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Oct 43  
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Ref: W4/2097.

Note on sighting of Bren L.M.G.

In a recent trial with Brens firing at medium ranges (1,000 - 2,000 yards) it was noticed that both Mk. I and Mk. II guns which had been carefully zeroed at 100 yards were apparently sighted too high, and it was necessary to set the sights at about 100 yards less than the true range, to secure hits on the target. In order to discover the reason for this, the quadrant elevation required for a series of ranges was worked out both on the old ballistic law, using the data for the Mk. VII bullet given in 'Notes on the external ballistics of small arms, 1941' and on the new ballistic law using data supplied by the Ordnance Board. In addition, the actual quadrant elevation given by the sights on the Mk. I and Mk. II guns was measured by a rough method which was estimated to be accurate to 2 minutes. The results are as shown in the following table; the values given for Mk. VII amm. in the Vickers M.G. range tables are also included:-

Range.	TE old law.	TE new law.	TE range table.	TE Bren MK. I measured.	TE Bren MK. II measured.
200 yds.	6'	6'	6'	6'	6'
500 yds.	19'	20'	21'	24.5'	19'
1,000 yds.	1° 3'	55'	1° 1'	1° 9'	1° 1'
1,500 yds.	2° 19'	2° 5'	2° 14'	2° 20'	2° 16.5'
1,800 yds.	3° 22'	3° 1'	3° 20'	3° 29'	3° 20'
2,000 yds.	*	3° 57'	4° 15'	4° 32.5'	-

\* table in 'Text book of Ballistics' not sufficient to calculate this value.

It will be noticed that the range tables, the old law and the Mk. II Bren agree sufficiently well. The Mk. I Bren is rather irregular (due possibly to the design of the backsight). The new law, however, gives considerably less QE's than the tables or the guns. Assuming that the trajectory is given most accurately by the new law, a satisfactory explanation of the anomalies noticed in shooting is provided.

It is not possible, with the facilities available, to check these apparent anomalies more thoroughly, and in any case this is the province of the Ballistic experts. We do, however, consider that the discrepancies are sufficiently marked to warrant a fuller investigation. It seems that up to 1,000 yards the inaccuracies are probably not great enough to cause trouble, but beyond that range they may be serious. This is particularly important as there is now a tendency to use the Bren at longer ranges, when the MMG is not available. If the sights can not be corrected, it should be sufficient to issue an instruction to Bren gunners to set their sights a suitable amount low at the greater ranges.

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