

relating aircraft tracks to notifications of flights previously given. This was clearly an unsatisfactory situation but one which had to be accepted in the circumstances. There is no doubt that every step should be taken to hasten the production of a really effective mechanical method of indicating friendly aircraft, and I consider that a great deal more scientific study should be devoted to this subject in the future.

#### *Balloon Defence.*

510. In any future amphibious operation similar to Operation "Neptune" which is mounted from a country in which exists a balloon defence with all its attendant facilities, the cheapness and comparative ease of providing balloon protection unquestionably makes Balloon Defence profitable if there be any likelihood of low-level attacks by enemy aircraft. For an operation despatched from an area in which no such facilities exist, the necessary lift in hydrogen, packed balloons, and ancillary equipment to provide for initial inflation and to meet a high casualty rate would, I consider, be justified only if the enemy air effort was expected to be unusually strong and determined.

#### *Operational Items.*

511. The enemy air effort, taken as a whole, was mediocre throughout. The lack of efficiency and the low operational effort of the G.A.F., especially during the critical assault stage, were largely the result of previous attention paid to the G.A.F., his loss of Radar coverage, and of attacks on its bases and installations, which constantly compelled him to change his operational aerodromes and A.L.G.'s and to operate his fighters outside effective range of the assault area and shipping lanes.

512. As was forecasted in our early planning, marked Allied air superiority made it possible to use heavy night bombers by day with outstanding success, and relatively slight losses, since, if necessary, they could be escorted by our fighters.

513. The fighter bomber proved to be a battle-winning weapon. It showed tremendous power in breaking up and destroying enemy concentrations, especially of armour, and contributed greatly to the paralysis of enemy road and rail movement.

514. Heavy bombers can be employed to decisive effect in a tactical role. A special treatise on the principles of their employment in support of the land operations has been issued jointly by 21 Army Group and A.E.A.F., with the blessing of Supreme Headquarters, Allied Expeditionary Force, and is now being considered by the U.S. Army and Air Force Commanders.

515. The enemy's Radar cover was effectively disrupted and neutralised by air attacks, and in consequence the enemy was virtually "blinded" at the time of the assault.

516. Because of the possible risk of bombing our own land forces, Army Commanders in some instances insisted on the bomb line being pushed too far ahead of the line of our forward troops. This often proved a handicap to the effective use of tactical support aircraft. The land forces should accept a bomb line as close as possible to our front line, and be prepared to run some small risk of casualties in order to enable the air to give them the maximum close

support. The fixing of the bomb line for predetermined direct support when heavy bombers are participating in a co-ordinated land/air operation is, of course, a separate issue.

517. Armed reconnaissance of roads, rail lines and the Seine crossing by Mosquitoes of British Second Tactical Air Force during the hours of darkness proved extremely effective and disconcerting to the enemy. Intruder action of this kind could have been most effectively extended had more forces been available.

518. The value of good photographic reconnaissance cannot be overstated. Our resources in normal high altitude photographic reconnaissance were on the whole adequate, but here too the weather adversely affected the fulfilment of the reconnaissance programme after D-Day. There were long periods of inactivity when lack of strategic intelligence relating in particular to movements in rearward areas and to damage inflicted by our bombing, had serious consequences and sometimes even frustrated our plans.

519. The absence of an intermediate and low altitude photographic reconnaissance aircraft became apparent very early on, and a few armed Mustang III had to be converted at R.A.F. Station Benson for this special type of photography. There should be one medium altitude and one high flying flight in each photographic reconnaissance unit.

520. It also clearly emerged that the control of photographic reconnaissance of all types for commitments outside the allotted tactical area must be centralised in one authority. The formation of the Combined Reconnaissance Committee at Uxbridge, which filtered and took action on demands for reconnaissance from all quarters satisfied this requirement.

521. The need for a highly efficient mapping and target section which could turn out the necessary material at the shortest notice was fully appreciated before "Neptune" was launched. Experience proved that the personnel and the facilities at the disposal of the Section were not adequate for the multiple tasks by which it was faced. It is impossible to prepare in advance dossiers of every possible target which the air forces may have to hit. The only solution is to have available as large an organisation as may possibly be necessary for the task of turning out with a minimum of delay the material that might be demanded of it.

522. Modifications to the system of supply of maps were found to be necessary during the campaign. The changes made, as described earlier in this Despatch, indicate the lines along which I feel future plans for map supply should be made.

523. Unless signal facilities are much increased and well planned in advance, and staffs given ample time to develop them, major operational and administrative headquarters, when they move, are likely to get out of touch with each other and with forward headquarters and sources of intelligence. The direction of air operations would at times have been more easily and effectively achieved if the moving of headquarters had been postponed until adequate communications between the Continent and the United Kingdom had been established.