

## FOOD TECHNOLOGY

**Loss of Ascorbic Acid Causes Tallowy Milk**

► DAIRY scientists and the milk industry have known how to prevent the tallowy flavor in fresh milk, but they never knew the cause of it.

Now, Profs. V. N. Krukovsky and E. S. Guthrie of the dairy department at Cornell University have come up with the answer. They have traced the flavor to the reaction involving the rate of loss of ascorbic acid (vitamin C) in the milk. The scientists are able both to prevent and to induce this flavor.

As a result, they have been able to keep the fresh, pasteurized milk for many more days than is normally possible in the refrigerator without loss of palatability. In the Cornell tests, the milk kept for two weeks.

In addition, the research promises to be useful in the milk powder industry, and it applies in other fields, such as citrus juice-preservation where turpentine-like flavor has been of some concern, and in controlling flavors of certain meat products.

In one oxidative method, oxygen is bubbled through the milk during pasteurization. This greatly reduces the susceptibility of milk to tallowy flavor development.

Market milk contains two forms of vitamin C. These are ascorbic acid and dehydroascorbic acid. The reaction that causes the breakdown of fats in the milk, and thus results in development of the tallowy flavor, can be inhibited by quick and complete oxidation of ascorbic acid to dehydroascorbic acid and by the subsequent heat treatment in pasteurization, Dr. Krukovsky said.

With flavor control, he does not doubt the sale of milk can be greatly increased.

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## ORDNANCE

**Hydro-Bomb Powered By Rocket Engine**

► THE HYDRO-BOMB, a new aerial torpedo powered by a rocket engine, was nearly ready for action when the Japs surrendered, the Army Air Forces have revealed.

Using the thrust of burning, expanding gases to propel itself through water, the hydro-bomb was designed by Westinghouse engineers to meet the need of the AAF for a torpedo that could be dropped 600 feet or more from fast

planes, permitting the plane to keep at a safer range from anti-aircraft fire. The new missile is described as the cheapest and simplest aerial torpedo yet developed.

The underwater rocket supplies its own oxygen from the solid fuel that is packed into the pipe-like motor. The impact of striking the water after the bomb is dropped from an airplane throws a switch igniting the fuel. The burning solid fuel sends gases through a nozzle to push the missile through the water.

Slightly shorter and thicker than a submarine torpedo, the hydro-bomb can carry 600 pounds of high explosives. Capable of a thrust of 1,000 pounds, the rocket engine can speed the new torpedo toward a target at 40 knots. Total weight of the projectile is 2,300 pounds.

Shock-treated for protection against the impact of striking the water after dropping hundreds of feet, the hydro-bomb survived a test drop of 2,000 feet.

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## PETROLEUM

**New Triptane Rating For Motor Fuels**

► A NEW SYSTEM of rating motor fuels may result from the high-quality gasolines developed for modern airplanes. A "triptane number," rating the fuels according to a leaded triptane-heptane scale, has been proposed at the National Bureau of Standards to replace the current octane classifications.

The trouble with the 20-year old octane scale, according to the Bureau's Cooperative Fuel Research Committee, is that modern aviation fuels have gone over the top of the octane ratings. First prepared in 1926 to cover higher knock rating fuels than any then used, the old scale is now out-of-date.

Present octane numbers for the gasoline you put in your car are derived from the percentage of iso-octane blended with normal heptane, which, in a standard engine, gives knock equal to that of a test fuel.

The newly-proposed rating would be in terms of blends of triptane and normal heptane, to both of which has been added about one-tenth of 1% of tetraethyl lead. Triptane is a relatively new compound of exceptionally high knock rating, and the new scale would cover a range from below to above present fuels.

So, one of these days, your gas may be rated with a "triptane number" instead of the present octane.

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**IN SCIENCE**

## MEDICINE

**PABA May Prove Typhus Fever Remedy**

► ONE OF the B vitamins, para-aminobenzoic acid, or PABA for short, may prove an effective remedy for the kind of typhus fever occurring in this country. It has already shown promise in treatment of the louse-borne and far more deadly typhus fever that occurs in epidemics abroad.

Trial of PABA in typhus fever in this country is reported by Dr. Paul K. Smith of George Washington University School of Medicine, formerly lieutenant colonel at the AAF School of Medicine, Randolph Field, Tex., in the *Journal of the American Medical Association* (Aug. 3).

Fever persisted 12 or more days in 22 of 29 typhus patients not treated with PABA, but only seven of the 29 treated with the vitamin chemical had fever that long. There were no toxic effects from the chemical, which suggests that it might safely be given in larger doses with presumably even quicker recovery. Dr. Smith recommends a thorough trial of the chemical with more patients and under more rigidly controlled conditions.

The study was made with the cooperation of members of the Bexar County Medical Society who referred patients for treatment as soon as they thought the patients were suffering from endemic typhus fever.

*Science News Letter, August 10, 1946*

## VETERINARY MEDICINE

**Recent War Healthiest In History for Animals**

► WORLD WAR II was the healthiest war in history for Army animals. Not a single outbreak of epidemic disease occurred among the many thousands of horses, mules, dogs and pigeons engaged in military operations, thanks to the care of the Veterinary Corps.

Production of vaccines to protect troops against typhus fever and some other diseases became the wartime mission of the Veterinary Corps' laboratory at the Army Medical Center because of the experience and excellent record of this laboratory in producing vaccines for animal protection.

*Science News Letter, August 10, 1946*

# E FIELDS

## METEOROLOGY

### Radar Reflectors Chart Wind 100,000 Feet Up

► SPECIAL war-developed reflectors, carried aloft by balloons and traced from the ground by radar, now give meteorologists data on the speed and direction of winds as high as 100,000 feet above the earth's surface, the Army Signal Corps discloses.

Two types of reflectors were developed during the war for use with military radar sets at frequencies ranging from 200 to 3,000 megacycles. A dipole-target consists of three short, foil-wrapped sticks, joined in the center to form 60-degree angles in a horizontal plane, and is for use with 200-megacycle, horizontally polarized radar sets. The other reflector, for microwave radar, is a box-kite-like affair with paper-backed aluminum foil supported in a triangular form by balsa sticks.

Before the war, sighting tubes, called theodolites, were used to chart the course of wind-recording balloons, but this arrangement would not work at night or in low visibility during the day.

The reflectors for radar wind observations were developed at the Signal Corps Engineering Laboratories, Bradley Beach, N. J., after early experiments had been conducted by the Signal Corps and by the Radiation Laboratory, Cambridge, Mass.

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## AERONAUTICS

### Electric Current Keeps Airplane Windshield Clean

► A COATED airplane windshield that eliminates ice and fog with an electrical current has been announced by the Pittsburgh Plate Glass Company.

A permanent transparent coating, commercially named Nesa, conducts an electric current clearing the windshield of ice and fog and strengthens the glass against impact, it was reported. Bonding the coating to another piece of glass with a layer of vinyl plastic is done to remove distortion. Visual characteristics are claimed to be approximately the same as untreated glass.

The coating can be applied to plate

glass, laminated safety glass and multiple-glazed units, and it strengthens the windshield by maintaining a temperature of between 80 and 120 degrees Fahrenheit, found to offer the most effective protection for laminated plate glass.

Electrical contact to the coating is made by applying metallic bus bars to the edges of the glass area.

The new coating was developed after wartime research to produce glass for radar equipment and other electronic instruments that would not collect static electricity and distort registering mechanisms.

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## PHOTOGRAPHY

### Six-Shooter Principle For Flash Lamps

► THE SIX-SHOOTER principle has been applied to photoflash lamps as Samuel Colt applied it to fire-arms a century ago. U. S. patent 2,404,970, issued to H. H. Magdsick of East Cleveland, Ohio, covers a flashlamp with a revolving cluster of six bulbs that can be turned so that each can be brought successively to the focal point of a parabolic mirror and "fired."

All the bulbs are mounted on a common base, which revolves on a spindle turned by a knurled head, held by a bracket at the top of the dry-cell holder. When all the bulbs have been used, the entire group is discarded and a new one set on the spindle in its place.

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## CHEMISTRY

### Chemical Enables Water And Gasoline to Mix

► WATER in gas tanks resulting from moisture condensation can be picked up by a chemical added to the fuel, and dispersed throughout the gasoline in such a way that it aids combustion. The chemical is a development of the Dacar Chemical Products Company.

In working on metal cleaning agents with the same constituents that gel gasoline, it was found that certain soaps of the polyethanolamine series act as water pick-up agents, and are at the same time soluble in gasoline. With them homogeneous mixtures up to 5% water can be obtained.

The chemical can be used as a gasoline anti-freeze; or in dehydrating underground gasoline tanks.

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## CHEMISTRY

### German Insecticide Supplements DDT

► AN INSECTICIDE that takes over where DDT stops in killing the insects that ravage gardens and orchards is now being produced from a formula discovered by German chemists.

The insect killer being produced by Monsanto Chemical Co. is hexaethyl tetraphosphate and was uncovered by U. S. scientific field teams in Germany.

Aphids, or "plant lice," and mites can both survive DDT, but the new insecticide is particularly effective against them. These insects that feed on foliage in gardens and orchards have a "field day" when DDT is used, according to chemists, because the DDT kills the natural enemies of the two pests. But the imported formula promises to restore a better balance when used with DDT.

Another important gain from the new enemy of aphids and mites is that present supplies of nicotine sulfate, used to kill them, are insufficient for national use.

Experiments conducted so far indicate that the brown liquid hexaethyl tetraphosphate will be superior to nicotine sulfate in some respects, chemists report.

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## NUTRITION

### Overseas Diet Was Good for Soldiers

► GIs GRIPE about the monotonous overseas diet, but apparently it did its job of keeping them well-nourished, at least so far as protein is concerned, regardless of the location or length of foreign service.

Capt. Herbert R. Plass, of the U. S. Army Medical Corps, made tests on the nutritional state of 421 Army Air Forces returnees, whose periods of foreign service ranged from 4 to 50 months, and found that the Army diet does not result in frequent deficiency diseases.

Since certain dietary diseases can be detected by a slight shift of what physicians call plasma protein, accurate graphs were kept to compare the average plasma protein of the returned soldiers with that of 50 soldiers and workers who had not been out of this country.

Even though more than half of the A.A.F. subjects ignored a balanced diet while celebrating their 21-day leaves, their nutritional state was normal within four weeks.

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