

## MILITARY DEFENSE

# Warns of Nerve Gas Attacks

We must consider nerve gas attacks as likely as atomic bombings or other means of inflicting heavy damage from long range, Army doctor warns.

► NERVE GAS attacks are to be reckoned with as much as atomic bombings or any other type of attack capable of inflicting heavy damage from long range, Col. John R. Wood, chairman of the Army's medical research and development board, warns in a special report to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (April 21).

"I do not believe that any chemical warfare agents except the nerve gases are adequate for long range attack," says the former chief of the medical division of the Army Chemical Center.

First knowledge that a nerve gas attack has been made will come, probably, from seeing its effects on the first casualties. The nerve gases are almost colorless and odorless. Automatic devices for detecting nerve gases may never be feasible for large cities, Col. Wood states.

Nerve gases may be spread by mortar shells, artillery shells, rockets or aerial bombs. Persistent types may be sprayed from airplanes. The persistent nerve gases are more persistent than mustard gas of World War I.

"The probable munition for long range attack is the aerial bomb, loaded with non-persistent nerve gas and a burster charge of high explosive," Col. Wood states.

Like an atomic bomb, explosion of a nerve gas bomb will be followed by a cloud. But the nerve gas cloud is invisible and does not dissipate upward into the atmosphere. It will drift downwind at the effective velocity of the wind at street level, growing in size but eventually being dissipated by dilution.

Col. Wood describes a hypothetical case as follows:

"Assume that this is an initial attack on a typical target city, delivered without adequate warning, by planes from a great height; that gas bombs are dropped over a one square mile area of the business district, forming a gas cloud of that size and about 10 meters in height and containing a concentration of gas such that breathing it for about two minutes would eventually prove fatal.

"Assume that the weather is favorable and that a six-mile-an-hour breeze is blowing at street level. Such a gas cloud may be expected to drift three miles downwind in the first 30 minutes and to carve a path 10 to 12 square miles in area.

"People caught on the streets without access to gas masks or gasproof shelters would become casualties over more than 90% of this path. The highest concentra-

tions of gas would occur at the downwind edge of the impact area, and the largest numbers of severe and fatal cases would occur in the impact area and in the first mile of the downwind path.

"About half as many such cases would occur in the second mile downwind, and severe cases, but few fatalities, would occur in the next one-half mile. In the area three miles downwind moderate and mild cases would predominate. Beyond that area the effects would be relatively trivial, and successful escape should be possible.

"If the attack were delivered during a rush hour, when large numbers of people are on the streets, there would obviously be thousands of casualties.

"However, people in buildings are not immune to the gas cloud. It is probable that high explosive bombs will be dropped on the impact area at the same time as the gas bombs. Glass breakage and structural damage would render the lower floors of these buildings practically as susceptible to gas as the streets.

"Unless systems that circulate the air in buildings (heating, ventilating, air conditioning) are turned off promptly, floor levels above the top of the gas cloud will also be infiltrated with gas."

The public should be taught to go promptly to gas-proof shelters if these are available within easy reach, Col. Wood advises. Otherwise, refuge should be sought on the upper floors of tall buildings. Windows and doors should be shut and air circulating systems of all types shut off.

Atropine injected into the muscles and artificial respiration given early, are the life-saving measures for nerve gas casualties.

Science News Letter, April 28, 1951

## CHEMISTRY

## New Vitamin Discovered, Necessary to Reproduction

► A NEW vitamin or helper to a vitamin exists in wheat germ oil. Without it, rats and presumably other animals including humans cannot raise their young successfully.

It is not vitamin E in wheat germ oil. It may not be a vitamin but a chemical that helps some known vitamin do its work, said the University of Illinois scientists, Dr. B. Connor Johnson, K. W. Keane and Eva M. Cohn, in their report of this new substance to the American Chemical Society in Cleveland.

Science News Letter, April 28, 1951

## EFFECTS OF NERVE GASES

You can tell nerve gas casualties by these symptoms. If such symptoms are not present in exposed persons within a minute or two, nerve gases can be ruled out.

1. Immediate and great difficulty in breathing.
2. Pupils of eyes constricted to pinpoint size.
3. Lips and entire skin rapidly turning blue.
4. Nausea and vomiting.
5. Unconsciousness with tremors or shakes.
6. Convulsions, until breathing stops and a flabby paralysis sets in.
7. Profuse discharge from the nose, excessive saliva, lack of control of bladder and bowels.

Science News Letter, April 28, 1951

## GENERAL SCIENCE

## Five Ways Possible for Using Energy of Sun

► FIVE POSSIBLE ways to use our most important natural resource, the energy streaming down on us from the sun, were reported by Dr. Farrington Daniels of the University of Wisconsin at the meeting of the American Philosophical Society in Philadelphia.

The five ways are: 1. heating and heat storage, both domestic and industrial—many sun-heated houses are now being tested in the United States; 2. solar engines; 3. direct conversion into electricity; 4. photochemical reactions; 5. photosynthesis and agriculture. Dr. Daniels suggested possible research programs for each of these ways of using solar energy.

Science News Letter, April 28, 1951

## INVENTION

## Typing Ribbon Re-Inked To Increase Useful Life

► THE USEFUL life of a typewriter ribbon is greatly increased by an improved re-inking device which brought Robert W. Harris, Garden City Park, N. Y., patent 2,549,196. Rights are assigned to the Western Union Telegraph Company, New York City. An important application will be on telegraph printers.

The life of the usual typewriter ribbon usually ends when its ink has dried out, even if the fabric is still in good condition. Several re-inking devices have been used, but they all have faults, according to Mr. Harris, which are eliminated in his invention. His device is readily attachable to and detachable from the conventional ribbon spool. Its inking pad rotates only when the ribbon is advancing during operation of the machine.

Science News Letter, April 28, 1951