

MILITARY SCIENCE

Gas Mine Detonator

If Axis uses poison gas before the war is over, U. S. Army is prepared with "surefire exploder" for gas. It looks like a clothesline.

► IF THE AXIS uses poison gas before the war is won, a peacetime mining product will prove President Roosevelt's assertion that the United States is more than ready for this phase of warfare, according to the War Department.

This product, in appearance, is innocent enough for it looks like a clothesline. It would be used primarily to detonate gas mines laid to delay or incapacitate enemy troops, although it is itself a rapid, powerful explosive.

It is called primacord and was developed in 1936 for use in the mining industry. But it is not a fuze, a mechanical device with or without combustibles used to explode a main charge. Nor is it a fuse, the name given to a train of combustibles used to explode a main charge after being ignited, similar to a dynamite fuse. It is an explosive used generally for setting off a number of charges simultaneously and, thus, would

technically become a combination fuze and fuse. It must be detonated electrically or mechanically and, by leading from the detonator to one or more charges, becomes a fuse also.

Primacord can be laid for miles, and when set off the explosion takes only one second to traverse more than three-and-a-half miles of the cord.

The cord, developed as a substitute for a lead-covered detonating fuse, can itself tear down a tree 15 inches in diameter when used in sufficient quantity. It can, naturally, be used under water. Laid on the ground, it can be exploded to clear a two-foot-wide path of small brush and at the same time dig earth from two to four inches deep, throwing it over a wide area. It can withstand rough handling, making it highly valuable in the field. It will stand friction, can be beaten with a hammer and burned like paper without exploding.

The Corps of Engineers uses it a great deal in demolitions, but one of its principal uses at present is by the Chemical Warfare Service of the Army Service Forces for training troops in best methods of setting off chemical land mines.

Chemical Warfare troops are vital in combat service, especially if gas is being used and a strategic withdrawal is ordered. It is their task to aid in slowing the enemy's advance, just as engineer, now lay mines and booby traps to slow up the enemy.

It is the duty of Chemical Warfare troops, also, to prevent the enemy from using certain areas by dispersing gas in that area; and if the enemy has laid down gas, to assist in decontaminating the area. In this latter work, primacord may be laid and exploded above ground when it blasts open a path a foot wide on each side and tears up the earth, aiding in neutralization of the contaminated area and permitting passage of troops.

In setting off chemical mines, primacord is tied in eight-foot lengths around each mine and each mine is connected with primacord. When detonated, the mines explode simultaneously and fling the contents over a wide area, thus forcing the enemy to detour or halt long enough to decontaminate the area.

Primacord is packaged in varying lengths and has many advantages over other methods of simultaneous explosion of land mines. Chemical Warfare Service authorities say it is much faster, more dependable and requires less time and labor for use. The Service calls it their "surefire exploder."

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PREPARED—These members of a Depot Company, wearing masks, impervious clothing and rubber gloves, are filling land mines with chemical agents which can be set off by primacord.

PUBLIC HEALTH

Meningitis on Increase As Paralysis Declines

► WITH the infantile paralysis epidemic definitely on the down grade, health authorities are now anxiously watching another threat to the nation's health, meningitis. The situation may be worse this year than last.

The number of meningitis cases reported by state health officers to the U. S. Public Health Service was high last winter, continued at a high level this summer and now is climbing even higher. Total for the week ending Oct. 2, latest on which figures are available, was 192. This represents a steady climb from 135 reported the week of Sept. 18 and 178 the week of Sept. 25.

The number that would normally be expected, based on the median for five years, is 27 cases for the last week in

September. Total meningitis cases since the first of this year were 14,523, compared to a five-year median figure for the year to date of 1,602.

Infantile paralysis cases dropped to 679 for the week ending Oct. 2, from

818 the preceding week. Decreases were particularly notable in those states previously reporting the largest number of cases: California, Texas, Kansas and Illinois.

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MEDICINE

Vaccines Against Virus

Protection against certain virus diseases, such as virus pneumonia, may be provided by serums and vaccines from the blood of hens and roosters.

► VACCINES to protect against certain virus diseases, such as virus pneumonia, parrot fever and lymphogranuloma venereum, or antisera to cure the diseases may some day be developed from chicken blood, it appears from a report by Maurice R. Hilleman and Dr. F. B. Gordon, of the University of Chicago. (*Science*, Oct. 15)

A chicken antiserum that definitely protects mice against a virus pneumonia peculiar to these animals has been developed by the Chicago scientists. A single dose of the antiserum given either before or after a dose of pneumonia virus has a protective effect, but an even greater effect is obtained when several doses of the antiserum are given during the first three days after the pneumonia virus infection.

This mouse pneumonia is caused by a virus which is very definitely related to the viruses that cause the human diseases, parrot fever, lymphogranuloma venereum, meningopneumonitis, trachoma, inclusion conjunctivitis and some of the atypical pneumonias now being re-

ported in increasing numbers of cases.

So far it has been impossible to produce vaccines or antisera for these diseases by the usual methods, such as inoculating horses or rabbits to produce virus-fighting antibodies in their blood. In fact, not even enough virus-fighting antibodies can be produced in the blood of such animals to provide good material for diagnostic tests or tests to help distinguish various unfamiliar virus diseases from each other.

Inoculating the virus into roosters seems to do the job, at least to the extent of producing a plentiful supply of mouse pneumonia virus antibodies in the rooster's blood. Serums with enough human disease virus antibodies for test purposes at least can probably be produced from chicken blood by the same methods.

"It is also possible," the Chicago scientists state, "that such serums would prove of value in treatment of human infections with these agents. Further investigation along these lines is under way."

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ative of diaminodiphenylsulfone. Both Promin and the chemical from which it was derived were developed after attempts to cure tuberculosis with sulfanilamide failed. The hope was that some chemical modification of sulfanilamide might give it tuberculosis-conquering powers.

Diaminodiphenylsulfone itself is toxic to mice, but can be detoxified, Dr. Raiziss discovered, by combining it with sodium formaldehyde sulfoxylate.

The detoxification which apparently makes it safe does not reduce its power as a germ-fighting remedy. In mice Diasone is as effective as sulfanilamide in curing streptococcus infections, Dr. Raiziss reports, and almost as effective as sulfadiazine in curing Type II pneumonia.

Its most important property as a germ-fighter, however, is its action against experimental tuberculosis in guinea pigs.

"With its background of low toxicity and effectiveness in experimental infection," Dr. Raiziss states, "this drug gives promise of favorable clinical application in tuberculosis."

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MEDICINE

New Plaster Cast Treatment Of Burns Has Good Results

► GOOD RESULTS with a new plaster cast treatment for burns of arms, legs, feet and hands are reported by Dr. Stanley M. Levenson and Dr. Charles C. Lund, of Boston City Hospital and Harvard Medical School. (*Journal, American Medical Association*, Oct. 2)

Possibility that the method may in the future be used for treating burns in the armed forces appears from the fact that the work reported was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Harvard University. Further suggestion of this appears in the emphasis the doctors put on the wide availability of the materials needed for the treatment, their lack of bulk and the fact that the cast will protect the burned extremity from injury if the patient has to be moved.

Healing is as rapid as with other methods of treating burns, the doctors state and ability to move the burned arm, leg or hand returns more rapidly.

The lack of pain felt by the patients, from the start of treatment to complete healing is described as "remarkable." As soon as the cast is on, the pain disappears. A slight dull ache was felt for

MEDICINE

Hope for TB Conquest

Expectation that new drug, Diasone, may wipe out dread disease is strengthened by the favorable results in tests on guinea pigs.

► HOPE that a chemical may yet be developed which can conquer tuberculosis as the sulfa drugs have conquered pneumonia and other infections appears in a report by Dr. George W. Raiziss, of the Abbott Laboratories. (*Science*, Oct. 15)

Diasone is the short name of the drug which is the latest white hope for a medicine that will cure tuberculosis. Tests on

guinea pigs of this and various other compounds, including Promin which has also given promise of curing tuberculosis, show that Diasone "produced the most beneficial" results in treating tuberculosis in the guinea pigs, Dr. Raiziss reports.

The full chemical name for Diasone is disodium formaldehyde sulfoxylate diaminodiphenylsulfone. Promin is a deriv-