

PART V

THE LESSONS LEARNT*

I.—THE LESSONS IN SUMMARISED FORM

324. The need for overwhelming fire support, including close support during the initial stages of the attack.

325. The necessity for the formation of permanent naval assault forces with a coherence comparable to that of any other first line fighting formations. Army formations intended for amphibious assaults must without question be trained in close co-operation with such naval assault forces.

326. The necessity for planning a combined operation at a Combined Headquarters where the Force Commanders and their staff can work and live together.

327. The necessity to plan a raid so as to be independent of weather conditions in the greatest possible degree. A plan based on the assumption that weather conditions will be uniform is very likely to fail; therefore a plan which can be carried out even when they are indifferent or bad is essential.

328. The necessity for flexibility in the military plan and its execution.

To achieve this, the assault must be on the widest possible front limited only by the possibilities of control and the amount of naval and air support available.

329. The allocation to the assault of the minimum force required for success and the retention of the maximum force as a reserve to exploit success where it is achieved.

330. The necessity for as accurate and comprehensive a system of control and communications as it is possible to establish.

331. The dissemination of knowledge to officers and other ranks, each of whom should know the intention of his superior, the outline of the operation and the details of the task of his own unit and those on the flanks.

332. The value of special training, particularly in amphibious night operations. Such training must include rehearsals and the testing of inter-communication arrangements.

333. The necessity for fire support in any operation where it has not been possible to rely on the element of surprise. This fire support must be provided by heavy and medium Naval bombardment, by air action, by special vessels or craft working close inshore, and by using the fire power of the assaulting troops while still sea-borne. Special close-support craft, which should be gun-boats or some form of mobile fort, do not exist and must be designed and constructed.

Support by the Royal Air Force is effective within the limits imposed by time and space.

334. Assaults must be carefully timed. Whether to assault in darkness, at dawn or dusk or in daylight, must depend on the nature of the raid, and on certain conditions, such as tide and distance, which will vary in every case.

335. Tanks should not be landed until the anti-tank defences have been destroyed or cleared. L.C.T. carrying tanks must not linger on the beaches beyond the time required to disembark their loads.

336. Great and continuous attention must be paid to security problems and greater use made of subordinate officers who should be put partly into the picture, so that they can control the men under them. Only important extracts from Operation Orders should be taken ashore. These should be kept in manuscript form and have their official headings removed.

337. Briefing of the troops should take place as late as possible.

If airborne troops are used, arrangements must be made to increase the number of models available so as to cut down the time needed for briefing.

Airborne troops provide means of achieving surprise and should be used as often as possible subject to the limitations of the weather. It should be regarded, however, as exceptional for a plan to depend for success entirely on their use.

338. Unless means for the provision of overwhelming close support are available, assaults should be planned to develop round the flanks of a strongly defended locality rather than frontally against it.

339. A far higher standard of aircraft recognition is essential both in the Royal Navy and the Army. This should be achieved by means of lectures, photographs and silhouettes. If possible, personnel of the Royal Observer Corps should be carried in ships.

340. Beach Signal Parties should not land complete with the first wave, but only when the beach has been secured.

341. The importance and necessity of using smoke cannot be over emphasized and larger quantities of smoke must be carried in any operation of the size of the assault on Dieppe.

342. Some form of light or self-propelled artillery must be provided once an assault has got across the landing place and is making progress inland.

II.—THE LESSONS IN DETAIL

343. **GENERAL OBSERVATION.**—Many lessons were learnt at Dieppe, not all of them new. The opportunity is taken of repeating and re-affirming the lessons learnt in previous operations as well.

344. NAVAL FIRE SUPPORT

The Lesson of Greatest Importance is the need for overwhelming fire support, including close support, during the initial stages of the attack. It is not too much to say that, at present, no standard Naval vessel or craft has the necessary qualities or equipment to provide close inshore support. Without such support any assault on the enemy-occupied coast of Europe is more and more likely to fail as the enemy's defences are extended and improved. Further remarks on close support vessels will be found in paragraph 362 (a) below.

345. THE FORMATION OF ASSAULT FORCES

- (a) For any amphibious campaign involving assaults on strongly defended coasts held by a determined enemy it is essential that the landing ships and craft required for the assaults shall be organised well in advance into Naval assault forces. These must have a coherence and degree of permanence comparable to that of any first-line fighting formations. The need for discipline, morale, tactical integration and flexibility and professional competence are not disputed in the case of troops, war vessels and air formations. Precisely the same applies to assault ships and craft.
- (b) The great importance of adhering to sound Naval procedure and organisation has been brought out not only at exercises, but also in operations. While it is one of the objects of the Navy to land troops on the beach in the formation the Army desires, this must not be attempted at the expense of sacrificing principles of sound seamanship or of sound flotilla procedure especially where a night landing is concerned. It is always the simplest form of organisation which has the best chance of success.
- (c) It is also essential that Army formations intended for amphibious assaults against opposition should be trained in close co-operation with the Naval assault forces that will carry them to the attack. The ideal to be aimed at is that they should think and act as one.

346. THE NEED FOR A COMBINED HEADQUARTERS

- (a) The Naval, Military and Air Force Commanders and the Supreme Commander or officer responsible for launching the operation, will usually have their own headquarters many miles apart. In Combined Operation Headquarters a permanent set of adjacent offices is provided specially for the Naval, Military and Air Force Commanders and their staffs, for all operations mounted under the Chief of Combined Operations.
- (b) The vital difference made to the planning of a Combined Operation when the outline plan is prepared by an experienced Inter-Service staff and the detailed plan by Force Commanders and their staffs working and living together, has been amply demonstrated in the Vaagso, Bruneval and St. Nazaire raids, and was so again in the Dieppe operation.
- (c) During an assault, it is, of course, essential that the Naval and Military Force Commanders should be afloat in a specially equipped Headquarters ship, and thus able to get close enough to the battle to be in a position to take and implement decisions immediately affecting the course of the action.

347. PERIOD DURING WHICH AN OPERATION CAN BE UNDERTAKEN

- (a) The overriding factor of all operations against the enemy on the other side of the Channel is the weather. Weather conditions need not be the same for all types of operations. If a raid such as the assault on Dieppe is to be made, then the weather conditions under which it can be carried out differ from those which can be accepted in an operation involving a permanent landing on the enemy-occupied coast. The problem is further complicated by the fact that conditions required by the Royal Navy are not necessarily suitable for the Royal Air Force and *vice versa*.
- (b) The Dieppe raid showed clearly that for a raid in which the Naval and land forces are given full air protection, good visibility is essential, and this overriding factor must be added to others equally indispensable. The operation against Dieppe could not prudently have taken place if the cloud had been more than four to five-tenths at 4,000 feet, if the wind had been more than Force 3, or if there had been an appreciable swell. The sea had to be calm enough to make a withdrawal feasible. These conditions seldom, if ever, occurred during June, July and August, 1942. Furthermore, four previous operations had been postponed and subsequently cancelled because the weather conditions were worse than those required. Even on 19th August, conditions were not ideal, and the force was sailed by the Chief of Combined Operations on a forecast which was by no means as favourable as could have been desired. So much was this so that just before the actual

departure, the Naval Force Commander received a message warning him that the weather might deteriorate, but he nevertheless took the risk of continuing, a decision which was fully justified by events. It must also be borne in mind that the length of French coast within the advantageous fighter area is also open to prevailing westerly winds, which were one of the main causes for the postponement of the four previous operations. On the other hand, if Air co-operation can be dispensed with, then the number of days on which an operation can take place is increased, for calm days are often associated with fog and mist, conditions in which aircraft cannot operate with certainty, especially in the early morning.

- (c) The conditions governing an expedition in which the troops will remain on shore are different from those which must prevail during a raid. If troops have not to be withdrawn they can be put ashore in much worse weather, with a wind of force 5 or 6 and considerable swell. Here, however, the limiting factors are their reinforcement and their maintenance. To supply troops on shore over open beaches requires weather conditions similar to those needed for a raid, unless the abandonment on the beach, should the weather deteriorate, of the supply carrying craft in ever increasing numbers, can be accepted.
- (d) The conclusion must, therefore, be that since it is unjustifiable to mount an operation which cannot, with certainty, take place in the average year, it follows that a raid must be so planned as to be independent of tidal conditions in the greatest possible degree. This was so in the Dieppe raid which could have been carried out on 12 days in any lunar month, thus making it virtually certain that it could take place during the summer months. An operation, however, involving the occupation of enemy-held territory calls for a succession of days in which the weather conditions are favourable on the landing beaches. They are principally dependent on the time required to capture a port or sheltered waters of suitable dimensions. Such a succession of days can never be relied on when operating on beaches which all face one way and are lee shores in prevailing winds. Consequently an assault made with the intention of remaining ashore should be planned to take place in an area capable of being supplied over beaches which face in different directions, or in an area where a port or sheltered anchorage is likely to fall into our hands at a very early stage. In other words, a plan based on the assumption that weather conditions will be uniform is very likely to fail and, therefore, a plan which can be carried out even when they are indifferent or bad is essential.

348. FLEXIBILITY

- (a) The chances and opportunities of an assault landing are extremely difficult to gauge in advance. The military plan must, therefore, be flexible in order to enable the Commander to apply force where force has already succeeded.

- (b) The axiom, normal in land warfare, that it is unprofitable to reinforce a hold-up, is even more strongly applicable in the assault phase of an opposed landing, because, in the latter type of operation a hold-up almost invariably means that there is little or no room for manoeuvre.

Thus, to put in more troops where the leading waves have not succeeded in penetrating the immediate defences, is likely to increase the target without increasing the prospects of success. This was again brought out at Dieppe.

- (c) If the military plan is to be flexible, then certain basic requirements must be accepted and must be embodied in the general arrangements for the operation. These requirements are discussed in paragraphs 349 to 354.
- (d) It must be recorded, however, that with the state of training of the landing craft crews which prevailed at the time of the Dieppe operation, a flexible military plan could not have been put into execution. It is only by the formation of the permanent Naval forces advocated in paragraph 345 (a) that the requisite standard of training can be achieved. The greater the number of experienced Royal Navy officers available, the shorter will be the period of training required by these forces.

349. THE WIDTH OF THE FRONT WHICH CAN BE ASSAULTED

- (a) If flexibility is to be a true characteristic of the plan, then the initial assault must cover several landing places. If, to take an extreme case, the assault is made across only one beach, then there is clearly little the military commander can do to make his arrangements flexible, for he will be dependent on success in one area, and must either batter his way through or fail.

- (b) It must be appreciated, however, that the following factors will qualify and limit the width of the front and the number of landing places which can be attacked with advantage:—

- (i) The frontage which can be controlled by the Headquarters organization which it is possible to set up on the spot and the number of physically suitable beaches within that frontage;
- (ii) The amount and type of support from the Naval forces and the air which can be made available;
- (iii) The size of the military force and the nature and composition of the Naval assault force which have been allotted to it and the organization and skill of that force.

350. STRENGTH OF THE ASSAULT IN RELATION TO THE FOLLOW-UP FORCE

- (a) In a combined operation there are always present two strong, but natural, tendencies both of which militate against flexibility. The first is to allocate too great a strength to the assault in order to ensure success in this essential phase, while the second is to issue precise and comprehensive orders to the whole force in advance so that each unit and sub-unit shall know exactly what it is required to accomplish and how to do it.
- (b) In a small scale raid, such an allocation of strength to the assault and such precision in the orders may be permissible, because the operation will, in all probability, depend upon immediate penetration in a certain area and upon the completion of definite tasks within a restricted time limit.
- (c) In larger operations, however, it becomes more and more necessary to weigh the balance with care and judgment, bearing in mind that the greater the strength allotted to the assault, the weaker the force that can be held aloft—the more rigid the plan and the less the chance of switching landing craft and troops to areas where success has been attained and through which it should be exploited.
- (d) From the military point of view, therefore, the aim must be to allocate to the assault the minimum force required for success and to retain aloft the maximum force ready to follow in and exploit success wherever it has been achieved.
- (e) From the military point of view, however, there can be no objection if the support given by Naval vessels or Air forces to the assault is excessive and the criterion should be the maximum which can be made available rather than the minimum which might be adequate.
- (f) The problem is, however, easier to state than to solve.

351. CONTROL AND COMMUNICATIONS*

- (a) The more flexible the plan and the greater the sub-division of the military force, the more essential it becomes that the control and communication arrangements should be of the highest standard.
- (b) It will not, in fact, be possible to carry out a flexible plan successfully unless the Commanders receive a constant series of accurate pictures of the situation on shore and unless, when in possession of such information they are able to take rapid executive action.
- (c) The following are the essential requirements:—
 - (i) A joint organisation, in which the arrangements for each service fit in with those of other services, and are available for emergency use by all. This must be centred in an H.Q. Ship, which should be duplicated as far as possible to meet the risk of loss.
Such a ship must include carefully laid-out arrangements for Command, Staff-work and communications, planned conjointly. These can only be satisfactory if the ship is properly fitted in permanent form.
 - (ii) Adequate Naval Signal organisation for the control of the numerous ships and landing craft engaged in the operation.
 - (iii) Alternative channels for the passing of information from shore to ship and vice versa. In this connection, it is to be noted that reliance must not be placed on a single method. For example, wireless links should be duplicated whenever possible, and visual signals, loud-hailers and any other available means, should be fully exploited.
 - (iv) On Army channels of communication no effort must be spared to establish and exploit alternative channels by which information can, if necessary, be passed. The fact that the same intelligence may reach the Military Commander from various sources and at about the same time, is not in practice either a waste of effort or over-insurance. The essentials are that the information should be sent, that it should arrive and that links should be available by which it can be acted on with the minimum delay.
 - (v) In the Naval organisation, on the other hand, although duplication of channels must be practised as far as possible, the large number of units with limited equipment which it is generally necessary to keep under centralised control makes essential the most rigid discipline and economy of signalling, and the duplication of reports cannot be accepted. The originator of any signal must, therefore, first consider whether or not his signal is really necessary for the conduct of the operation.
- (d) Good information and the power to act upon it are essential in all operations. It cannot be too strongly emphasised that the need for such facilities is particularly apparent in the assault phase of a combined operation when a narrow stretch of water may, through lack of them form an impenetrable barrier.
- (e) Much may depend upon the efficiency or otherwise of the communications between ground or ship and the aircraft supporting the operation.

* The Lessons Learnt concerning Control and Communications are also dealt with in Annex 10, and Appendix, pp. 173 and 177.

352. KNOWLEDGE OF THE OPERATION AMONG ALL UNITS AND ALL RANKS

- (a) The more flexible the plan the more important it is that every officer, N.C.O. and man should know the intention of his superior and the outline of the operation as a whole and the detail of the primary task allotted to his own unit and to those on his flanks. Without such knowledge, units and individuals faced by unexpected circumstances cannot be expected to know how best to take advantage of a particular situation or how to further the operation as a whole.
- (b) Dissemination of knowledge to the extent contemplated in the preceding sub-paragraph requires time and access to certain facilities such as models, photographs and silhouettes. The use of such facilities is, of course, bound up with the difficult problem of security which is dealt with later. (See paragraph 367.)

353. REHEARSALS

- (a) No combined operation should be launched until it has been adequately rehearsed.
- (b) Rehearsals need not necessarily always be complete. For instance, the operation on land can be practised frequently without the actual disembarkation from landing craft being included. Similarly, the inter-communication system between ships, shore and air can be worked up without all sea, air and land forces being present.
- (c) After partial rehearsals, rehearsals on a larger scale may be desirable. No general rule can be laid down and commanders must consider each case on its merits.
- (d) It is particularly important that all sea-borne military headquarters should be given adequate opportunity for practice. They will, at any rate, during the initial stage of an operation be working in unfamiliar and probably cramped conditions. The best lay-out of the headquarters and the best placing of the inter-communication and intelligence staffs cannot be satisfactorily settled by discussions over a diagram. Such discussions must terminate in full-dress rehearsals with all shore headquarters fully represented.

354. VALUE OF SPECIAL TRAINING

- (a) There is no doubt that units or sub-units allotted specific tasks require specialised training for that task. For example, training for tasks which include street fighting or demolition work or attacks on pill-boxes or on battery positions should all be carried out over similar ground and distances and under conditions of light the same as those which may be expected in the operation itself. The more perfect the training the more perfect is the execution likely to be.
- (b) It should be realized that the number of persons possessing night vision *above* the normal is very small and that there are many more who have night vision *below* the normal. It is, therefore, imperative that tests should be carried out with the object of selecting personnel for key positions in the assault whose night vision is adequate. Admiralty Fleet Order No. 3977/42 gives the details of a simple little instrument for carrying out these tests. Special training is also needed to develop and improve night vision.
- (c) Without adequate sea training and opportunities of practice, military assault units will inevitably find themselves hampered and at a disadvantage. Though such training is necessary, it must however, come after that of the Naval formations taking part in the assault.

355. SUPPORT FOR THE ASSAULT

- (a) Leaving out of consideration the long preparatory bombardments for the reduction of "key" major coast defences which would be a necessary feature of invasion plans but cannot, for obvious reasons, be a preface to raids, the assault, in both raids and invasions, of a defended coast requires fire support while it is in progress, unless complete surprise can be obtained.
- (b) Surprise is likely to become progressively more difficult with the passage of time, and support fire more necessary as the enemy increases his defences.
- (c) If the assault is to take place under fire support, it must, in volume and effect, be comparable to that which would be available to a brigade attacking a strongly defended position in normal land warfare. The latter would, assuming a normal allocation of army field and medium artillery, amount to:—
 - (i) *Close support weapons*—One 6-pdr. for each 100 yards of objective.
 - (ii) *Neutralising weapons*—One 25-pdr. for each 20 yards of objective.
 - (iii) *Counter-battery weapon*—5.5-in. and 7.2-in. Howitzer. Sufficient to engage each enemy battery covering the assault beaches with 30 rounds every 30 seconds. or a total of about:—
 - 140 guns on a brigade front of 2,000 yards.

This figure ignores the support of mortar fire which would be available to a brigade and the greater accuracy of guns on fixed platforms as compared with ship or craft-borne guns, and should then be regarded as a strict minimum.

- (d) The equivalent of these weapons must be available in the form of ships or craft used afloat or beached, in addition to self-propelled artillery, to cover the period between the beginning of the assault and the deployment of the artillery of the assault formations.

356. THE FOUR TYPES OF SUPPORT

- (a) Support for the assault can be most easily studied under four main headings:—
- (i) Support by heavy and medium naval bombardment (para. 357).
 - (ii) Support by air action (para. 358-361).
 - (iii) Support by special vessels or craft working close inshore (para. 362).
 - (iv) Military support during landing (para. 363).
- (b) The bombardment of Maaloy Island by H.M.S. "Kenya," a 6-in. cruiser, enabled landing craft to approach within 100 yards of the shore before it was considered necessary to cease fire. This was, no doubt, a special case, for the "Kenya" had been able to approach within point-blank range without detection. Such good fortune cannot be counted upon in operations against the coast of France and it must be borne in mind that cruisers are very vulnerable. At Dieppe, no ship larger than a "Hunt" class destroyer could, with safety, have been used, unless recourse had been had to a capital ship. The effect produced by the broadsides of a battleship at close range can justly be described as devastating. It may be recalled that on the 25th April, 1915, during the attack on Gallipoli, H.M.S. "Implacable" covered the landing at X beach from only 450 yards, firing 10 rounds of 12-in., 179 of 6-in. and 154 12-pdr. shells.

357. SUPPORT BY HEAVY AND MEDIUM NAVAL BOMBARDMENT

- (a) At Dieppe, the central assaults against the town itself were supported by a short bombardment carried out by destroyers. This bombardment did not prove effective support for the assault. It was neither heavy nor accurate enough to flatten strong defences, nor could destroyers follow the landing craft in close enough to support the actual assault at short range, by dealing directly with such elements of the enemy's defences as had survived.
- (b) On the other hand, if larger ships could have been employed, and if they could have been supplied with bombardment charges and could either have observed their fire with accuracy or have it observed for them by aircraft, more satisfactory results would have been possible.
- (c) Thus the conclusion drawn is that if Naval bombardment is to be an effective means of preparing for the assault and supporting it, the following requirements must be met:—
- (i) Cruisers, monitors or even larger ships must be available for support fire, and should preferably be capable of indirect bombardment with air spotting.*
 - (ii) The position of the targets must be accurately ascertained beforehand.
 - (iii) Close support fire by special vessels or craft working close inshore with the assault craft is essential. Any smoke-screen laid must be laid clear of the line of close support fire which in its action must be direct.

358. SUPPORT BY AIR ACTION.—I. ACTION BY CANNON-FIGHTERS

- (a) The attacks on the central beaches and the final assault on the Varengeville battery were both preceded by cannon-fighter attacks. The attack on the Varengeville battery was particularly effective because "B" and "F" troops of No. 4 Commando waited until the cannon Spitfires went in and shot up the position, before delivering their final assault.
- (b) Such support has considerable moral results and is effective in that the enemy's attention is drawn away for a few invaluable minutes from the craft coming into land or the troops forming up to attack. At the same time, the enemy's attention cannot wholly be given to the cannon-fighters and experience showed that A.A. fire was much less intense than usual.
- (c) It must be appreciated, however, that air action of this kind is essentially fleeting in its nature. For instance, it cannot be expected to keep the enemy's defences quiescent for sufficient time to allow the landing troops to disembark and cut their way through beach wire, mines or other obstacles. Neither can cannon fighters be expected to put fixed defences out of action. Furthermore, cannon-fighters cannot at present operate in close support under cover of darkness and their activities are thus restricted to daylight action.
- (d) Lastly, it is particularly necessary for as large a number of close support squadrons of cannon fighters as possible to be available. These aircraft have only a limited range and can therefore normally participate in a programme capable of only limited variation when operating towards the limit of their endurance. Unless a change in the programme is notified a sufficiently long time in advance, the cannon-fighters may be unable to synchronize their attack with that of the assaulting infantry. Cancellation, however, is possible almost up to zero hour and a new attack can always be delivered within 30 to 40 minutes if provision has been made for an adequate number of aircraft.

*Note.—In the Channel or the North Sea it is very probable that the use of cruisers would not be justified, because of their vulnerability to air attack.

- (c) In these circumstances, it is concluded that support by cannon-fighters should be regarded as a most valuable adjunct to an assault, but that when including them in the plan it must be borne in mind that the effect of their action is likely to be diversionary in character and of only very short duration. Cannon-fighters are rarely competent to silence a strongly protected position permanently.

359. II. SUPPORT BY HIGH LEVEL BOMBING

- (a) The plans for Dieppe did not include high level bombing prior to the assault. Had suitable day bombers such as American Fortresses been available in sufficient numbers this decision might well have been different. In the circumstances, the main objections to support by night bombing were:—

- (i) Surprise would have been lost because the bombing would have had to take place some time before the assault in order to allow the bombers to get clear of the target area by dawn, and to have been effective, the weight of the attack would have had to be larger than it is in the normal periodic raids on French ports.
- (ii) It would be wasteful effort in view of the inaccuracies which must be expected.
- (iii) The rubble from damaged houses might fill the streets and prevent the movements of tanks.
- (iv) High level bombing was unlikely to damage many of the sea-front positions from which heavy fire was brought to bear on the landing places.
- (v) In order to enable H.M.S. "Locust" and the cutting-out party to perform their tasks, it was necessary to avoid damage to the harbour installations and the power house.

- (b) As against these points, however, it may be argued that:—

- (i) Surprise would not necessarily have been given away had the bombing been part of a programme of attacks on coastal ports, including perhaps one or two previous raids on Dieppe itself.
- (ii) Inaccuracies might to some extent have been overcome by the use of a few expert "path-finders" who could have indicated the target by flares.
- (iii) Rubble in the streets might not have proved a worse obstacle than the undamaged road blocks and obstruction walls which were encountered.
- (iv) Though particular defence positions might not have been damaged the personnel might have been killed or wounded while on the way to man them.
- (v) The moral effect of a heavy raid and the dislocation that it causes cannot be overlooked.

- (c) The fair conclusion to draw seems to be that the question whether or not high level bombing should be included in the plan is an open one and that no hard and fast deduction should be drawn;

Each case must be judged on its merits having regard to the *pros* and *cons* mentioned above and to the possibility of diverting bomber effort from other and perhaps more important programmes.

- (d) In connection with air support, generally, it is of obvious importance to note the recent developments in daylight bombing and to consider how they may effect the planning of an assault.

- (e) It is only fair to add that large scale night bombing of towns in France is against the general policy of His Majesty's Government, although an exception might have been made in the case of Dieppe had the Force Commanders really wanted it.

(BINGO)

360. III. AIR ATTACKS ON ENEMY REINFORCEMENTS

- (a) Once an assault on any scale has been launched it will almost invariably be important to prevent or at least delay the move up of enemy reinforcements. If air action to this end is likely to be required, then it must be arranged for in the plan.

Probably the easiest way of doing this is to hold suitable squadrons at call for the purpose and to organise operations by intruder aircraft at night and Tactical Reconnaissance aircraft by day along the likely approaches so that early warning can be obtained that enemy forces are on the move. Tactical reconnaissance by aircraft proved adequate at Dieppe though the casualties suffered were heavier than those inflicted on aircraft employed on other tasks.

- (b) There is little doubt that in a large scale operation, or when an assault is made in an area particularly suited to rapid reinforcement by the enemy, air action against enemy communication centres, barracks and camps will have to be undertaken as part of a set programme, which may have to be initiated some days or even weeks before the raid.

When summing-up the relative importance of retarding or preventing the moves of enemy reinforcements it should be borne in mind that though the coastal defences may be formidable, they are fixed in character.

Thus, once a breach has been made, the danger of serious counter-attack comes not so much from the garrisons of other fixed defences in the neighbourhood as from mobile reserves outside the immediate area of the assault. These reserves should be attacked from the air as and when opportunity offers.

- (c) In these circumstances, accurate intelligence data concerning the location of enemy formations is a necessity if the Commanders are to arrive at the proper decision regarding the allocation of aircraft as between this and other tasks. The ideal to be aimed at is for the presence of reinforcements to be detected by tactical reconnaissance aircraft and subsequently attacked.

361. IV. THE SCALE OF AIR SUPPORT AT DIEPPE IN RELATION TO THE SCALE OF THE LAND OPERATION

- (a) It is of particular interest to note that at Dieppe 67 Squadrons were employed on various tasks directly concerned with the operation. This was not abnormally high in view of the anticipated scale of the enemy's air opposition and proved adequate to cover the operation. That opposition, however, would decrease:—

- (i) if operations on the same scale took place at several different points;
- (ii) if they were continued over a longer period of time thus progressively reducing the enemy's air resources.

It is pointed out, however, that if more than one assault is delivered simultaneously at several different points, the enemy is free to concentrate all his air forces against any one of them, for it will scarcely be possible for the Royal Air Force, unless its strength is enormously increased, to give the scale of fighter cover provided at Dieppe to all of them at once. Landings must, therefore, take place with a sufficient interval of time between each to enable maximum fighter cover to be given to each landing in turn, or the enemy's strength in the air must have been reduced before the operation begins. If it is necessary for several landings to take place simultaneously, reliance must be placed on Intelligence and early warning R.D.F. Such information is normally sufficient indication to enable the Air Force Commander to divert fighter cover from one landing to another and, in the case of one landing only, to intercept enemy air forces on their way to the landing. It is, however, emphasised that this method at the present moment cannot be depended upon, though further developments should increase the probability of its successful use.

- (b) Enemy air attacks on ships were at times intensive but the volume of A.A. fire achieved by the close concentration of the ships greatly reduced the effectiveness of the enemy's low attacks. Such concentration of fire may make it possible for air cover to be reduced in its neighbourhood and used for other purposes. Broadly speaking ships and craft were only hit when detached. The moral is "Unity is Strength."
- (c) The enemy failed at any time to develop serious air attacks against the troops on shore.

362. SUPPORT BY SPECIAL VESSELS OR CRAFT WORKING CLOSE INSHORE

- (a) The assaults at Dieppe, particularly on the central beaches, showed in the most clear fashion the need for overwhelming fire support during the initial stages of the attack. It is during these vital minutes while troops are disembarking, cutting or blasting their way through wire, clearing beach mines and finding routes over obstacles that the need for close support is at its greatest. At the same time it is during this very period that the troops are least able to support themselves because there has not been time to organise and deploy supporting arms. The support that is so necessary must, therefore, come from outside sources; for without it, the assault will almost inevitably lose momentum and may end in a stalemate with the troops pinned to the beaches, unable either to advance or to withdraw. Overwhelming support of the kind now envisaged should not only make the assault possible, but would also be of the greatest value in protecting the craft themselves from being disabled during the final closing on the beach and while beached.
- (b) It is quite certain that the "Support Craft" which are now available do not meet the requirement envisaged in the preceding paragraph. They are too lightly armed and too lightly armoured for continued action against the type of defences which the enemy have erected at all important points on the occupied coast-line.
- (c) It must be remembered that though an assault may take place to a flank of the main objective, it is in itself a frontal attack. Thus, once the assault is discovered, there is little room for subtlety. The main necessity is to batter a way through in the shortest possible time.
- (d) In order to achieve this object, it is considered that an entirely new type of support vessel is required, which might be described as a shallow-draught armoured gun-boat. There is also the technical possibility of a specially designed small mobile fort, constructed on lines permitting it to be brought to the scene of action and there sunk in position for as long as may be needed, leaving only the gun turret above water. This, however, would, in the nature of things, be more for barrage and counter-battery work than suitable for direct close support against beach defences in the opening stage of the attack.

* Note: See also paragraph 371.

- (c) No such gun-boats or mobile forts exist. The need, however, does and it can only be met by new design and new construction. This is a matter not only of real urgency but is one which will grow in importance. There are two sides to the question. On the one hand, each week that passes allows the enemy more time to strengthen the already strong coastal crust through which we must break, before large forces can be deployed. In carrying out this work, we must anticipate that the enemy will naturally give priority to important areas and ports. On the other hand, the necessity on our part to include in any major attack or even in any major raid the very areas which are most likely to be strongly defended, does not grow less.

363. MILITARY SUPPORT DURING LANDING

The attacking troops can add themselves to the volume of covering fire developed during the landing in various ways:—

- (i) Self-propelled mobile artillery provided that it is put ashore immediately will prove of great assistance in covering the initial assault. In addition to fire from specially designed and fitted support craft, such as the L.C.S. (M) and L.C.S. (L), much assistance can also be given by the troops from the actual landing craft. In each of these latter type of craft, one or two Bren guns and, whenever possible, a 2-in. mortar should be mounted ready for use. The Bren guns may be required against either land or air targets while the 2-in. mortar will be particularly valuable in providing smoke cover and in blanketing searchlights which may open up on the landing places.

- (ii) It is to be noted that firing from landing craft requires a considerable amount of practice and that frequent opportunities for such practice must be arranged during the preparatory training period.

364. THE TIMING OF THE ASSAULT

- (a) In the Dieppe operation the assaults which took place in the first faint light of dawn (i.e. a visibility of 200 yards) succeeded, whereas those that came in after dawn were unable to make so much progress. It would be very unwise however to draw any definite conclusions from these facts because the daylight assaults which were those against the town itself were faced by defences which were far stronger and by difficulties which did not exist on the flanks.

- (b) Thus it is considered that the problem whether to land in darkness or in daylight is an open one and that each particular case must be judged in relation to the broad questions stated below:—

- (i) Do the conditions of tide and moon, and the time which will be taken by the ships and craft on passage permit of a choice between a day and a night assault?
- (ii) Do the circumstances of the operation indicate that a night assault will give a reasonable chance of tactical surprise? If the answer to this question is in the affirmative, then it is considered that a good many risks and disadvantages can profitably be accepted in order to gain surprise. In this connection, the importance of having vessels and craft of sufficient speed is to be emphasized for good speed will very often not only make an assault possible that otherwise would be impracticable, but in many cases will achieve the additional advantages of a tactical surprise.
- (iii) If a daylight assault is thought best, can it be said that the available means of support (including smoke) will be sufficient to deal with enemy defences unhampered by darkness?
- (iv) If a night assault is thought best, can the following questions be answered satisfactorily?

Is the Naval assault force capable of accurately conducting an approach in the area concerned and does it possess the latest navigational aids necessary to make an accurate landfall?

Is there sufficient time available for the specialised training required by the Naval and Military personnel taking part?

- (c) All these questions are comprehensive and each one of them has many ramifications which must be examined by those who have to take the decision.
- (d) Before reaching this decision there appears to be one further and fundamental question which the Commanders concerned should ask themselves; it is this:—

"Will a night assault allow me to accomplish something which I do not think I can equally well accomplish by a daylight assault?"

365. THE LANDING OF TANKS IN THE ASSAULT

- (a) At Dieppe the tanks, which were all landed in daylight with the landing waves in the face of defences which dominated the beach and against tank obstacles that had not been breached, found themselves in grave difficulties. The deduction to be drawn is that, unless overwhelming fire support is available, tanks should not be landed until defences have been captured and the obstacles cleared.

- (b) The L.C.T. offer a big target when used with the assaulting waves and must not be delayed at the beaches beyond the time required to disembark tactically their loads of tanks and other troops if these are carried. At Dieppe they drew most of the fire, and suffered heavily.

366. BEACH RECONNAISSANCE

As soon as it is known that a project involving a combined operation is under consideration the question of beach reconnaissance in all its aspects must be investigated. In many cases sufficient information can be obtained from existing publications and personal knowledge. As the project develops, the beach reconnaissance plan should also develop, not side by side but ahead of it, so that when the outline planning stage is reached, the reconnaissance of the beach is complete in every detail with photographs, silhouettes and information concerning the nature and slope of the beach and the waters off it, whether tanks and track vehicles can land on it with or without the use of track laying devices, etc. Information concerning the beaches at Dieppe was very complete and much of it was obtained by the study of oblique and vertical air photographs. Naval reconnaissance methods should also be used but care must be taken that they remain undetected.

367. SECURITY

- (a) One of the most difficult problems to solve in the mounting of a combined operation is that of security.
- (b) The Dieppe operation was a particularly complex case as it had been mounted, postponed and cancelled before being re-mounted in the form in which it eventually took place. Thus many hundreds of people were aware of the objective and there was clearly a risk that security might have been jeopardised during the 41 days which intervened between the original cancellation and preliminary order to sail the expedition. Very special steps were therefore taken, and it is gratifying to note that all intelligence sources agreed that the landing came as a surprise and that no abnormal manning of defences or reinforcement of the area had taken place.
- (c) The conditions of each operation will vary so much that it is impossible to lay down rigid and detailed rules for the maintenance of security. Common-sense and the particular circumstances of the operation must dictate the measures to be taken.

Attention is drawn to the following points:—

- (i) The maintenance of security among the Naval force is more difficult than in the case of the other Services since the relatively higher trained men who man the craft cannot be prevented from indulging in speculation when unusual preparatory steps are being taken. Such steps are usually necessary at a comparatively early stage. Although speculation may be wide of the mark it may easily focus the attention of a trained agent on the ships concerned and he will at once divine what is in the wind. The only persons who can allay such speculation or direct it into harmless channels, are the Captains of the ships concerned. It must, therefore, be a cardinal principle for these officers to be put into the picture before any overt action is taken in connection with an operation.
- (ii) The aim should be to disseminate intelligence at the earliest moment without divulging either the date or the place of the operation. Without naming date or place, much can be done to render training realistic by giving units the details of their tasks, the distances they will have to cover, the type of country and obstacles they will have to move over, and the time limit, if any, within which they must complete their tasks.

It will be necessary also to say whether they are to concentrate on day or night work and to indicate whether there will be other units operating on the flanks.

Armed with this information unit commanders will be able to relate their training to actual operational requirements and to concentrate on the subjects that really matter. It is inevitable that those of an enquiring mind will sense that an operation is being prepared but they will not know when or where.

- (iii) In certain cases, it may be found possible, without endangering security, to issue maps, models and photographs which bear no names.

The preparation of such aids requires time and demands must be foreseen at an early stage in the planning if they are to be of real use.

- (iv) It will be necessary throughout the preparatory stage to keep a careful record of all those who are aware of the operation. In this connection the issue of cards bearing the code name of the operation and the name and details of the holder has been found useful. Such cards, the issue of which should be severely restricted, authorise the holder to speak to another holder, but to no non-holder, regarding the operation.

- (v) Throughout the preparatory stages, the "G" and "Q" staffs of all three Services must work closely together. If this is not the case, it may be found that the most carefully veiled arrangements by one branch are rendered entirely useless, through lack of knowledge on the part of the other.

- (vi) It goes without saying that the number of officers in each headquarters who know of the operation should be kept to the minimum.
- (vii) The early production of a "cover" plan for the forces engaged including not only their training but their moves is an urgent necessity.
- (viii) It must be realized that strategical surprise may be completely compromised and the constitution of the force given away by the use of wireless, particularly in a well-known operational training area, unless this problem is carefully thought out and regulated. The co-operation of units outside the force may be necessary to adjust or sustain traffic at the required level.
- (ix) The administrative and movement aspects of the security problem are dealt with in Annex 12, but it may be said here that the issue of large quantities of stores, equipment and explosives to units, ships and craft is apt to provide much cause for speculation and rumour.

(d) The difficulties encountered in trying to select an area in the South of England which can be completely "sealed" appear to be insurmountable. For various reasons it proved impossible to get even an island like the Isle of Wight completely "sealed" before the operation. Much can be done, however, to offset this disadvantage by the imposition of postal and telegraphic censorship, monitoring of telephone lines and by the installation of plain-clothes police in hotels, public houses and places where gossip is likely to occur.

(e) During the Dieppe operation, complete copies of the Military Force Commander's Operation Orders were taken ashore. It is not considered that there is any justification for such a step and that only important extracts such as code words or time-tables need be landed. Even in these cases the numbers carried should be reduced to the minimum. Force Commanders, will, in most cases, be well advised to indicate in orders the portions which may be landed, and those who are authorised to carry them. To prevent the enemy being in a position to quote any of these portions which may be captured as being "official operation orders," these extracts should be copied in manuscript and have their official headings removed.

368. WHEN TO BRIEF TROOPS

- (a) In the first mounting of the Dieppe operation troops were briefed and embarked on the first day and thereafter had to remain "sealed" for the whole of the five days during which the operation was kept mounted, waiting for the weather to improve. In some of the smaller ships, which were only intended to ferry soldiers across, the discomfort and lack of space and facilities decreased the efficiency of the troops day by day.
- (b) It is therefore desirable to refrain, not only from briefing, but from embarking troops until a long range weather forecast shows some prospect of the weather becoming sufficiently settled to give really good chances of the operation coming off shortly after embarkation and briefing. This was done when the Dieppe operation was finally mounted.
- (c) The briefing which has to be given to the aircrews and troops of the airborne division is of necessity much more complicated and, at present, the minimum time required is about four days for the aircrews and two days for the troops. Except in periods of set weather no weather forecast can extend to cover so long a period. It follows that briefing for the airborne division has to take place before there is any real prospect of knowing when the operation is coming off. Further, since the aircrews and troops are not embarked in ships but are scattered in camps, efficient "sealings" can only be done at the expense of focussing attention on the imminence of an operation. The time taken for briefing could probably be reduced to about twelve hours for airborne troops if facilities could be made available for the airborne Division to reproduce the requisite number of "models" for simultaneous briefing of all units concerned.

369. THE USE OF AIRBORNE TROOPS

- (a) In the original plan for the Dieppe operation Airborne Troops were included to deal with certain important batteries.

In the final plan for the operation they were omitted.

The participation of Airborne Troops calls for certain weather conditions, especially as far as light is concerned, and in so doing increases the odds against a particular operation taking place within the favourable period for moon and tide.

In this respect the Dieppe report makes it clear that though the conditions on the day of the attack were satisfactory for ships and landing craft, they would not have permitted the use of Airborne Troops at the time required in the original plan. In fact, weather conditions suitable both for landing craft and Airborne Troops did not occur at all during the period. Thus, had the latter been included, the operation would have had to be cancelled.

- (b) It should be observed, however, that technique, equipment and methods are continually improving and that conditions which would be considered hazardous or impossible today may become far from impracticable in a few months time.

(c) It is considered that the correct deductions to draw are the following :—

- (i) Airborne Troops provide a means of achieving surprise and of getting over difficulties both literally and figuratively which other arms do not possess. They should, therefore, be included in plans as often as possible.
- (ii) However, so long as the present weather limitations apply, it is advisable that Airborne Troops should not be allotted to tasks of such importance as would entail the cancellation of the operation if adverse "airborne weather conditions" prevailed.

Thus, they should be employed on tasks which, though extremely helpful, are not vital to the plan as a whole. If so used, then their possible non-participation will not necessarily mean the cancellation of the entire operation. It should, however, be borne in mind that the tendency of recent inventions is to overcome the main obstacle—the necessity for suitable light conditions—to the use of Airborne Troops. The new navigational aid is now giving most satisfactory results and, provided one or more men can be landed before the operation, troops can be dropped accurately under almost any light conditions.

- (iii) The question of briefing and "sealing" of Airborne Troops and their aircrews must be taken into consideration when deciding whether to employ them.
- (iv) Close touch should be kept with Airborne formations so that those responsible for preparing plans are kept aware of all progress made and of the weather and light conditions in which improved methods and equipment may allow them to operate.

370. CHOICE OF ASSAULT LANDING PLACES

(a) The choice of assault landing places is limited principally by the tidal conditions at the time of the landing, the beach gradients, and the exits from the beaches. In addition, the time that can be allowed on shore has a direct bearing on the choice of landing places in raiding operations of comparatively short duration.

(b) It is considered, however, that whenever the conditions permit the assaults should be planned to develop round the flanks of a strongly defended locality, such as a town, rather than frontally against it.

(c) It is recognised that the defences along the whole occupied coast are becoming formidable. But the intense difficulties caused at Dieppe by well-concealed and reinforced positions in houses, by road-blocks and obstruction walls are very evident from the report on the operation. The landing places at Dieppe were peculiarly difficult, for in addition to the frontal defences they were flanked by high cliffs from which coast defence guns and other arms maintained heavy enfilade fire. These defences could not be neutralised by the bombardment, bombing, or assault landings. What happened at Dieppe points to the wisdom of avoiding frontal attacks on such areas whenever possible.

Naturally, the situation would be radically altered if very powerful fire support was available during the early stages, or if the defences had been subdued by action before the assault, but in the absence of such support or preparatory action it will be wise to envelop a strongly defended locality rather than to make a frontal attack upon it.

This by no means excludes a frontal feint staged in order to fix the enemy's defences and perhaps his reserves as well. On the contrary, every form of feint deception and diversion should be practised in order to mislead and confuse him during the all-important period when the leading troops are being landed and are fighting to make good their bridgeheads.

371. AIRCRAFT RECOGNITION

(a) During the Dieppe operation, there were many cases of our own aircraft being engaged by our own guns. Such incidents are always likely to occur in the heat of an action, but every possible step must be taken to reduce them to an absolute minimum.

(b) The following measures are recommended :—

(i) The early issue to all ships and units of photographs and silhouettes showing the types of aircraft which will be acting in support of the operation, and of enemy aircraft likely to be seen. Lectures should also be given as frequently as opportunity offers.

(ii) Arrangements to be made for aircraft of the various types to fly over ships and units during training and rehearsals. On such occasions personnel of the Royal Observer Corps should, whenever possible, be present so as to indicate the type and the distinctive features by which it may be recognised.

(iii) During the operation itself, it will be invaluable if specially trained personnel (possibly from the Observer Corps) can be allotted to ships and landing places so that they are available to distinguish friendly from hostile aircraft at the earliest moment.

(iv) Pilots to be instructed to avoid as far as possible flying straight at ships, as the guns' crews are bound to treat all aircraft flying straight at their ship as hostile.

(v) The greatest possible use should be made of the present schools for aircraft recognition established at the various ports.

372. LANDING OF BEACH ORGANISATION PERSONNEL

- (a) Beach parties at Dieppe were put ashore as complete detachments in the first flights with the object of getting the landing places organised from the earliest moment.
- (b) In practice, however, it was found that the landing of complete beach parties had two major disadvantages. The first was that their presence meant leaving out an equivalent number of the leading sub-units. The second that, if, as happened, the action did not proceed according to plan, the beach party was likely to become embroiled in the fighting ashore and as a result to suffer casualties which might be great enough to prevent it functioning as an organised body for some considerable time.
- (c) It is recommended, therefore, that beach signal organisation personnel including beach parties should be distributed evenly between the escorting craft for each Group of landing craft and that it should be the Beachmaster himself, in one of these craft with the Beach Signal Officer, who should decide at what time the various elements of beach organisation personnel parties can safely be landed. Situation reports from reasonably close inshore could then be passed before they had landed.

373. PROTECTION DURING PASSAGE.

During its progress across the Channel, the force attacking Dieppe was very vulnerable to surface attack. None, in fact, developed, but it will be imprudent to assume that such a risk can again be taken with impunity. It is therefore necessary for a heavier Naval escort to be provided than was available for the operation against Dieppe.

374. THE USE OF SMOKE

- (a) Given reasonable atmospheric conditions smoke properly used can be a very valuable aid to a combined operation.

It can, nevertheless, become a double edged weapon if its employment is not most carefully planned between the three Services.

- (b) At Dieppe, for instance, it might have been helpful in order to cover the landing craft during the final stages of their approach, and the initial stages of the landing itself, to have ended the Naval bombardment of the central beaches with some salvos of a smoke shell or, alternatively, to have laid a curtain of smoke across the front of the town by aircraft. If, however, smoke had been put down by either of these methods, then the cannon fighters could not have gone in to make their attacks just before the landing, and in the case of smoke laid by aircraft, bombarding ships would probably have lost sight of their targets too soon. The comparative advantages of a fighter attack and no smoke as against a smoke screen and no fighter attack had to be weighed and a decision reached. This isolated incident appears an excellent example of one of the numberless points directly affecting all three Services which inevitably crops up during the planning of a combined operation and which can only be settled by joint consideration and a joint decision on the part of the Force Commanders.
- (c) The conditions for smoke during the Dieppe operation were excellent and the following methods were employed for producing it:—
 - (i) by special smoke apparatus (Chloro-Sulphuric Acid) carried in certain ships and craft;
 - (ii) by smoke-floats carried by ships and craft;
 - (iii) by aircraft, some dropping phosphorus smoke-bombs and others laying smoke curtains with S.C.I.;
 - (iv) by 2-in. and 3-in. mortars.
- (d) It is considered that attention should be drawn to the following points which indicate the periods during which smoke will probably be especially required and to certain qualifications which should be borne in mind:—
 - (i) If the assault is carried out in daylight it is virtually certain that smoke will be required to cover the landing craft during the final stages of the approach. Similarly, if ships or craft are required to lie comparatively close to the shore during daylight hours, then they will require smoke to cover them from shore batteries and from air attack. Such screens may have to persist throughout the daylight hours. A long period of this kind entails the carriage and employment of very large quantities of smoke equipment which may require special provision.
 - (ii) The withdrawal from a combined operation, especially if the enemy is in close contact and can still bring fire to bear from fixed or mobile batteries, is bound to be a difficult undertaking and constitutes a phase of the operation during which smoke will without doubt play a big part. Experiences at Dieppe more than proved its value at a critical time of this sort.
 - (iii) The smoke laid to cover craft as they approach the landing places must follow and not precede action by fighter aircraft against these landing places, and the preliminary Naval bombardment.

(iv) A screen of smoke lying between the Headquarters ship and the shore makes visual signalling impossible and signalling by pyrotechnics a doubtful means of inter-communication. If such conditions are likely to continue for any length of time, then it becomes all the more important to ensure that alternative wireless channels exist in order to replace any that may become for one reason or another, unworkable. (See Annex 10.)

(v) The blanketing of a battery by smoke just prior to an assault upon it is obviously possible and more often than not desirable, but the blanketing of a battery by smoke in order to prevent it shooting is very likely to prove disappointing.

The former is an offensive use of smoke and is followed by immediate action at close quarters as in the case of the Varengeville battery.

The latter is a defensive use of the weapon and though it may reduce the battery's effort by making the local conditions unpleasant and inconvenient it is unlikely to prevent it shooting as the remote observation post which usually exists, will not necessarily have been affected.

(vi) Various actions at Dieppe showed the value of smoke to infantry. When a definite target, such as a defensive position or pill-box or battery is the objective, it can be studied in precise detail from air photographs and the attack on it rehearsed under varying atmospheric conditions over ground which is similar.

(vii) The smoke plan, like the plan as a whole, should be flexible so that the arrangements can be accommodated to fit a change in the weather. Such flexibility will probably demand the provision and carriage of additional smoke stores so that a task which would have been undertaken by aircraft under certain conditions can, if necessary, be undertaken by another method. It took approximately two hours to change a squadron from smoke-curtain installation to smoke-bombs or vice versa. Thus if it is uncertain whether smoke-bombs or S.C.I. will be used, it will be necessary to have some aircraft loaded with S.C.I. and some with smoke-bombs. This may be uneconomical in aircraft, but in order that the flexibility of the smoke plan may be retained the extra aircraft will be necessary.

Steps are now being taken with the object of discovering how far it is possible to reduce the time taken to load S.C.I.

(viii) Force Commanders will require frequent meteorological reports throughout the operation, and a meteorologist should be attached to their staff.

(ix) The Dieppe operations showed the necessity for a careful assessment during the planning stage of smoke requirements. These proved higher than were anticipated and there is evidence to show that a greater quantity, particularly of smoke-grenades, should have been carried.

375. PROVISION OF SOME FORM OF LIGHT ARTILLERY

(a) Once an assault has got across the landing place and is making progress inland, one of the main and urgent requirements will be adequate supporting fire so that momentum should not be lost and so that strongly defended areas can be assaulted without delay.

(b) It is considered that such support can only be provided rapidly by self-propelled artillery and by weapons which can be manhandled ashore because beach roadways will not have been laid and proper clearance of obstacles will still be uncompleted. In such conditions equipment which is in any way cumbersome will not fulfil the requirements.

(c) In these circumstances it is suggested that the allocation of 3.7-in. howitzers and heavy mortars to assaulting units should be considered.