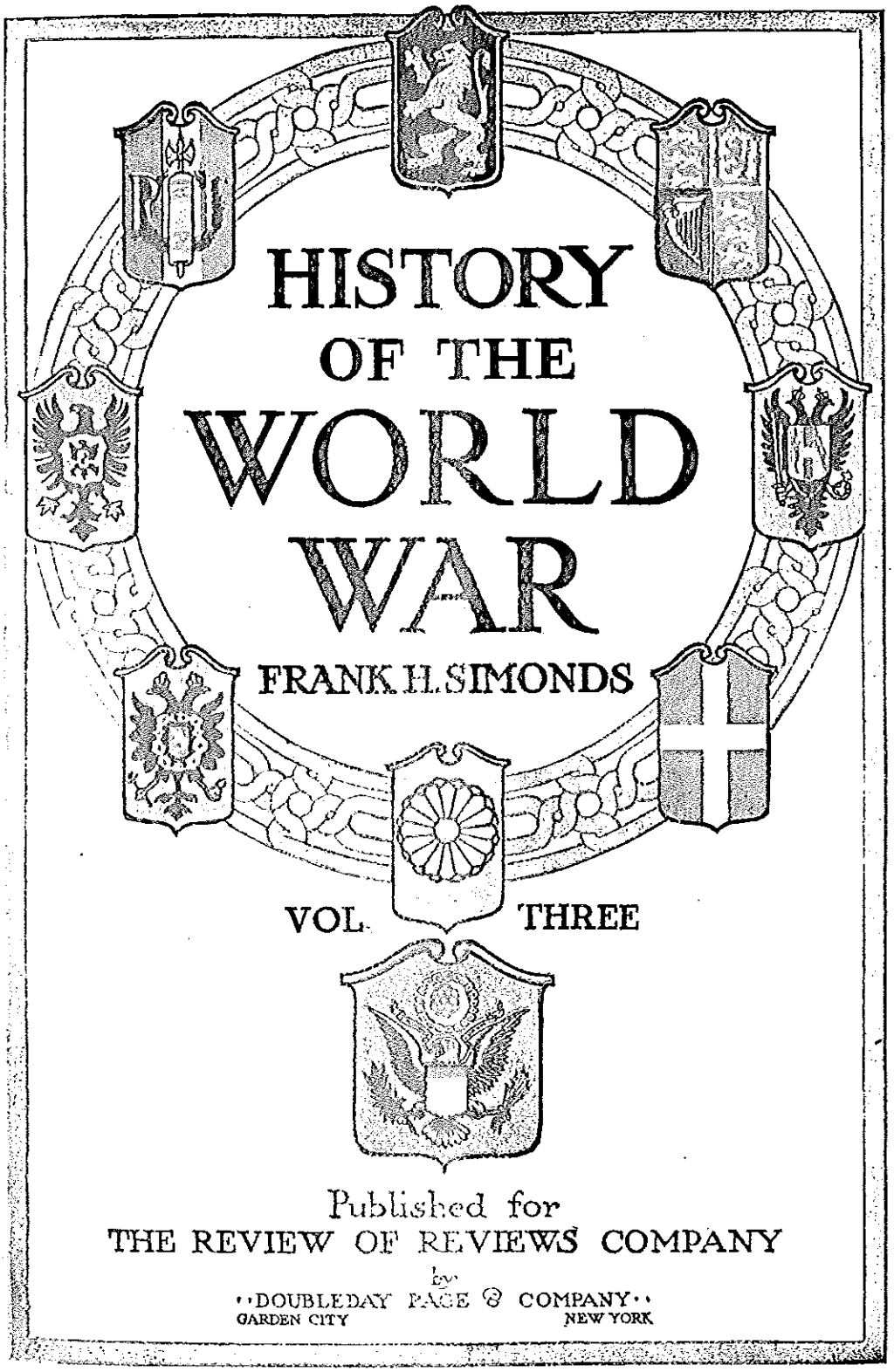

Published for
THE REVIEW OF REVIEWS COMPANY
by
DOUBLEDAY PAGE & COMPANY
GARDEN CITY NEW YORK

1919

VIII

THE FIRST GERMAN GAS ATTACK AND THE NEW GAS WARFARE*

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In the early part of April, 1915, we were in trenches opposite Messines. We enjoyed the usual morning and evening "hate"; we sniped and were sniped at; we patrolled and wired and attempted to drain away the superfluous water, and there was much mud and humour and expectancy. It is true there were no Mills grenades or Stokes mortars or tin hats, but trench warfare was not so very different then from what it is now—with one great exception: there was no gas. And there were consequently no respirators to carry day and night. It is almost impossible now to remember the time when one did not carry a respirator in the trenches. Somehow it makes you feel quite naked to think of it—and yet there we were, imagining we knew what war really was like!

The newspapers we got at that time were generally a good many days old, and censored at that, and our chief source of news about the war in other people's parts of the line was a summary of so-called information issued from headquarters, which percolated down to the battalion and, like every other summary before and since, went by the name of "Comic Cuts."

Somewhere about the middle of the month we heard that in somebody else's summary had appeared a paragraph to the effect that a deserter from the German lines up in the salient had told a cock-and-bull story of how they intended to poison us all with a cloud of gas, and that tanks full of the poison gas were already installed in their trenches.

THE FIRST APPEARANCE

Of course nobody believed him. The statement was "passed for information for what it is worth." And as nobody ever believed anything that appeared in Comic Cuts in any case, we were not disposed to get the wind up about it. And then, about a week later, on April 22, 1915, was launched the first gas attack; and another constant horror was added to an already somewhat unpleasant war. Details about the attack are still somewhat meagre,

*Courtesy *Saturday Evening Post*, *World's Work* and George H. Doran Company as publishers of "Gas and Flame."

for the simple reason that the men who could have told much about it never came back.

The place chosen for the first gas attack was in the northeast part of the Ypres salient at that part of the line where the French and British lines met, running down from where the trenches left the canal near Boesinghe. On the French right was the — Regiment of Turcos, and on the British left were the Canadians.

Try to imagine the feelings and the condition of the coloured troops as they saw the vast cloud of greenish-yellow gas spring out of the ground and slowly move down wind toward them, the vapor clinging to the earth, seeking out every hole and hollow and filling the trenches and shell holes as it came. First wonder, then fear; then, as the first fringes of the cloud enveloped them and left them choking and agonized in the fight for breath—panic. Those who could move broke and ran, trying, generally in vain, to outstrip the cloud which followed inexorably after them.

The majority of those in the front line were killed—some, let us hope, immediately, but most of them slowly and horribly. It is not my intention to try to play upon feelings, but those of us who have seen men badly gassed can only think with horror of a battlefield covered with such cases, over which the Germans subsequently advanced.

The Canadians on the British left fared both better and worse than the French coloured troops. Only their left appears to have been in the main path of the poison cloud, but there is little doubt that in the thickest part those who did not escape either to a flank or to the rear were killed on the field. Thousands of those in the support trenches and reserve lines and in billets behind the line were suffocated—many to die later in the field ambulances and casualty clearing stations.

Of those on the fringe of the cloud many saved themselves by burying their faces in the earth. Others wrapped mufflers round their mouths and noses or stuffed handkerchiefs into their mouths. Many of these men were saved by their presence of mind, for though gassed at the time they recovered later, after treatment in the hospitals.

CANADIAN PLUCK

It is on record that the Canadians, with handkerchiefs or mufflers tied over their mouths, continued to engage the Germans and that a number of them actually charged back through the gas cloud in an endeavour to reach the enemy. What became of them is not known.

In this way a big gap was made in the Allied lines, through which the Germans advanced. But the Canadians quickly formed a flank on the left and stoutly engaged the enemy, with such success that they first slowed up and

then brought to a halt the advance of the Germans. It was this prompt action and gallant resistance that probably saved the day.

Whether the German High Command had underestimated the probable effect of the gas and had arranged for only a limited objective past which the local commanders did not take the initiative to go, or whether the latter were unaware of the real weakness of the Canadian line is unknown. The fact remains that they did not press their advantage to the full. They had taken the Allied front line on a wide front, killed or captured thousands of men, and taken sixty guns, and seemed to have a clear way through to Calais; but they were stopped by the pluck of a handful of Canadians. Reinforcements of men and guns were rushed up, and the immediate danger was over.

It is a matter for surmise how long the Germans had been planning and preparing their use of gas. The idea may have been a pre-war one, but it is difficult to believe that a project deliberately planned for years would not have been developed so as to make it a sure winner—for it could easily have been that. If, for example, they had made the attack over a wider front with such strong gas clouds as are now used nothing could possibly have stood against them. Every living thing to a depth of fifteen miles or more could have been killed.

On the other hand, it is impossible to imagine the use of poison gas as having been decided on without better preparation having been made to meet retaliation, unless it was assumed either that the use of the gas would be decisive or that at any rate the war would be finished before the Allies could hit back with the same weapon.

LATER DEVELOPMENTS

During the last two years, and particularly during the last year, the use of gas shell by the enemy has so increased in importance and extent as to indicate that the Germans regard this weapon as one of the most effective in their possession. At the present time practically all their gas attacks are carried out by means of shell. For the time being the "cloud" or "wave" gas attack appears to be in the background. It has been estimated that more than one fourth and possibly something like a third of *all* the shell of all calibres fired by the Germans are filled with poisonous gases. Often an intensive bombardment, lasting for hours and in which anything up to 50,000 or 100,000 shell are employed, is composed to the extent of 60 per cent., or even wholly of gas shell. Many months before the recent German "Push" a French officer estimated that on one corps alone the Germans had fired more than a million gas shell in under thirty days.

However, even these vast numbers of gas shell are not sufficient to keep the air poisoned all the time along the whole front. But when the gas does come, it comes in such quantities that there is no mistaking it. This is be-

cause, in the words of the official German instructions to their artillery on the use of gas shell, "concentration of gas shell, as regards time and area, namely, the production of the densest cloud on the target sector, is essential to good results. Single shots are valueless."

All calibres of guns, howitzers, and trench mortars are used by the Boche to fire gas shell. This gives him every variation in range from a few hundred yards up to miles, and with the largest shell, allows of more than fifty pounds of gas to be forced into the atmosphere from each round fired. And the gases used are so potent that they are effective when diluted with many thousand times their volume of air.

The great advantage of the gas shell is that it combines the accuracy of fire of the ordinary shell with a much wider killing range and is much more lasting. In other words, if skilfully employed, the gas, to a limited extent, becomes continuous in the atmosphere, both as regards time and space. It consequently has greater opportunity for putting men out of action than high explosive or shrapnel, which have no persistence and the effects of which may be very much localized. Owing to the ability of gas to move around corners the gas shell can take on targets which are denied to the high explosive or shrapnel.

To take only one example: Against a gun which is well placed and dug in, it is necessary that a "direct hit" be registered on it with high-explosive shell, if it is to be silenced or destroyed. Not so, however, with the gas shell. If well placed with regard to the direction of the wind, the gas from the gas shell will envelop the whole battery position, probably put some of the gunners out of action, and will compel the remainder to wear their gas masks. This reduces their fighting efficiency very considerably.

As now constructed, gas shell are almost exactly similar to the high-explosive shell of the same size, except that the space occupied by the explosive is taken up by the chemical filling. They are generally constructed so that they will burst on percussion.

At various times more than twenty different poisonous compounds have been used by the Germans in their shell or hand grenades, but many of the fillings are now obsolete. The original fillings were lacrymators or tear-producers like xylyl bromide or brom-ethylmethylketone, but these have now practically disappeared as has bromacetone, another powerful tear-producer which was used in shell and hand grenades. The very small amount of lacrymator now in use consists of a material called phenylcarbylamine chloride, which probably shows that the extensive use of bromine compounds by the Germans has begun to tell on their bromine supplies, big as they were in the Stassfurt deposits before the war.

At present the Germans use only three kinds of shell, though it is true that certain variations exist in each class. The shell of each type are distinctively

marked with different coloured crosses from which the gases themselves are consequently named. The three kinds are the Green Cross, the Yellow Cross, and the Blue Cross. The Green Cross gas is the chief killing gas. Chemically speaking, it is trichlormethylchloroformate. It is a most powerful asphyxiant and is the same kind of poison as the celebrated *phosgen* which is used in the cloud attacks and is also filled into trench mortar bombs. Like phosgen it has a "delayed" action and a man slightly gassed with it may think he is all right and then be taken ill and possibly succumb several hours later, especially if he has done any fatiguing work in between. A little of the Green Cross gas goes a long way, but it is not very persistent and will disappear from a gassed neighbourhood fairly soon after the bombardment has ceased unless the weather is very cold.

There are two variations of the Green Cross shell, called by the Germans Green Cross 1 and Green Cross 2. The former is the usual poisonous shell of to-day and contains the trichlormethylchloroformate mixed with a proportion of chloropicrin, a material which in itself is very poisonous and lacrymatory and which in smaller doses is apt to cause severe sickness—hence its nickname of "vomiting gas." The Green Cross 2 has the same basis but is mixed with a proportion of phosgen and the "sneezing gas" of the Blue Cross shell.

MUSTARD GAS

The Yellow Cross gas is the celebrated "mustard gas." It is the gas, *par excellence*, for persisting. It will hang about, even in the open, for hours and possibly for days and if it once gets into a dugout, the latter is very difficult to ventilate even with the aid of fires. Mustard gas is not primarily a "killing" gas though it will do that as well if breathed for a long time. Its chief value lies in the fact that, though it can be detected by its mustard or garlic-like smell and by the irritation it causes to the eyes, nose, and throat it is not sufficiently objectionable at first to cause any alarm. The effects come on later—possibly hours later—and develop in intensity until the man affected becomes a definite, if not permanent, casualty. The parts chiefly affected are the eyes and throat. The eyes suffer excruciating pain, swell up and discharge and, in fact, become temporarily blind. The throat and lungs get inflamed and corroded and bronchitis and possibly pneumonia are likely to be developed.

The mustard gas also burns the skin, especially if actual drops of liquid come in contact with it, and popular attention has been fixed more on this aspect of the mustard gas than on any other. As a matter of fact, however, the skin burning is the least important poisonous property and in itself is responsible for very few casualties. The chief effects are on the eyes and the respiratory passages.

As mustard gas will produce its effects in very low concentrations and as it

is so very persistent, one can readily understand that it is a weapon of very great military value even if the casualties it causes are not so severe as those of the asphyxiant gases like the Green Cross.

The third member of the trilogy, the Blue Cross Shell, is quite different from the other two. For one thing, the active component is a solid and for another the shell itself is a high-explosive shell of almost full violence, the solid poison being embedded in the fused T. N. T. enclosed in a glass bottle or in some cases actually mixed up with a special explosive. When the shell bursts the solid chemical is atomized and distributed into the atmosphere in the form of tiny particles which even in very small concentrations cause intense sneezing and are also very irritant to the eyes and lungs. Chemically speaking, the substance is diphenylchlorarsine, but it is generally known simply as "sneezing gas." Apparently the enemy hoped by disguising its presence with the high explosive to attain a surprise effect and to have men gassed before they realized that gas shell were about.

It will have been realized that the German gas shells are not really gas shells in the sense that they contain gas under pressure. Two of the "Coloured Crosses" are liquids—the most volatile component of which is less volatile than water—and the third is a solid.

Only after the explosion has particulated the poison and given it every opportunity to vaporize can any appreciable concentration of gas be present in the air. In the case of the solid "sneezing gas" the fine particles probably remain more like a smoke and are hardly gasified at all.

To obtain their maximum effect the gas shell are dropped just to windward of the target so that the gas is driven over the position by the action of the prevailing wind currents. For this purpose it is essential that the behaviour of the wind be thoroughly studied, not only at the battery position, but also as to its likely behaviour at the target end. Gas bombardments on small targets are, therefore, conducted in consultation with the local officers of the Gas and the Meteorological Services. For longer bombardments local variations in wind direction due to contour or other features are not so important.

With regard to the mustard gas the German Staff insists that full use be made of its slight smell and its non-immediate effects. To hide its presence as far as possible until it is too late, it is frequently fired (at any rate at first) in conjunction with high explosive. From two to four Yellow Cross shell are fired to one explosive shell.

Owing to its great lasting power the Boche makes the mustard gas his chief neutralizing agent. By firing it on our batteries, our gathering and halting places, on our reserve lines, and so on, he compels our men to wear their masks—it may be for many hours on end—not necessarily during the fighting, but before they go up to the line—with the idea of causing them losses, paralyzing their activity, and wearing them out so that they will not arrive

at the fighting with the freshness and vigour necessary to meet or to make an assault.

Where an infantry advance is to be made the Germans generally choose targets—particularly our artillery—owing to the possible danger of gassing their own troops, but this is not always possible and in certain cases they have used, simultaneously with their gas shell, shell filled with red and purple dyes in themselves harmless, and intended to indicate contaminated shell holes to the advancing infantry so that the gassed areas can be avoided.

As a rule, however, the front-line troops and other close-in targets are chiefly treated with Green Cross shell, frequently mixed up with Blue Cross or sneezing gas so as to prevent adjustment or cause displacement of the respirators. Blue Cross shell are seldom used alone. This "non-persistent" gas bombardment of the front line generally ceases at least one hour before the assault, but the "persistent" gas bombardment may continue throughout the operation.

After a Green Cross bombardment evil-smelling but harmless gases may be used so as to induce our fellows to continue wearing their masks although the advancing enemy will know that he can do without them and so on. But these are minor points in a much bigger game, the extent and importance of which are steadily increasing.