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21 ARMY GROUP

**SOME NOTES ON
THE USE OF AIR POWER
IN SUPPORT OF
LAND OPERATIONS
AND
DIRECT AIR SUPPORT**

This pamphlet must NOT fall into enemy hands. Officers in possession of a copy will be responsible for its safe custody.

**HOLLAND.
DECEMBER, 1944.**

Introduction

DURING the last few years, many lessons have been learned and much progress made in the art of integrating land and air action. From these experiences the Army and the Air Forces have been able to agree on methods of working together in the field, and to establish certain broad principles which govern the use of air power in support of armies. Both principles and methods have been tested in battle and proved sound; they are well known and have been set out in inter-service pamphlets, and it is unnecessary to repeat them in these notes.

2. Present operations in western EUROPE in all stages have been combined Army/Air operations. These combined operations have been conducted in accordance with the agreed principles and methods, and the overall contribution of the Air Forces to the successes gained has been immense. As the battle continues so we go on adding to our experience, and we must never be content with the present state of the game. We must constantly seek ways and means of exploiting still further the great potential of the air weapon and of taking full advantage of technical improvements as they become available.

3. In this present campaign we have enjoyed an overwhelming superiority in numbers in the air. We may not always be fortunate enough to operate under such conditions: a factor which increases the importance of correcting mistakes and making improvements. We must also have a clear recognition of the limitations which different conditions in the air may have on the contribution which the Air Forces can make to the land battle.

4. In the following notes, I wish to emphasise the features which I regard as of fundamental importance in this business, and call attention to the major points which have emerged during the last few months.

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Holland.
December, 1944

SOME NOTES ON THE USE OF AIR POWER IN SUPPORT OF LAND OPERATIONS

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1. Any officer who aspires to hold high command in war must understand clearly certain principles regarding the use of air power. In addition, it is necessary for commanders and staffs at all levels to have a sound knowledge of the capacity and limitations of air support and a familiarity with the machinery and procedure.

Flexibility and Concentration of Effort

2. The greatest asset of air power is its flexibility. Whereas to shift the weight of effort on the ground from one point to another takes time, the flexibility inherent in Air Forces permits them without change of base to be switched quickly from one objective to another in the theatre of operations. So long as this is realised then the whole weight of the available air power can be used in selected areas in turn. This concentrated use of the air-striking force is a battle-winning factor of the first importance.

3. It follows that control of the available air power must be centralised and command must be exercised through Air Force channels. Nothing could be more fatal to successful results than to dissipate the air resources into small packets placed under command of Army formation commanders with each packet working on its own plan. The soldier must not expect or wish to exercise direct command over air-striking forces.

Inter-Service Relations

4. Experience in this war has proved beyond doubt that all modern military operations are in fact combined Army/Air operations. Consequently our working system must be one by which two independent Services can

operate smoothly and efficiently in what is fundamentally a common task. This automatically implies a process of negotiation rather than authority, and a satisfactory solution is no easy matter.

Success is bound to be conditioned by many factors, of which I consider the following are the most important:—

- (a) The degree of knowledge possessed by each Service, of the other's task, their capacity and their limitations.
- (b) The degree of mutual trust and honesty of motive which is reached between the two Services.
5. Satisfactory relationships are not brought about by subscribing to them in theory or by giving formal approval to well-meaning principles. For example, it is a fallacy to imagine that the principle of adjacent Headquarters of itself will produce a proper standard in these things. They call for hard work and genuine effort on both sides, and a constant interchange of views. Both Services have something to contribute to joint problems, and in all our dealings with one another we must be honest and say what we think without being hampered by too narrow a division of responsibilities or by out-of-date formulas. I consider that this sort of approach to common problems is essential to good relations and genuine progress and improvement.

The Army's Responsibilities

6. The Army's part begins with the acceptance of certain broad responsibilities towards the Air Force. Unless we deal efficiently with the points set out below, we must understand quite clearly that the Air Force contribution to the Army will be greatly handicapped:—

- (a) In order to produce the maximum support, Air Forces must be provided with adequate airfields. It is the duty of the military commander to ensure that their early provision is covered in his plans.

- (b) The repair and construction of airfields is largely an Army commitment. The military commander must ensure that adequate Engineer and Labour resources are allotted to this end, and that timely provision is made for the lifting of the necessary stores.
- (c) Given adequate airfields, the efficient operation of air forces is dependent on good communications. The military commander must ensure that adequate Signal resources are provided and that proper priority is given to Air Force Signal requirements.
- (d) The Army is primarily responsible for the protection of airfields and Air Force installations both from ground and air attack. In every plan of operations the dispositions of troops and AA artillery must cater for these requirements.
- (e) The Army has certain responsibilities for the delivery of Air Force supplies and for the movement control of Air Force units. The military commander must ensure proper priority and efficient service in these matters.

Planning

7. The military commander who is concerned in the planning and conduct of air operations on his front must deal with one air commander and one only. Under certain circumstances it may be necessary for the air commander to call for air resources beyond his immediate command in order to meet the Army's requirements. If that is so, additional Air Force representatives may be brought forward to give expert advice, but the one to one channel must not be traversed. I regard this as a fundamental principle to which there should be no exceptions.
8. The plan of air operations is determined by the air commander within the framework of the Army/Air plan approved by the military commander. It is essential that the staffs of both Services should work together

from the outset on a joint basis in planning operations. The conception of making an Army plan and then asking for air assistance to be provided may result in air power being overlooked during the important preliminary phases, or even in a misunderstanding of the project as a whole.

The Correct Approach to Decentralisation

9. I have already referred to centralisation of control and concentration of effort as principles of the first importance. It is necessary to have a very clear and accurate understanding of what these things mean. If this is not so, a faulty interpretation will result in handicapping the Air Force contribution.

10. Once the priorities have been decided, the air effort is allotted to a particular sector. When that is done, concentration of effort has been achieved. Within that sector, however, decentralisation of control of a proportion of the effort may be advantageous, and at times essential, in order to bring about quick and immediate air attacks closely related in time and space to the action on the ground.

When correctly interpreted, decentralisation of control does not in any way conflict with first principles.

THE BASIC FUNDAMENTALS

11. I give below those points in connection with the use of air power which in my opinion are fundamental and vital to success:—

- (a) It is necessary to win the air battle before embarking on the land battle. If this is not done, then operations on land will be conducted at a great disadvantage.
- (b) It is not possible to conduct successful offensive operations on land against an enemy with a superior Air Force, other things being equal. The enemy's Air Force must be subdued before the land offensive is launched.

(c) Fire support from the air is dependent on the weather. The overall plan must aim at winning the battle with the fire support available from the ground, especially when time is important and you cannot wait. If the air support becomes available it is a good bonus and enables you to win more quickly and with fewer casualties.

(d) There will be occasions when fire support from the air is essential for success. You then require good weather and must wait for it.

(e) A retreating enemy offers the most favourable targets to air attack. The greater the pressure applied on the ground, the more disorganised the retreat, and the greater the opportunities for the air forces to inflict punishment.

Under these circumstances, given correct and timely appreciations and a proper application of the air effort, action by the air forces can turn retreat into rout and may be decisive.

(f) The moral effect of air action is very great and is out of proportion to the material damage inflicted. In the reverse direction, the sight and sound of our own air forces operating against the enemy have an equally satisfactory effect on our own troops. A combination of the two has a profound influence on the most important single factor in war—morale.

B. L. M.

SOME NOTES ON
DIRECT
AIR SUPPORT

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The Tactical Air Force

1. An Army Group in the field gets direct air support through the agency of a Tactical Air Force. The Tactical Air Force is an independent air command organised and equipped for its particular task and comprises:—

- (a) A Headquarters
- (b) Tactical Groups on the scale of one per army
- (c) A Light/Medium Bomber Group
- (d) A Strategic Reconnaissance Wing
- (e) A Base Defence Group

2. The Tactical Group consists of fighter type aircraft exclusively, all trained in air combat and ground attack. A proportion are specially equipped and trained for photographic and visual reconnaissance.

The Light/Medium Bomber Group is equipped and trained for day and night operations. The Strategic Reconnaissance Wing specialises in day and night photography. The Base Defence Group consists of day and night fighters.

3. The HQ of the Tactical Air Force is associated with and works with the HQ of the Army Group. Each Tactical Group is associated with and works with an army. The remainder of the formations have no immediate military association, and are controlled directly from HQ Tactical Air Force.

The Focus of Direct Air Support

4. The focus of all direct air support both in the planning stages and in the conduct of operations is at the Army/Tactical Group level. It is at this point that the chief responsibility must rest and the bulk of the work will be done. The Tactical Group will frequently

require reinforcements which will come from the remainder of the Tactical Air Force resources and, on occasions, from the Strategic Air Forces. Whatever additional effort is provided, the planning and conduct of the air operations must remain with the Army/Tactical Group whose front is concerned. Higher HQs of both Services will be required to provide assistance and expert advice, but there must be no attempt to pull back control to the higher levels. There may be variations to this rule such as the assault phase of a seaborne landing when elements of two armies may be involved and air bases in the bridgehead are not available. Such instances must be regarded as exceptions, and not allowed to prejudice the general rule.

Location of Army and Air Headquarters

5. Two adjacent HQs will provide the associated military and air commanders with the best opportunity of working together successfully. Physical proximity by itself will not produce the answer, unless it carries with it close individual contacts, a constant exchange of information and a frank interchange of views. Experience has shown that actual integration of staffs is not necessary, but the associated branches must have ready access to each other at all times. The relationship which is reached between the two Services is of first importance. Commanders must watch these points therefore, and take a personal interest in seeing that things are going as they should.

6. It follows that the aim must always be to live and work side by side, but there will frequently be a conflict of interests in the siting of HQs. Difficulties arise chiefly because of the more direct control exercised by the Air HQ over its subordinate formations. To be effective, this control requires good telephone communications and, as a result, a location in the airfield area. At the same time, the associated military HQ may require to be well up with the battle, and content to work by wireless.

7. Under these circumstances a too rigid insistence on maintaining adjacent HQs will result in loss of efficiency, and it may be necessary to accept a split. Experience has shown that there is no fundamental objection to split HQs provided proper arrangements are made. For example, the US authorities have adopted as their normal procedure the establishment of a representative military staff at the HQ of the associated Air Forces, rather than a joint Army/Air HQ. When the two HQs are apart, a representative staff section should normally be detached from one to remain with the other. This section must have first-class communications to its parent HQ and be linked to the special air support signals arrangements. Under all circumstances the yardstick in this problem must be that of effective results.

Methods of Presenting Army Requirements to the Air Force

8. The principle by which one military commander deals with one air commander has been referred to and its importance stressed. It follows that requests for air support beyond the immediate resources of the air commander must be passed through Air Force channels to higher air HQ for consideration. At the same time there must be a soldier to soldier interpretation of these requirements as they travel upwards to ensure that they are considered at the higher levels against a proper military background and with correct military priorities. The principle for the passage of requests, therefore, will be:—

- (a) Air to Air channel for action
 - (b) Parallel Army to Army channel for information
9. Within this general method, requirements can be considered under three headings:—
- (a) The set-piece battle
 - (b) Daily pre-arranged support
 - (c) Immediate support

The Set-Piece Battle

10. The set-piece battle will usually involve the employment of Air Forces outside the Tactical Ground resources, and frequently beyond those of the Tactical Air Force. The following are the important points in this type of operation:—

- (a) The military commander must decide at the outset whether he will wait for the weather or not.
- (b) If air support is essential to success he may have to wait. He must obtain the best weather forecasts, and must make fool-proof arrangements for day-to-day or perhaps hour-to-hour postponements.
- (c) If Strategic Air Forces are called for, the Army's requirements will have to be balanced against the current strategic air tasks. The priorities are decided at the highest levels: this takes time. The military commander must aim, therefore, at giving the maximum notice of his requirements.
- (d) Wherever the reinforcing air effort may come from, the operations must be planned and conducted at Army/Tactical Group HQ; expert advice and assistance will be provided by the higher HQ on demand.
- (e) When Air Forces are called upon to operate in an unaccustomed role and over terrain with which they are not familiar, particular attention must be paid to safety precautions, and where necessary special arrangements made to ensure accuracy and prevent accidents.

Daily Pre-Arranged Support

11. The pre-arranged support for the following day is decided at a joint conference held at Army/Air HQ daily. The points to bear in mind are:—

- (a) The resources of the Tactical Group supplemented by those of the Tactical Air Force should be

sufficient to meet the normal day-to-day requirements of an Army.

- (b) Requirements likely to involve reference to higher HQ must be submitted as early as possible to overcome the delays inevitable in obtaining support from another Air Command.
- (c) The military appreciation leading to requests must be presented thoroughly and passed upwards over military channels.
- (d) The timings of the daily Army/Air conferences at the various levels must be arranged so that they fit in with one another in correct sequence.

Immediate Support

12. Requests for immediate support cannot be foreseen in detail, but must be anticipated as far as possible in the pre-planned arrangements. When such requests arise they are urgent and speed of response is vital to good results. The following are the important points:—

- (a) Good communications are an essential. Special air support wireless networks (ASSU) are provided to by-pass normal channels in the interests of speed.
- (b) Given good communications, good immediate air support is dependent on accurate procedure. All concerned with this procedure must see to it that they reach the necessary efficiency.
- (c) A Forward Control Post empowered to operate an allotted air effort on a selected front, and brief aircraft in the air, will frequently produce the best results.
- (d) Good bombline drill is important.

Staff Duties

13. The responsibility for staff duties on the Army side connected with supporting air action must always

rest with the General Staff (Operations and Intelligence). At certain HQ levels it is necessary for a section of the General Staff to specialise in air matters in the interests of efficiency. The HQs at which a special staff section is necessary, and the number of appointments required at each HQ, will vary in accordance with two factors:—

- (a) The volume of work directly connected with air matters.
- (b) The knowledge of and consequent ability to handle air matters possessed by the officers holding normal General Staff appointments.

14. All staff officers should be competent to deal with the military responsibilities connected with air matters, and indeed their ability to do so should eventually constitute an important item in their qualifications for appointments on the General Staff side. At present we have not reached that standard and, in my opinion, to do so will require a reorientation of our basic training at all stages, so that supporting air action is taught and studied in the same way and with the same priorities as other operational subjects.

15. As further experience is gained and adjustments in our training have had time to bear fruit, the requirement for any section of the operational staff to concentrate exclusively on air matters should diminish, and at certain HQ levels disappear. It is probable however that at certain points, particularly the HQ of an army, the volume of work directly connected with air support will always remain such as to necessitate a section of the operational staff devoting themselves to air matters. These staffs must not be treated in any way as separate sections: an attitude which would tend to confine the responsibility for air matters, and be detrimental in the long run. They should be regarded as an integral part of the General Staff (Operations) and classified accordingly.

Aircraft Characteristics

16. No commander can form an adequate appreciation of the potentialities of supporting air action without some knowledge of the characteristics of the different types of aircraft. Although the choice of weapons to be used to engage a certain type of target must always remain an Air Force decision, the military commander cannot make his plans or frame reasonable requests without some knowledge of this subject, just as he must know enough of his artillery weapons and other supporting arms.

17. The principle by which the Army should confine itself to stating the problem and the Air Forces decide the method is basically correct, but calls for a liberal interpretation if discussions of joint problems are to be brief and satisfactory, and if the overall results are to be the best possible. I consider, therefore, that military commanders and staffs should take every opportunity of gaining knowledge, through their associated Air Forces, of the chief characteristics of the various aircraft which may operate on their behalf and as a result of their requests.

Air Liaison Officers

18. Air Forces acting in direct support of Armies cannot be expected to give of their best unless the following conditions are met:—

- (a) They must have a sound general knowledge of the Army, its ways and its problems.
- (b) They must be kept fully informed of the situation on the ground.
- (c) They must be let into the plan early and must know the object to be attained in any particular operation.
- (d) When asked by the Army to attack a target, the information on that target must be as complete as possible.

(e) Whenever possible they must be told of the results of their attacks as from the Army's angle.

19. The Army has a direct responsibility for these things, and it is a vital one. At the higher HQ levels, this responsibility rests with the General Staff and is met primarily by means of daily joint meetings. At the lower levels, the responsibility rests with the ALO, and at these levels the information is required for the benefit of the pilots who actually fly the aircraft. I regard the ALO as a very important person therefore, and it is necessary to ensure:—

- (a) That only officers of the right calibre and with proper training are employed in these duties.
- (b) That the means exist by which the ALO can obtain all the information he requires to do his job properly.

20. It must also be remembered that ALOs are resident representatives of the Army with the Air Force. In many cases they will be the only Army officers with whom the majority of the pilots come into close contact. In my opinion, good inter-service relations and effective combined action are matters which can be influenced considerably by the standard of performance of the ALO. In selecting officers for these duties, recent fighting experience with a unit is a great asset. In addition, turnover should be arranged. If this is not done, and officers are left unduly long doing specialist work of this type, they become out of date with their own service, and automatically are at a disadvantage in doing their special job. A regular exchange of officers will also increase the general knowledge of air matters throughout the Army. Commanders must recognise these facts and take the steps necessary to ensure that the ALO and his business are given the attention they deserve.

Air Support Signals Unit

21. Other things being equal, the effective operation of Air Forces is dependent in the last degree on good communications. In the airfield area conditions normally permit the laying of land line communications between the Air HQ and its airfields. On the Army side, however, it is not feasible to provide direct telephone links between the Army HQ and the many and varied lower formations which have a voice and part to play in air support operations. Army air support communications therefore must be by wireless and the Air Support Signals Unit (ASSU) is the instrument designed to do the job.

22. The important points to bear in mind in regard to the Air Support Signals Unit are:—

- (a) It is an independent Signals unit under the operational control of the General Staff, although technically responsible to the Signals branch.
- (b) Its particular task calls for a special signals procedure of its own; this must be accepted and not interfered with.
- (c) However good the communications, results depend on how they are used. Staffs down to Brigade level must understand thoroughly the use of air support communications and procedure.
- (d) Speed demands signals in clear whereas security calls for codes and ciphers. The correct balance between the two must always be maintained.

Information from the Air

23. Reliable and timely information of enemy dispositions and movements is vital to the combined plan and to the conduct of operations. The resources of the Tactical Air Force include a number of squadrons specially equipped and trained in visual and photographic reconnaissance. In addition, every aircraft which flies over the battle area is a potential source of information.

24. The air is an important source, but only one of many sources from which the general enemy situation is built up. Information from the air therefore is of primary interest to the General Staff (Intelligence), and the closest links must exist between the air reconnaissance organisation at the various levels and the appropriate military Intelligence sections.

25. The following are the more important points of which the Army must have a clear understanding:—

- (a) Reconnaissance aircraft fly singly or in pairs; consequently they are susceptible to the air situation.
- (b) If the air situation deteriorates, reconnaissance missions will require fighter escort. The number of missions will then be governed largely by the availability of fighter aircraft. In these conditions the volume of information from the air is bound to be reduced.
- (c) The value of visual reconnaissance is increased beyond measure by good briefing. The key to success is to ensure that reconnaissance pilots know not only what information is required, but why.
- (d) Air photography is dependent on the weather. By looking ahead and forecasting his requirements the military commander will greatly increase the chances of obtaining air photographs.
- (e) The value of air photographs to the Army is dependent on good interpretation and efficient distribution.
- (f) The control of reconnaissance resources is centralised at the level of Army Group and armies. It must be remembered that information about the enemy in the forefront of the battle is required most urgently by the forward military commanders. Good communications and good arrangements for the rapid receipt and distribution

of air information are essential. These arrangements must not be confined to the reconnaissance squadrons but must cover all Tactical Air Force units.

Targets for Air Attack

26. It is quite impossible to provide rigid rules by which targets can be defined precisely as suitable or unsuitable. The importance of the objective in relation to the operational plan and the suitability of the target will frequently conflict. In fact, there will always be a number of factors which can be assessed only by the joint commanders on the spot in the light of the prevailing conditions.

27. We must get back to basic things, therefore, if this business is to be dealt with properly. Firstly, military commanders and staffs who deal with such matters must have a working knowledge of the capacity and limitations of the air weapons. Secondly, they must understand that ideally, a target offered for air attack should be:—

- (a) Readily recognisable from the air.
 - (b) Within the accuracy limits of the air weapon.
 - (c) Vulnerable if hit.
 - (d) Beyond the capacity of ground weapons.
- Thirdly, it must be understood by all concerned that:—
- (a) Operational priorities may overrule the unsuitability of the target as an air target.
 - (b) In battle it is seldom possible to reach the specification agreed for the ideal air target.
 - (c) In many instances Intelligence information is perforce limited to deduction and cannot be confirmed.

- (d) Target unsuitability can sometimes be overcome by increasing the effort. Superficially this may appear uneconomical but, in fact, circumstances may make it the exact reverse.
- (e) The suitability of the target may be judged not by the range of ground weapons but by their capacity to reduce it.
- (f) The moral effect of air attack must never be overlooked.
- (g) New weapons and new tactics will continue to increase the scope of air attack.
28. In my opinion commanders and staffs of both Services should understand these basic points, so thoroughly that they become an automatic background to any target discussion. If decisions are taken on this basis, common sense and mutual confidence will produce sound results.

Artillery Assistance to Air Support

29. When the target to be engaged by aircraft is within range, artillery can be used profitably to:—
- (a) Mark the target area with coloured smoke by day or marker shell by night.
- (b) To fire a counter-battery programme against the AA guns covering the target.
30. As regards (a), careful arrangements must be made in advance to tie up the artillery representative responsible for providing the smoke with the appropriate point in the air support system. This is particularly important in the case of immediate air support where the time factor may be vital.
31. As regards (b), a counter-battery programme of this sort will reduce casualties to aircraft. When Air Forces are asked to attack a target known to be heavily defended by AA equipments, counter-battery arrangements of this type should be arranged whenever possible.

32. Aircraft from Air OP Squadrons can usefully be used to check the accuracy of coloured-smoke markers. By means of a wireless link to the point of air control, they can also be used to provide last-minute target information for the attacking aircraft and to observe and report additional targets.

The Bombline

33. Good bombline drill is an important factor in direct air support. The purpose of the bombline is to provide the Air Forces with a safety line beyond which they are at liberty to attack any targets they may find. The bombline is built-up on information received at Army HQ from the forward troops, and must be one which can be identified readily from the air. The fixing of the bombline is an Army responsibility, the Air Forces being consulted only as regards ease of recognition from the air.
- The following are the important points:—
- (a) Everything depends on the provision of timely and accurate information from forward commanders, who must constantly be impressed with the importance of the part they have to play.
- (b) The bombline is for the benefit of the pilot in the aircraft. Unless he gets the information everything else is to no purpose. The drill for ensuring this must be fool-proof.
- (c) If the Army puts the bombline too far ahead of its forward troops, the Air Forces will begin to lose faith in the system. The Army may then have to pay the penalty of its own mistakes both by a reduction in the effectiveness of air support and an increase in the risk of attack by our own aircraft.
- (d) When conditions are static there is no problem. The test comes in the mobile battle, when both the difficulties and the need for efficient drill are at their greatest.

Recognition and Identification - Ground from Air

34. One of the greatest difficulties confronting Air Forces in the battle area is to determine friend from foe. It is the Army's responsibility to give the maximum help to the Air Forces in this matter. The methods by which we can help are two-fold:—

- (a) By providing landmarks to assist the Air Forces in their navigational problems.
- (b) By marking the position of our troops, M/T and tanks by means of agreed devices.

35. Commanders must see that mobile landmark parties are available to meet the requirements of (a) above. A scale of one per corps is considered normal.

36. As regards (b), the agreed system has been proved sound. The only link shown by current experience to be weak has been strengthened by the adoption of the US fluorescent panel to supplement the yellow celanese strip, and when supplies permit, to replace it.

37. Commanders must constantly remind their units of the importance of good drill in recognition procedure. They must check the standard of training whenever possible, and keep an eye on the state and supply of the apparatus.

38. The soldier must be made to realise that he is helping the Air Forces to help him by an efficient use of the various aids. He must also be impressed with the value of these aids as an insurance against accidental attack from our own aircraft. In this connection when accidents do happen, as they will, it is important to keep them in proper perspective. Statistics show that in relation to the number of missions flown in the battle area, the number of attacks on our own troops is small. All ranks must understand that certain risks are inevitable in close air support, and those risks are well

worth-while and readily accepted by the Army in return for the assistance they get from the air. It should also be made clear that, in the main, accidents occur when the standard of drill in the agreed system is not good enough, and not because the system itself has been found wanting.

The first reaction of a unit which has been attacked by friendly aircraft, therefore, should be to overhaul its recognition drill. When that has been done the facts should be carefully checked with all exaggeration eliminated, and sent back by the quickest means in order to avoid a repetition, and so that faults can be corrected elsewhere.

39. It is during the rapidly moving battle that there is the greatest need for a high standard in recognition drill. Under these conditions the targets presented are of the best and the most favourable for air attack. An intelligent and skilful use of recognition devices by the Army will be of the greatest assistance to the Air Forces, and help them to take heavy toll of the enemy.

Visits

40. One of the best methods by which the two Services can get to know one another better is by an interchange of visits, and whenever practicable every effort should be made to make arrangements of this sort. Visits are of value only when they are properly organised and conducted. Without this they do more harm than good and merely waste time. It is important that any programme of visits should include junior officers and NCOs of fighting units, and pilots and ground crews of squadrons, and should not be confined to staff officers. Over a period and under active service conditions, a properly organised series of visits is of great value and helps considerably towards a mutual understanding of one another's difficulties and the conditions under which we each live and fight.

The Effect of Weather and the Air Situation

41. The capacity of air forces to support land operations is governed in a high degree by two factors:—

- (a) The weather
 - (b) The air situation
- I have already referred to both these points as being fundamental. They are so important that they merit further reference.

The Weather and Navigational Aids

42. All commanders must have a very clear understanding of the weather limitations and how they must be dealt with in the planning of air operations. Navigational aids provide the only means of reducing these limitations, and great progress has been made in the development and efficiency of these devices. Already certain instruments enable strategic air forces to carry out blind bombing with as great, if not a greater, degree of accuracy than visual methods. Research is being continuously pressed forward, and it is important that the soldier should keep abreast of the progress which is made. If he does not do so, his lack of knowledge and the fear of the unknown will prejudice his readiness to accept the use of such things in his tactical area, and the help he can receive from the air will be unnecessarily restricted.

Air Superiority

43. The winning of the air battle, and with it the achievement of a favourable air situation, is at one and the same time the primary task of the air forces, and the greatest contribution they can make to the land battle. It is in fact a pre-requisite to military success.

However successful the air battle may have been, and however satisfactory the air situation may be at the outset, nevertheless there are bound to be fluctuations, and from time to time the enemy opposition in the air may increase temporarily. When this situation arises the soldier must understand that:—

- (a) The priority for air action will be the subjection of the enemy revival in the air.
- (b) In addition to the effort which is directly tied up in regaining air superiority, all other forms of air action will be affected and restricted.
- (c) While this situation persists it will not always be possible to meet his own local requirements.
- (d) It will not be possible to guarantee the immunity from hostile air attack to which he has become accustomed, and he must rely upon his own skill and weapons to look after himself.

Conclusion

44. Experience in battle shows that the degree and effectiveness of the air support which a military formation receives is related in a striking manner to:—

- (a) The interest it takes in air matters.
- (b) The knowledge and proficiency it possesses in air support procedure and the part the Army has to play.

45. On a purely selfish basis, then, it will pay any Army formation or unit to reach a high standard in this business. From the wider angle, it is abundantly clear that all modern land operations are combined Army/Air operations. Technical developments in the air weapon continue apace and their possibilities are bounded only by the imagination. It follows that land operations are likely to be influenced more and more by air action.

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