

41. As was always the case, however, the mere deployment of guns was not in itself sufficient. The raiders approached at heights of less than 100 feet, having found that by this means they could almost always escape radar detection; consequently it was impossible either to warn the anti-aircraft defences in time for the guns to be manned or to scramble fighter aircraft into the air to make an interception. To watchers on the shore the enemy planes could only be seen at the last minute and they used every device which would help them to make an unobserved approach such as sneaking in up undefended valleys and hedge-hopping along the coast.

42. Orders were therefore issued that every Light anti-aircraft gun within five miles of the coast from the North Foreland to Land's End would be constantly manned during daylight hours, but even so it was difficult to secure the necessary degree of alertness when a town might go unattacked for months at a time, while the cold of the approaching winter did not help.

43. To secure freedom of action for the guns we arranged that no R.A.F. plane should cross the coast at less than 1,000 feet except with undercarriage lowered, so that all low-flying single-engined aircraft could be assumed to be hostile without the necessity for prior identification.

44. In December, 1942, the defences were further reinforced by the addition of large numbers of 20-mm. guns, and other 20-mm. equipments were manned by the R.A.F. Regiment; batteries of 40-mm. Bofors were loaned by Home Forces and the Canadian Forces. By March, 1943, the Fringe defences had increased to 917 40-mm. guns, 192 20-mm. (with another 232 expected shortly to be available) and 674 light machine-guns of various kinds.

45. The winter successes were limited and the pattern of attack remained similar, though the average number of planes in each attack showed a slight tendency to increase.

46. There were, however, two attacks of an exceptional size and aimed at targets further inland. On 31st October, 1942, a sweep of 60 raiders made a sharp attack on Canterbury and this was followed by two bomber raids the following night. On 20th January, 1943, a similar number, aided by diversionary raids elsewhere, made an attack on London. We thereupon deployed a small number of 40-mm. guns on Heavy gun sites and had a simplified drill worked out for the Heavy anti-aircraft gunners.

47. Meanwhile, the winter had been spent in improving and elaborating the warning system. Use was made of certain R.A.F. stations on the coast and new marks of radar were deployed. Radio links between these and Light Anti-Aircraft Troop Headquarters were established and the signals organization, besides installing and maintaining these radio sets at the receiving end, also laid a network of land lines for every Troop Headquarters to the guns they controlled. It was now possible to warn guns when an attack was imminent and in April, 1943, an improvement was beginning to be observed in the results when the attacks suddenly ceased.

48. On 7th May, 1943, the German attacks were renewed with much stronger forces and between that date and 6th June, 1943, 15 attacks by about 300 aircraft were made. The

guns destroyed 25 and probably destroyed or damaged 13, the R.A.F. destroyed 17 and probably destroyed or damaged 4. Thus the battle was brought finally to a successful conclusion. Altogether 94 different towns had been attacked, of which the heaviest sufferers were probably Eastbourne and Hastings. Though Light anti-aircraft shooting was not as much a science as Heavy anti-aircraft shooting, there is no doubt that it was largely the result of the application of scientific assistance to the Light guns which in the end achieved success.

#### *Smoke Defences.*

49. I must now digress in order to refer to the Smoke Defences, the responsibility for which had on 1st April, 1943, been transferred from the Ministry of Home Security to Anti-Aircraft Command. The smoke screens were manned by the Pioneer Corps and once again we were to experience all the disadvantages of a divided control. It was only with the greatest difficulty that sufficient control was obtained to enable us to secure even the most limited efficiency.

50. After the successful attack by Bomber Command upon German dams in May, 1943, it was feared that there might be retaliations in kind and the Chiefs of Staff placed a very high priority upon the defence of our own reservoirs throughout the country. For a short time these were defended by Light anti-aircraft guns and searchlights withdrawn from aerodromes and "Baedeker" towns. Since April, 1943, however, very considerable technical strides had been made in smoke production; chemical, as opposed to oil, smokes were rapidly developed on the basis of earlier work by the Ministry of Home Security and entirely new methods of rapid multiple ignitions were evolved. Training of the Pioneer troops, which had previously been much neglected, was improved and long overdue steps for the improvement of their welfare and health services were taken.

51. Consequently, I was able to suggest that the defence of our dams might more economically be provided by smoke screens, since what had to be feared was a precision type of attack. For six dams this proposal was accepted and it is worthy of note that this was the only occasion throughout the war when smoke alone was accepted as a sufficient defence.

52. For thirteen other dams, however, the smoke defences were to be supplemented by catenary defences and no guns or searchlights were to be withdrawn until the chains were in place. The task of producing and erecting the necessary masts and chains proved much slower than had been anticipated and as a result, for the greater part of the following winter (1943-44), two conflicting forms of defence were in operation at these dams. Apart from the fact that this was uneconomical, it aggravated the already difficult problem of providing accommodation. The troops were generally placed in remote hills where weather conditions were notoriously bad and it was fortunate that the winter proved to be unusually mild and dry.

53. No attack on the dams actually took place, but the defences remained operational until the disbandment of the Smoke Companies in the autumn of 1944. Other Smoke Companies took part in the defence of southern ports from Great Yarmouth to South Wales during the preparations for the invasion of Northern Europe.