking regiment from the enemy as a dense cloud of white smoke, or in another form it may be cleaning up the metal of a tank, truck, ship, gun or airplane.

A commonly used dry-cleaning fluid is a chlorine compound known to chemists as perchlorethylene. This may be easily converted into another compound called hexachlorethane. Hexachlorethane reacts vigorously with fine metallic zinc to form zinc chloride. The reaction liberates a large quantity of heat which instantly evaporates the zinc chloride, making the dense white smoke cloud. This is the smoke screen that hides ships or troops from the eyes of the enemy.

A compound known as trichlorethylene, closely related to perchlorethylene, is used as the metal cleaner.

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