

ANTI-AIRCRAFT SIGHT FOR RIFLES DESIGNED BY M.I.D.

Referred to Committee by D.D.G.M.D.(S.)

Description.—This consists of a square plate of transparent celluloid with a handle attached. The handle is slipped in under the leaf of the back-sight from the left side of the rifle. The slide must be down to 200 yards.

The aperture sight must be raised, and the extension with aperture drilled in it clipped to it just below the original aperture as high up as it will go.

Aim is taken through this new aperture, and through one of the squares on the celluloid plate on to the aircraft.

In addition to this attachment to the rifle is a card in the possession of the platoon leader with similar squares on it, corresponding to the squares on the sight and numbered similarly. Over these squares are ruled circles and lines radiating clockwise. The outer and inner circles are dotted, the other four are continuous lines. The four continuous circles represent the amount of lead or deflection necessary for an aeroplane travelling 80 miles an hour at the following distances:—

	400 yards	inner	continuous	line.
800	„	next	„	„
1,200	„	„	„	„
1,600	„	outer	„	„

For an estimated speed of only 60 miles an hour the four innermost circles, including the inner dotted circle, should be taken for the same distances, and for a speed of 100 miles an hour, the outer four lines including the outer dotted one. The procedure is then as follows:—

The platoon leader holds up his card at arm's length, in such a position as it would be if it were fixed on a rifle as the celluloid squares are. He treats the aeroplane as if it were flying into the centre of the circles on the card and notes along which line the aircraft is apparently flying. Thus for example: Supposing the aeroplane is flying in along the 10 o'clock line, at an estimated speed of 80 miles an hour, at a distance of 1,600 yards, the aim he would direct his platoon to take would be 21, if no allowance were made for elevation. This allowance is, however, necessary at the longer distances and the lower angles. The allowance necessary is contained in the following small table, in terms of the size of the ruled squares:—

ANGLE OF SIGHT ALTITUDE.				45°.	60°.	75°.
Range—						
1,600	...	...		1	$\frac{3}{4}$	$\frac{1}{3}$
1,200	...	...		$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$
800	...	...		$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{8}$
400	...	...		$\frac{1}{8}$	0	0

Thus, in the example already given, to correct the aim for elevation for an aeroplane at 45°, the allowance of one whole square must be made, and the platoon would be ordered to take the number .31 as their sight. No other allowance is necessary and the platoon would fire with this sight.

Another Example.—An aeroplane coming straight at the platoon, distance 1,200 yards, speed 100 miles per hour, angle of sight 60°. Correct aim 73/74, when aim would be taken on the line between the figures 73 and 74 on the squares.

Report by Experimental Officer, Hythe.

1. Putting aside the general question of the value of small-arm fire against aircraft it appears very doubtful whether this sight represents the best system of assisting the firer of a rifle or machine gun.

It involves :—

- (a) The estimation of the approximate range.
- (b) Subsequent issue of fire orders.
- (c) Selection by the firers of the named sighting point, aiming and firing.

In view of the complications of the fire direction card and of the sight, it would appear to be unlikely that these operations would be completed before the change in position of the target was so great that the calculations would be vitiated.

For this reason, except at very close range, it would appear that the best chance lies in the direction of a system of combined sights and combined elevations.

2. It would be advantageous, however, to supply some system of allowing for deflection due to movement of aircraft, and, if advisable, for combining such deflections—and probably the German Flieger Korn or something similar would be suitable.

3. As to application to machine guns—once fire is opened the chances of hitting with rifles is greater than with machine guns. Machine guns do not have any advantage in speed of opening fire at high angles, as changes in mountings are involved; the only advantage is speed in communicating orders. It would seem to be preferable to use the fixed mounting of the machine gun as a means of keeping a zone of fire through which the aircraft have to pass rather than to attempt to follow its movement. Therefore I do not believe such a sight as this is likely to be of use for machine guns.

4. Most of the above is, no doubt, a matter of opinion. If it is thought worth while to try a sight of this pattern it is suggested :—

- (a) That the complication should be reduced by having only three ranges and one speed—the fire commander being advised to use the adjoining square if the speed is thought to be higher or lower.
- (b) That a better system of attachment be devised. Attachment to the aperture sight is bad, as this component has been temporarily abandoned. Attachment to the backsight interferes with the use of the backsight in the ordinary way and would prevent the air sight being always ready for use.
- (c) That greater strength be provided. The present specimen has been broken in the course of ordinary handling and this would soon occur in practice.

The sample is returned herewith.

ACTION TAKEN—

Reported to D.D.G.M.D.(S.).

The Committee endorse the views expressed by the Experimental Officer, Hythe, and recommend that this sight be not adopted for the following reasons :—

- (1) The sight, as designed, would be very liable to get damaged and broken, the celluloid square being particularly susceptible to damage.
- (2) The sight would be an inconvenience on the rifle if permanently affixed, and if kept separate it would take some time to affix the sight.
- (3) In practice the firer would find difficulty in picking up through the aperture the square which he needed to sight with.
- (4) The sight must be kept in a position at right angles to the barrel of the rifle to be of value; owing to the size of the celluloid card this is liable to get displaced, and consequently to be of little value.
- (5) It is probable that some interval of time must elapse between the giving of the order by the platoon commander and the time at which the first shot is fired. This space of time will be sufficient to vitiate the value of the sight, for the target will have moved a considerable distance in that period of time.
- (6) The allowances necessary for range and angle of sight are a complication, and will probably cause errors.

On the whole, it is not recommended that the sight be introduced, as it is not likely to prove of practical value.

Recommendation approved 18.2.16