

PHYSICS

**Pushbutton War
Foreseen as Possibility**

➤ A NEW KIND of pushbutton war through use of atomic bombs is visualized by Dr. E. U. Condon, newly named director of the National Bureau of Standards and technical adviser to the Senate's Atomic Energy committee.

The possibility of the diplomatic representatives of a foreign nation bringing atomic bombs piece-meal into the country under cover of diplomatic immunity, assembling them clandestinely, and then blowing the hearts out of all the leading American cities, is visualized by Dr. Condon, in an article written as Westinghouse associate research director, before he was given his government positions. (*Army Ordnance*)

"The next war should be described as the War of the Pushbuttons," Dr. Condon said. "For the atomic bombs are such small and simple devices that it is easy to visualize agents of an enemy nation bringing them in in small pieces, under cover of diplomatic immunity, and assembling them quietly in the closets or back rooms of their embassies and consular offices in our chief cities.

"Then when the decision to make war is reached, the ruler of the enemy nation has merely to say the word, and his agents in our country touch off the dozen or two bombs so planted in each of our major cities. And within minutes the entire hearts of each of them are utterly destroyed, and made to resemble the recently released photographs of Hiroshima."

Science News Letter, November 24, 1945

TECHNOLOGY

**"Anhydrous" Vegetables
Go on Market Soon**

➤ VEGETABLES that are not merely dehydrated but "anhydrous" are the newest thing on the nutritional horizon. They are a development of Clarence Birdseye, pioneer in the quick-frozen foods industry, and are due to be offered on the public market soon.

Biggest advantage at the consumer's end is claimed to be the quickness and ease with which "anhydrous" vegetables can be reconstituted—that is, brought back to normal moisture content and made ready for cooking. As a matter of fact, it is really part of the cooking process itself. The dry vegetables are placed in a pot with enough salted water to cover them and brought to a

boil as quickly as possible, then cooked over a lowered fire for a few minutes. That is all. Appearance and flavor are claimed to be indistinguishable from those of fresh vegetables.

They do, however, have to be prepared in cut-up form—riced, diced, sliced or what have you. You can't get a whole boiled anhydrous potato.

Secret of the new process, Mr. Birdseye stated, is the speed with which the water is extracted. In place of the 18 hours or so required in the customary drying process, "anhydration" is accomplished in an average of 90 minutes. Space and weight saving are described as enormous: five truckloads of vegetables that roll in at the receiving doors of the plant go out of the shipping door as one truckload.

The new vegetable products will be distributed by American Home Foods, Inc.

Science News Letter, November 24, 1945

OPTICS

**Light Travels Fast
Through New Glass**

➤ A NEW TYPE of glass, in which the mineral beryllium fluoride is substituted for the silicon dioxide, or ordinary sand, used in conventional glass formulae, lets light go through at a higher speed than any other known glass, solid or liquid. Light velocity through beryllium fluoride glass is 146,000 miles a second, as compared with speeds of 186,000 miles a second in empty space, 140,000 miles a second in water, and 122,000 miles a second in the kind of glass used in spectacles.

The new glass has been produced experimentally in the laboratories of the American Optical Company, at Southbridge, Mass., and its properties have been studied by Dr. Estelle Glancy and Carl G. Silverberg. Because it causes less bending in a beam of light, and also produces less color-scattering effect, it may some day become valuable in the production of optical instruments.

At present, beryllium fluoride glass suffers from one serious handicap: it is hygroscopic, absorbing water from the atmosphere. If this can be overcome, and the glass produced in stable form, its useful career will begin.

Possibility of producing beryllium fluoride glass was first forecast on theoretical grounds in 1927 by a German scientist, V. M. Goldschmidt, who also predicted its low refractive index and low color dispersion. He apparently did not follow up his initial suggestion.

Science News Letter, November 24, 1945

IN SCIENCE

PHYSICS

**More Atomic Energy
May Be Available**

➤ ALTHOUGH scientists have split atoms with the consequence that the world has atomic energy and atomic bombs, there are many things about the elementary and fundamental particles of the universe that need further exploration.

The joint meeting of the American Philosophical Society and the National Academy of Sciences in Philadelphia heard Prof. John A. Wheeler of Princeton University raise new questions that need investigation.

Is there a possibility of converting into energy the entire mass of the neutrons and protons that make up the nuclei of all atoms? This was one question which if answered affirmatively might open the door to almost unlimited atomic power.

What are the relationships between various entities that occur in nature—neutrons, protons, neutrinos, photons, electrons, positrons and mesons?

Can one of these entities be transformed into another in the cosmic radiation and in stellar interiors? Prof. Wheeler asked.

Since man-made sources of high energy radiation are now available or in prospect, Prof. Wheeler said that scientists need to know what transformations of the elementary particles can be caused by such radiations and for which cosmic radiation will still be needed.

Science News Letter, November 24, 1945

CHEMISTRY

**Boron Carbide Keeps
Chemical Sample Pure**

➤ ONE of the hardest mortar and pestles available is made of boron carbide, which is almost as hard as diamond. Glass can be ground into a fine powder with such a mortar and pestle set without marring the grinding surface, according to the *American Journal of Pharmacy*.

Boron carbide, made by heating boron and carbon in an electric furnace, is particularly useful in grinding substances for accurate analysis where the sample must be kept free from contamination.

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CE FIELDS

MEDICINE

Two Anti-Malaria Drugs Now Announced

► ANNOUNCEMENT of two of the many drugs developed during the war as possible weapons against malaria was made at the joint meeting of the National Malaria Society and the Southern Medical Association in Cincinnati.

From the National Institute of Health came news that a compound short-named NIH-204 proved adequate, like atabrine, in suppressing malaria attacks but did not cure early attacks. Neither atabrine nor NIH-204 was able to prevent the infection in trials reported by Drs. G. Robert Coatney, W. Clark Cooper, Martin D. Young and Robert E. Burgess of the federal research institute at Bethesda, Md. NIH-204 was more fully identified as 9-(2-diamylamino-1-hydroxyethyl) 1, 2, 3, 4-tetrahydrophenanthrene hydrochloride.

A new drug which both prevents and suppresses bird malaria was reported by Drs. Emanuel Waletzky and Sterling Brackett of the American Cyanamid Research Laboratories at Stamford, Conn. This drug is called metachloridine. Its full chemical name is 2-metanilamido-5-chloropyrimidine.

It is now being tried in human patients but long trials will be needed, the scientists stated, to show whether it has possible value in human malaria.

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MEDICINE

Penicillin Reduces Scarlet Fever Quarantine

► ISOLATION, or quarantine as it is popularly called, of scarlet fever patients might be reduced from the usual three or four weeks to eight or 10 days by penicillin treatment. This is one tentative conclusion of a study reported by Dr. Manson Meads, Dr. M. Eugene Flipse, Jr., Miss Mildred W. Barnes and Dr. Maxwell Finland, of Boston City Hospital and Harvard Medical School, (*Journal, American Medical Association*, Nov. 17). The studies were made with the collaboration of Miss Ruth Drew and Miss Alice Northrop.

Penicillin, like the sulfa drugs, had little or no effect on the rash and "strictly toxic" phase of the illness.

Injections of the mold chemical into the muscles, however, banished the hemolytic streptococci of scarlet fever from the patients' noses and throats within 48 hours. If the treatment is continued, the original types of these germs do not reappear. This means that after seven days of treatment the patient is no longer a carrier of the germs and consequently no longer a danger to others. The week of penicillin treatment which banishes the germs is also believed to be effective in preventing complications of scarlet fever.

Penicillin sprayed into the nose and throat four to six times a day has very little effect on the germs in the throat though it seems to keep the nose free of hemolytic streptococci while the treatment is being continued.

Sulfadiazine given by mouth for seven days, the Boston scientists found, suppresses the number of hemolytic streptococci during the period of treatment only.

The studies were made on 36 scarlet fever patients ranging in age from four to 15 years. They were divided into groups of nine. One group was given sulfadiazine, one group penicillin by intramuscular injection, one group penicillin nose and throat spray, and the fourth group was given the usual scarlet fever treatment without sulfa drugs or antibiotics.

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CHEMISTRY

Zinc-Containing Fungicide Claimed to Be Superior

► A NEW chemical weapon useful in defense against the fungi that cause plant diseases has been prepared by chemists of E. I. du Pont de Nemours and Company, and will be ready for use by the opening of another crop season. It has been given the trade name "Zerlate"—short for zinc dimethyldithiocarbamate—and is claimed to be more effective than long-used fungicides based on copper and sulfur against certain plant diseases. A close chemical relative, which contains iron instead of zinc, is already in use under the name of "Fermate."

Zerlate combines readily with DDT and other insecticides, so that the same dusting or spraying can be used to combat both fungi and insect pests. It also has repellent action against some insects when used alone; one application is said to protect peaches against Japanese beetles for from seven to ten days.

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MEDICINE

Anti-Pellagra Vitamin For Malarial Headache

► TRIAL of nicotinic acid, the anti-pellagra vitamin, as a remedy for malarial headache is advised by Lt. Comdr. Meyer A. Zeligs, of the Navy Medical Corps. (*Journal, American Medical Association*, Nov. 17)

This headache is the most common and most disturbing symptom afflicting servicemen with chronic malaria during the interval between attacks of the disease, he found from experience at the Marine Barracks, Klamath Falls, Ore.

The patient usually wakes up with the headache which gets better after he has been up a few hours. Exercise, especially in the hot sun, however, almost always brings on severe headache. If the headache persists for a prolonged period, the patient may develop mild mental depression and seclusiveness, loses interest, and cannot stand physical exertion.

The reason for trying nicotinic acid in these cases is that this chemical dilates the blood vessels and enhances the flow of blood to the brain. A tendency for red blood cells containing malaria parasites to become "sticky" has been observed in patients dying of malaria of the brain. This stickiness might slow the flow of blood to the brain even in less severe cases and cause the headache, Dr. Zeligs reasoned. Nicotinic acid might counteract this.

The vitamin chemical relieved the headache in 10 out of 25 cases, he reports, and caused moderate improvement in seven, with no benefit in eight. Because it is a safe drug and no other remedy has been effective in relieving malarial headaches, Dr. Zeligs suggests that it be given further trial.

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ELECTRONICS

Electronic "Eye" Has Long-Range Detection

See Front Cover

► INFORMATION provided by radar's electronic eye is marked down on a vertical chart in the radar plot room of an Essex-class carrier during strikes against Japan early this year. Behind the transparent expanse of the giant circle, other enlisted men work on other aspects of the incoming flow of information. Official U. S. Navy photograph.

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