

Dover, heavy engagements were frequent and several enemy aircraft were destroyed. It was at this time that Dover began to be "Hell-fire Corner" for German pilots.

36. The second phase opened on August 12th, 1940, when the enemy began to attack the coastal airfields. Reference has already been made to the importance of anti-aircraft defence for airfields and, though many raiders were shot down in these attacks, considerable damage to the airfields was in fact done and many were temporarily put out of commission. Especially in the early attacks of this phase the standard of training in the Light anti-aircraft gun detachments was insufficiently high and later, when frequent practice had led to improvement, the limited number of guns proved a handicap. The damage however, to the airfields would generally have been still more serious and of more permanent a character without the presence of the few guns which could be spared.

37. The policy of filling the gaps in the heavier equipment with Lewis light machine-guns was amply justified during this second phase. On 18th August, 1940, ten aircraft were destroyed by these weapons alone, and it was a fortunate chance of war that German aircraft were lightly armoured at the time when equipment was short and that heavier armour was only fitted when the defences had more weapons capable of penetrating it.

38. The third phase of the battle, directed against inland airfields, opened on 24th August, 1940. The Light anti-aircraft defences continued to show improved results and, because many of the attacks were delivered against the outskirts of the London area, the heavy guns in the Thames Estuary were able to take part in the battle. This was the densest concentration of Heavy guns which the Germans had so far encountered and, though only a limited number of planes was destroyed, formations were consistently broken up before they reached their objectives.

39. On 7th September, 1940, the fourth phase of the battle began with a heavy raid on London. During the preceding phases we had received constant demands for guns to defend other places, not only on the south coast but in industrial areas which were beginning to feel the weight of night attacks. We had, therefore, reluctantly drained London of its defences until no more than 92 Heavy guns remained. As soon as it became apparent that London was to be the target, I had to draw back into the capital as many guns as I could reasonably manage and within 48 hours the total had increased to 203.

40. The attack on London was made both by night and by day, and of the initial inefficacy of the night defences I shall have something to say later. By day, though it was impossible for the R.A.F. to prevent the Germans reaching the capital and though when they were there it was too late to prevent them bombing the city, the guns destroyed a considerable number in many of the formations. It was significant too that the most spectacular success which the enemy achieved by day, namely the firing of the dock area on 7th September, 1940, occurred when the gun defences were numerically at their lowest ebb. The increase in the number of guns at once

reduced the amount of damage which the enemy was able to inflict; his formations were more effectively broken and the successes of the fighter aircraft continued to mount. On 15th September, 1940, due largely to the R.A.F., the enemy effort was so decisively beaten that though attacks continued by day until 30th September, 1940, it was undoubtedly then that the turning-point of the battle against the day raider had been reached.

41. I have dealt only briefly with this battle because it was primarily a battle between air forces.

From 10th July, 1940, the day which most authorities have accepted as the opening day of the battle, until 30th September, 1940, the guns of Anti-Aircraft Command destroyed by day 296 enemy aircraft and damaged or probably destroyed a further 74.

42. During October, 1940, the enemy reserved his bombers almost exclusively for night operations but he continued for a time to attack the country by day with fighter-bombers. For the most part these attacks did not penetrate far inland and were often delivered on unprotected coastal towns. Militarily the attacks had little significance, except in so far as they were designed to wear down our fighter forces and with the existing resources it was impossible to provide gun defences for these coastal towns without denuding vital factories of protection.

### SECTION III.—THE NIGHT RAIDER.

43. I come now to that form of air attack which, in the early days, before a successful night fighter technique had been developed, was essentially a gun battle; I refer to the night raids. I have already mentioned that practically all equipment had been designed for visual shooting at seen targets, and this applied to shooting by night as well as to shooting by day.

44. The equipment which was available in the first year of the war had been designed some years previously at a time when the possibility of targets taking violent evasive action at high speeds had been insufficiently realised. It had been hoped that if raiding took place at night the searchlights would be able by means of sound-locators to find their targets, illuminate them and continue the illumination without difficulty. This would enable the guns to use their normal visual methods of engagement and the fighters outside the Gun Defended Areas to make their interceptions and attacks.

45. Even before the war it was obvious however that the likelihood of night raiding had been increased by the improvement in navigational methods and the greater reliability of aircraft engines and also that, even without evasive action by the enemy, cloud would seriously handicap all forms of night defence. Visually controlled searchlights appeared to be of doubtful value to the guns.

46. There appeared to be no satisfactory solution to this problem until the invention of radar and, as the delivery of the first radar sets for guns was not due until 1940, some alternative means of dealing with unseen targets had to be found. The only available equipment was the sound-locator.