

CURRENT OPINION

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DEALING DEATH FROM THE AIR THREE DROPS AT A TIME

DROPPING gas bombs from high altitudes is only the beginning of the destructive use of gas by airplanes. In the next war, no matter how soon it may occur, a deadly composition called Lewisite will be used, says Brigadier-General Amos A. Fries, chief of the Chemical Warfare Service, with far more devastating effect than that of mustard gas. Like mustard gas it produces casualties by burning, but, unlike mustard gas, the burns from a quantity equal to three drops will usually cause death and it can be manufactured at the rate of thousands of tons per month. As a protection against Lewisite, however, the Chemical Warfare Service is working on a wearing apparel and mask that will keep it out just as clothing has been devised to keep out mustard gas. But this new agent of death is so powerful in its penetrating ability that even if clothing be made that will protect the wearer it must cover every inch of skin from head to foot. Consider, writes General Fries, in the *New York Globe*, the burden put on any army in the field that would have to wear continually such complete protection.

The navy, we are told, is studying how to make war vessels gas-proof. The toxic smokes may be dropped from airplanes or turned loose from under water by submarines. In either case they will give off smokes over wide areas through which ships must pass. Any defects will let these toxic smokes in and will force every man to wear a mask. Airplane bombs will come raining down on the ship or alongside of it either with toxic smokes or other terrible gases. White phosphorus that burns and cannot be put out wet or dry will be rained on ships.

A program is being arranged by the Chemical Warfare Service for the most important bombing test ever made in this country. Toxic smokes, phosphorus and a powerful tear gas in great quantity will be used and "we are going to put our own men, man for man, with men from other services on the ships employed, each equipped with a gas mask and protectively clothed:

"The use of gas against landing parties or to aid landing parties has come up in many ways. Our studies to date indicate that gas

is a greater advantage to the defense against landing parties than to the offense. Mustard gas and the like may be sprinkled from airplanes, and while it will not float long on the water, it will float long enough to smear any small boats attempting to land. It can be sprinkled over all the areas that landing parties must occupy. Mustard gas may be placed in bombs or drums around all areas that are apt to be used as landing places and exploded in the face of advancing troops....

"We have to-day at Edgewood Arsenal some 1,400 tons of poisonous gases, not including chlorine. Those gases have been manufactured, practically every ounce of them, for three years, and are yet in almost perfect condition. Our chemists believe they can be kept in the future for ten years and perhaps longer. Our gas shells then will have the life almost of the modern battleship, while the cost of a million will be but a fraction of the cost of a battleship.

"Our masks, too, we believe can be kept for at least ten years. Experience to date indicates that rubber deteriorates mainly through the action of sunlight and moisture, that cause oxidation or other change in the crystalline structure of cured rubber. Accordingly we are putting up masks to-day in hermetically sealed boxes. It is thus evident that we can store a reserve of masks and gases in peace the same as other war materials."

As to the effectiveness of phosphorus and thermit against machine-gun nests, there is no recorded instance where our gas troops failed to silence German machine-gun nests once they were located. In future, we read, gas troops will be able to put off the majority of all cloud gas attacks even with toxic smoke candles.

If, says General Fries, we have practically no masks when war breaks out it will be nine months before an army of 1,000,000 men can be equipped and trained in its use, and in that nine months the first campaign will be over and the war won or lost or at a stalemate.

Masks cost about \$10 apiece to-day, less by far than rifles. Their life under use, with slight repairs, is probably three years, a full enlistment, or as long as the life of most rifles. The cost of training and replacing the canisters is far less than the cost of rifle ammunition. We should, in the opinion of General Fries, have a reserve of 500,000 masks besides enough to equip the army, which, according to our modern definition, includes the National Guard, the regular army and organized reserve—say, 400,000; a total of, say, 900,000 masks at a cost of \$9,000,000, one-fourth the cost of a battleship.