(iv) *Hispano 20-mm. Equipment.*

A few of these weapons only were deployed and, owing to shortage of ammunition and lack of tracer, were not found very effective.

5. *Part Played by Searchlights.*

(a) *Day.*

Owing to the close spacing of Searchlight sites they formed a valuable source of intelligence and rapid reports were able to be made upwards of casualties to friendly and enemy aircraft, pilots descending by parachute and other incidents of importance. In addition, they have been able to provide valuable reports of isolated enemy aircraft, trace of which had been lost by the Observer Corps.

The value of the A.A.L.M.G. with which each site was equipped cannot be too highly stressed, and during the 4 months under review no less than 23 enemy aircraft were destroyed, confirmed, by A.A.L.M.G. at Searchlight sites (this includes a few in which A.A.L.M.G. at H.A.A. sites also shared). Prisoner of War reports showed that it was not generally known by the German Air Force pilots that Searchlight sites were equipped with A.A. defence.

(b) *Night.*

Tactical employment of Searchlights at night was by either—

(i) 3-beam rule, in which 3 sites only engaged the target; or

(ii) by the Master-beam system, in which one Master beam per three sites exposed and was followed by the remaining two beams acting under the orders of the Master beam.

The decision to engage was the responsibility of the Detachment Commander, and no direct tactical control was exercised from Battery Headquarters.

In the early stages of the Battle of Britain night activity was on a small scale and Searchlights had few raids to engage. Some illuminations were effected, but throughout it was difficult, by ground observations, to assess the actual numbers. Frequently illuminations were reported by sites not engaging the targets. The difficulty of illumination was increased as the number of night raids increased, owing to the difficulty of sites selecting the same target.

There is evidence to show that Searchlight activity, whilst being difficult to measure, forced enemy aircraft to fly at a greater height than they would otherwise have done. Bombs were frequently dropped when enemy aircraft were illuminated, which were possibly intended to discourage Searchlights from exposing. Evasive tactics by the enemy consisted of changing height and speed continuously to avoid being illuminated rather than a violent evasive action upon illumination.

6. *G.L. Equipment.*

At the beginning of August experiments had just been completed to determine whether G.L. equipment could satisfactorily be used as a Ships detector. Apart from the results of this experiment three other facts emerged:—

(*a*) The G.L. principle was of considerable value when used in conjunction with Searchlights.

(*b*) That G.L. sets sited in an anti-ship rôle, *i.e.*, on the top of a cliff, were of considerable value in detecting low-flying aircraft.

(*c*) It showed the value of small R.D.F. detectors within the main R.A.F. chain, in plotting enemy aircraft direct to sectors.

At the beginning of the Battle of Britain, 21 G.L. sets were in use by 6th A.A. Division, and by October this number had been increased by another 14.

(i) *G.L. at Gun Stations.*

The main function of these equipments was to provide data for Unseen target engagements as described above. One other function of these sets is worth special mention.

Two sets were specially sited on the cliffs at Dover to pick up targets at low level. These sets were able to register aircraft taking off from the aerodromes immediately behind Calais, thereby obtaining information considerably earlier than could be provided by the main R.D.F. station on the coast. This information was reported back to Uxbridge Operations Room by a priority code message which indicated the approximate number of aircraft which had taken off and their position. This report was received some 5/6 minutes before it could be received through the usual R.D.F. channels, and therefore enabled the Controller to order his Fighters off the ground correspondingly earlier than would otherwise have been the case.

This system, which was also adopted somewhat further along the coast in the neighbourhood of Beachy Head, was of all the more value as the enemy were heavily bombing the R.D.F. stations, which were consequently sometimes out of action.

(ii) *G.L. Stations with Searchlights.*

During the latter stages of the offensive, when the night raids on London commenced, it was realised that the G.L. would be of considerable assistance to Night Fighters. An " elevation " attachment to the equipment was produced and this enabled height to be obtained, which in conjunction with a plotting scheme at S.O.R., enabled Searchlight beams to be directed more accurately on a target to assist night fighters. The results obtained from this were not completely satisfactory, but they showed the way to the development of the present system.

(iii) *Mine-Laying Aircraft.*

It was found that the experiments conducted in the ship-detector rôle could be very satisfactorily applied to detecting mine-laying aircraft which flew in at a height too low to be picked up by the C.H. Stations. It enabled accurate tracks of these aircraft to be kept which were afterwards passed to the Naval Authorities, who were then able to sweep up the mines which had been laid by these aircraft.

7. *Statistics.*

Careful records have been kept of ammunition expenditure and enemy aircraft shot down, and details are shown in Appendix " C."

The following points are worthy of note:—

(*a*) The total enemy aircraft Destroyed, Confirmed Category I by 6th A.A. Division during the months July-October 1940, inclusive, was