

enemy over whom we felt that we were gaining the mastery had slipped out of our grasp. All arms of the defence were working better than they had ever done before; the first five months of 1941 had seen a steady and striking improvement in the results achieved. We were confident—I am confident still—that if the enemy had not chosen that moment to pull out, we should soon have been inflicting such casualties on his night bombers that the continuance of his night offensive on a similar scale would have been impossible.

(d) *Operations, June to December, 1941.*

52. As it was, the minor operations which formed the staple of the German night offensive during the second half of 1941 gave few chances to the defences. Minelaying aircraft, which flew low and could usually avoid gun-defended areas, were particularly hard to shoot down, and although we made many attempts to evolve means of intercepting them, it was not until 1942 that we had much success. But when the enemy did venture overland, the improvement which had been made since the beginning of the year was well maintained. When the Medway towns were attacked in June, for example, the defences claimed the destruction of seven enemy aircraft out of less than 100 operating; on two successive moonlit nights in July, eleven out of about 170 were claimed; and on the first night of November, when some 50 aircraft operated against Merseyside, the defences claimed the destruction of six.

(e) *The Free Balloon Barrage.*

53. Towards the end of 1940, I made arrangements to release Balloons carrying lethal charges in the path of German bombers approaching London. The intention was to use this free barrage on nights when the conditions were unsuitable for fighters; but it did not follow that whenever conditions were unsuitable for fighters they would be favourable for the Balloon Barrage, which had certain positive requirements of its own. These were by no means easy to satisfy. A disadvantage of the scheme was that deployment of the equipment had to be begun many hours in advance, on the strength of a difficult meteorological forecast, and on the chance that when the time came the character of the enemy's operations as well as the weather would favour release.

54. The first release was made on the night of 27th December. Imperfect communications caused a delay of 35 minutes between the issue of the order to release and the ascent of the first balloons. Shortly afterwards the enemy attack died away and the order to stop releasing the balloons was given. So far as is known the comparatively small number of balloons released had no effect on the enemy.

55. A further release on the night of 11th January, 1941, went much more smoothly. The weather turned out as predicted and 1,252 balloons were released over a period of three hours. Some 60 German bombers flew through the area in which the barrage was operating but appeared to be quite unaffected by it, mainly, perhaps, because the balloons were too widely spaced to give a good chance of success.

56. Although arrangements were subsequently made to improve the equipment and system of release, the scheme never achieved any practical success and was eventually abandoned.

(f) *No. 93 Squadron.*

57. No. 93 Squadron was formed in the late Autumn of 1940 for the purpose of trailing and sowing aerial mines in the path of German bombers. During its life of rather less than a year the squadron claimed a number of successes, and the destruction of two enemy aircraft—one in December, 1940, and one in the following April—was officially credited to it.

58. As time went on, however, the performance of orthodox night-fighter squadrons using A.I. improved so much that I came to the conclusion that the comparatively modest results achieved by No. 93 Squadron did not justify the manpower and effort involved in its continued existence. In November, 1941, therefore, I obtained authority to disband the squadron.

(g) *Airborne Searchlights.*

59. The idea of a searchlight carried in an aircraft is an old one, but the practical difficulties involved are considerable, because of the great weight of the equipment needed to produce a sufficiently powerful light.

60. In 1941 this problem seemed to have been solved, thanks to the skill and ingenuity of Air Commodore W. Helmore. Aircraft carrying searchlights were now a practicable weapon and I was ordered to form the equivalent of five squadrons of Havoc aircraft so equipped.

61. In trials these aircraft succeeded in illuminating and holding their targets while attendant single-engined fighters intercepted them. The crews of the target aircraft reported that the effect when the Havoc suddenly switched on its searchlights and held them in its blinding glare was extremely disconcerting, and hopes ran high.

62. By the time that the Havocs were ready for active operations, however, the enemy effort had dwindled to very small proportions, so that the scheme had no chance to prove its worth in 1941. When, after the end of the period now under review, the Havocs were given their opportunity, they proved too slow to compete on level terms with the orthodox A.I. squadrons against the faster bombers with which the German bomber force was then equipped.

(h) *Deployment of Ground Searchlights.*

63. Reference has been made to the siting of the searchlights in clusters of three during the winter of 1940-41.

64. This arrangement was found to be no solution to the problem, and, in the autumn of 1941, I arranged with General Pile for the searchlights to be re-sited singly.

65. Their primary function was now to help fighters to intercept, since the heavy A.A. guns were no longer dependent on them, and the basis of the new system was what was called the "fighter box."

66. It was found by calculation and experiment that the area within which a fighter pilot could hope to pick up and intercept a bomber with the aid of searchlights alone was a rectangle 44 miles long and 14 miles wide. Accordingly, we divided the whole of the area to be covered by searchlights into rectangles of this size. The searchlights were then so arranged that in the centre of each rectangle