

## A SPECIAL RESPIRATOR.

The fumes of modern shells are very harmful for the men exposed to them. The special respirator shown in our illustration is made so that men exposed to these fumes can breathe a purer air. There is an ingenious little valve on the top, which opens to allow the air to come out when exhaling, but closes and prevents ingress during inspiration.

But it is not only the fumes of shells with which the Allies have to contend. The military correspondent of a contemporary states that "the use of such shells as were employed by the Germans in the action north of Ypres can only be classed with the poisoning of wells or the dissemination of the germs of plague or cholera. Filled with highly-compressed carbon-monoxide, or some similar heavy and deadly gas, their employment seems to have been successful in compelling the French to retire for a short distance. But, regard for conventions apart, no army would use these projectiles unless its chiefs believed the position to be desperate, for it is perfectly easy for an enemy to retort in kind."

It is pointed out that the employment of this diabolical device is in direct contravention of the Hague Convention, which was signed by Germany among other nations. The declaration relating to the use of asphyxiating gases sets forth that "the contracting parties agree to abstain from the use of projectiles, the object of which is the diffusion of asphyxiating or deleterious gases."

The phenomenon of asphyxiation may be divided into three distinct classes, arising in the main from the following causes:—

(1) Asphyxiation resulting from the initial velocity (a) of the projectiles and the rapidity with which these are fired; (b) the "bursting height" of the shell and the ricocheting power prior to explosion.

(2) The material employed in the modern common and shrapnel shell.

(3) The material employed in grenades or bombs now in use by the Germans in the case of projectiles the sole objective of which is asphyxiation.

It has been suggested that the gas used is carbon monoxide, but this is controverted by

another authority on the ground that under normal conditions carbon monoxide is slightly lighter than the air, and, when expanded by heat is so much lighter, that the air disturbance caused by the explosion leads to rapid upward diffusion and the gas is never present in dangerous quantities at the breathing level. A French official dispatch states that "A dense yellow smoke, emanating from the German trenches and blown by a north wind, produced an effect of complete asphyxiation upon our troops which was felt as far as our second line positions."

This description is consistent with the appearance and effect of sulphur dioxide which is a true asphyxiant, four parts in 10,000 of air rendering it unbreathable.

But whatever the gas may be it is essential that its effect should be counteracted, and the use of a respirator such as that shown in our illustration

becomes of the utmost importance. A still simpler device is used by the workmen in bleaching chambers, who tie a strip of wet flannel impregnated with carbonate of soda over the mouth and breathe through it, allowing the air to return through the nostrils.

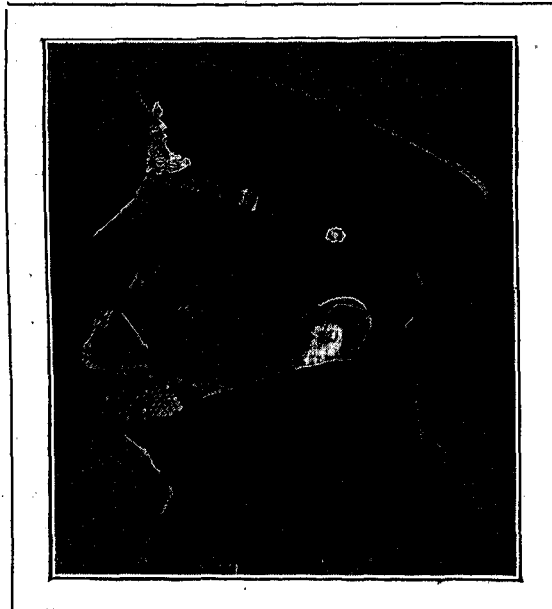
Late on Tuesday night the War Office issued the following communication:

As a protection against the asphyxiating gases being used as a weapon of warfare by the Germans, supplies of one or both of the following types of respirator are required by the troops at the front. Either can be made easily in any household.

First, a face piece (to cover mouth and nostrils), formed of an oblong pad of bleached absorbent cotton wool, about  $5\frac{1}{4}$  in. by 3 in. by  $\frac{3}{4}$  in., covered with three layers of bleached cotton gauze, and fitted with a band, to fit round the head and keep the pad in position, consisting of a piece of half-inch cotton elastic 16 in. long, attached to the narrow end of the face pad, to form a loop.

Second, a piece of double stockinette,  $9\frac{1}{2}$  in. long and  $3\frac{1}{2}$  in. wide in the centre, gradually diminishing in width to  $2\frac{1}{2}$  in. at each end, with a piece of thick plaited worsted about 5 in. long, attached at each end, so as to form a loop to pass over the ear.

These respirators should be sent in packages of not less than 100 to the Chief Ordnance Officer, Royal Army Clothing Department, Pimlico.



Photo, Clark & Hyde.

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