

The system was tried again during the "Baedeker" raids of 1942 and, after considerable protests on my part, was finally abandoned.

61. Of necessity priority in the provision of radar equipment was given to the guns; but I arranged for the provision at the earliest possible moment of similar equipment for searchlights also and the first sets were deployed towards the end of 1940. These were of the same type as was being employed with the guns; shortly afterwards, a type specially designed for searchlight control, known as S.L.C., which had been delayed in production, became available.

62. Throughout the first three months of 1941 there was an increasing amount of radar equipment coming into service, and a more advanced type for gunlaying, the G.L.II, also began to come from production. These were deployed in and around London in March, 1941.

63. The problems associated with radar were not all confined purely to theoretical matters. Sets deployed in the field produced curious results, and though some of these could be traced to bad drill or technical faults others appeared to be occurring without any good reason. One of the greatest problems was the appearance on the signal tube of spurious breaks, among which the break caused by the target was apt to disappear. It was not at first clear why these appeared; they might or might not appear whether the set was placed on high or low ground, close to or clear of buildings.

What was finally established was that the contours of the ground around the set had a pronounced effect upon it and it was suggested that, by pegging out a mat of wire mesh for some 150 feet round the receiver, an artificial level could be obtained which would largely eradicate the trouble. Experiments with a trial mat were a complete success and the principle was adopted universally. What I had not realised was that the project would involve using the whole of the country's stocks of wire net on the first 300 mats.

The project also involved the re-siting of a great number of the sets, as it was not always possible to find sufficient clear space for a mat near to the guns. Some sets were moved over a quarter of a mile from their guns and careful calculations had then to be made to co-ordinate the two positions, as the radar and the guns would see targets from quite a different aspect.

64. It was at this stage, when the equipment position at last began to look easier, that the pressure of manpower problems became severe. I was asked to economise in manpower to the utmost, and the A.O.C.-in-C. Fighter Command and I felt that any cuts which might have to be made must be in the searchlight and not in the gun units.

65. The tactical layout of searchlights had for some time been under discussion with Fighter Command with a view to finding some better means of using them with night fighters. Together we evolved a system by which the lights would be sited in clusters instead of singly. Night fighter pilots had represented that a single beam did not give them enough illumination to see and engage the enemy. Very comprehensive trials of clusters versus single lights were carried out and the majority of

the pilots gave their opinion in favour of the cluster of 3 lights. Looking back I think the idea was not sound but it had the advantage that we were able to dispense with some of the administrative troops owing to the greater concentration of detachments. Consequently the actual cut in the searchlight units was kept to a minimum.

66. Technical inventions and improvements came in a flood early in 1941. Among them was the Semi-Automatic Plotter, early versions of which supplied a continuous track of a target and later versions also incorporated a means of deriving future gunnery data. Other devices are too numerous to mention individually but the sum total was such as to renew the hope that fire control might be re-stored once again to the Gun Position Officer. The control from the Gun Operations Room, moreover, had proved no better than the old systems.

67. One of the prime movers in the restoration of fire control to gunsites was Major-General R. F. E. Whittaker, C.B., C.B.E., T.D., who had throughout been opposed to my decision to put control in the hands of the Operations Rooms. He carried out experiments with the various new equipments and thereby provided the most valuable contribution to date in the investigation of unseen methods of fire. These new methods of fire control convinced me that we should revert to the plan by which each gun site was responsible for obtaining its own gunnery data.

68. Having now outlined the stages in the development of our methods to combat the raider, I must describe briefly the course of the night battle. Essentially it was one battle throughout but it was possible to detect in it changes in the German policy; each change initiating in some degree a new phase; I must point out, however, that the phases merge one into another to a greater degree even than in the Battle of Britain. No good purpose would be served in a despatch of this nature in detailing all the attacks, since those details did not generally affect the policy of the defences.

69. After the preliminary raids on the West and Midlands, which have already been described, the first phase opened on 7th/8th September, 1940; in this phase the main target was almost exclusively London, which was continuously raided night after night. Supplementary and diversionary raids of smaller size were from time to time scattered across the whole country, so that it was never possible to withdraw into the Capital all the guns I wanted. On 14th/15th November, 1940, a second phase opened in which the main weight of attack was shifted from London to industrial centres and ports, although London continued to receive a succession of smaller raids. The concentration of industry and other objectives in these smaller cities and towns was far greater than in London, and the dropping of a similar weight of bombs could, therefore, cause far greater damage and dislocation than had been achieved in most of the London raids. Coventry was the first town to be singled out and others which in the course of this phase received particular attention were Liverpool, Bristol, Plymouth, Cardiff and Portsmouth. The guns defending London were at once reduced from 239 to 192, and another 36 were taken from the Thames Estuary. In the later part of