47. The distribution of Army Units was, as a matter of fact, in a condition of perpetual change to meet new situations as they arose, and I must pay a very sincere tribute to the flexibility of the Army organisation, and to the tact, patience and loyalty of the Commander-in-Chief of the Anti-Aircraft Command, Lt.-Gen. Sir Frederick A. Pile, Bart., K.C.B., D.S.O., M.C., which enabled these constant changes to be made without disorganisation.

48. In theory the Commander-in-Chief, Fighter Command, was the authority responsible for settling the dispositions of all guns allotted to the Air Defence of Great Britain; but this was little more than a convenient fiction. The number of guns available was so inadequate for the defence of all the vulnerable targets in the country, and the interests concerned were so diverse and powerful, that it was not to be supposed that an individual member of any one Service would be left to exercise such a prerogative uninterruptedly. A disproportionate amount of my time was taken up in discussions on gun distribution, and each decision was at once greeted with a fresh agitation, until finally I had to ask that all proposals should be discussed by a small Committee on which all interests were represented, and I normally accepted the recommendations of this Committee during quiet periods. During active operations I consulted General Pile, and we acted according to our judgment.

One rather important lesson emerged from our experience, viz., that the general fire-control of all guns in the Air Defence System should be vested in the Air Defence authorities. I do not, of course, mean that, if an invasion had taken place, the guns co-operating with the troops in the Field should have been subordinated to any A.A. Defence Commander, but the existence of "free-lance" guns*), the positions and even the existence of which were unknown to me, was an appreciable handicap, especially at night. It was impossible to acquaint them with the approach of enemy raiders, or of the fact that our own aircraft were working in the vicinity.

49. When the night attacks on London began to be really serious, General Pile, in consultation with myself, decided to send heavy reinforcements. Within 24 hours the defences to the South and South-East of London were approximately doubled, and the great increase in the volume of fire was immediately noticed and had a very good effect on public morale. The physical effect in the shape of raiders destroyed was by no means negligible, but the main effect was never generally known. The track of every raid was, of course, shown on various operations tables, and on some nights as many as 60 per cent. of the raiders approaching London from the South turned back after dropping their bombs in the open country or on the fringe of the Barrage.

50. The A.A. Guns at Dover enjoyed unusual opportunities for practice, with the result that their crews became acknowledged experts in the art of Anti-Aircraft Gunnery. Their skill, however, was attained through the circumstance that they and the Dover Balloon Barrage were continuously the objectives of German attack; they manned their guns continuously night and day, and I must pay a high tribute to their morale, enthusiasm and efficiency.

A report from the 6th A.A. Division, which was busily and typically employed, is included at Appendices C, C.A, C.B. and C.C.

51. A short Appendix (C.D) is added showing the number of rounds fired per aircraft destroyed, for the whole Anti-Aircraft Command.

52. On the map which constitutes Appendix A.A. are shown the boundaries of Groups and Sectors, and also the positions of the Balloon Barrages, together with an indication of the front covered by Radio Location Stations and the area covered by the Observer Corps.

53. The Balloon Barrages had, at this stage, had little opportunity of justifying their existence, except perhaps at Rosyth and Scapa Flow, since bombing attacks against land objectives in Britain had not yet begun. It was thought, however, (and later experience confirmed this opinion), that the heavy cost of their installation and maintenance, and their drain on man-power, were on the whole justified. It is true that their material results, in terms of enemy aircraft destroyed, were not impressive, they suffered staggering casualties in electric storms, and had brought down a number of our own aircraft; on the other hand, they exercise a very salutary moral effect upon the Germans and to a great extent protected the vital objectives, which they surrounded, against low-altitude attacks and dive-bombing.

54. This is not the place to give an account of the romantic discovery and development of Radio Location. It may be explained, however, that the backbone of the system consisted of a series of large "chain" stations at intervals averaging about 30 miles. These gave warning, by means of reflected electrical echoes, of the presence of aircraft within the radius of their effective action, which attained to nearly 200 miles in the most favourable circumstances. The average effective radius was about 80 miles, but they had the serious limitation that they failed altogether to give indications of aircraft flying below 1,000 feet.

55. To overcome this disability, which was particularly hampering to operations against low-flying minelayers, smaller units called "C.H.L. Stations" were included in the protective line.

56. These had a restricted range (about 30 miles), and were incapable of giving heights with any degree of accuracy; they were, however, extremely accurate in azimuth, and constituted an essential feature of the Defensive and Warning Systems.

57. The Radio Location system was growing so fast and had to meet so many calls from overseas that the training of the technical personnel and the maintenance of the elaborate scientific apparatus presented great difficulties. In spite of these handicaps, however, the system operated effectively, and it is not too much to say that the warnings which it gave could have been obtained by no other means and constituted a vital factor in the Air Defence of Great Britain.

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* These guns belonged to Field Force Units. As such units were, of necessity, highly mobile, their exact location was not always known to Fighter Command. Nor, after a recent move, were they always included in the telephone system.