FK-8 aircraft of No 8 Squadron commanded by Leigh–Mallory from 1917-1918

The Maintenance of Air Superiority in a Land Campaign

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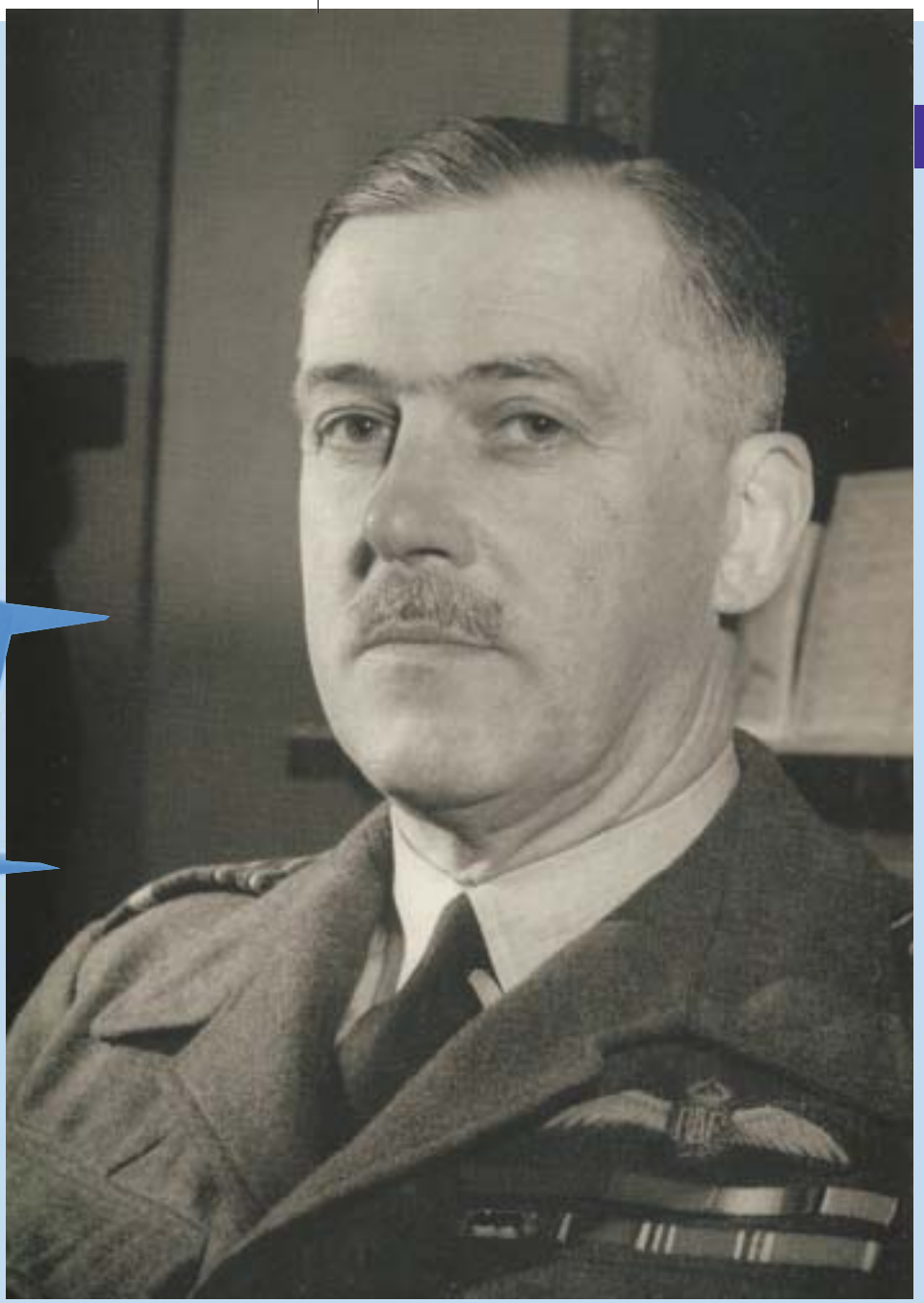

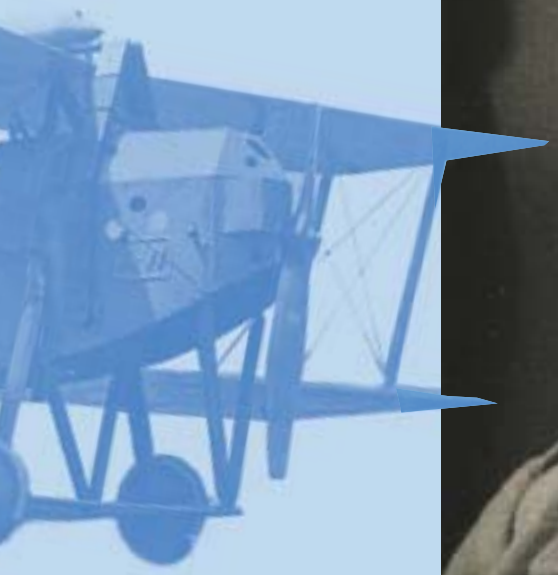

By Wing Commander T Leigh-Mallory DSO

In any future land campaign the attainment and maintenance of air superiority will have a far-reaching effect on the progress of land operations. The bombing forces which will be employed in the future will be so much greater and more effective than anything of which previous experience has been gained, that their effect on land operations can be a far more serious factor than they have been in the past. The degree of interference which an army may experience from an enemy's air force, will vary as the measure of air superiority possessed by that air force. Should the enemy possess a marked degree of air superiority, he will not only be very much better supplied with information than our own commanders, but he will also be able to hinder military movement and dislocate supply systems to such an extent that projected operations may be jeopardised. The object of this article is to discuss the methods by which air superiority may be attained, first considering some of the factors which affect operations in the air, and secondly what alternative policies there are to choose from.

MEANING OF AIR SUPERIORITY

Before starting to discuss the method of attaining air superiority, it would appear desirable to give some definition of it. Air superiority may be described as the attainment of operational freedom by our own aircraft, and denying it to the enemy. It must be pointed out that the complete domination of the aircraft of one side by those of the other is a state of affairs which will only be achieved when that side's resources of pilots and aircraft have been completely exhausted and cannot be replaced. It is obvious that this will be very rare, and in actual fact air superiority will tend to fluctuate as new types of aircraft or new tactics are introduced. This was very noticeable in the war 1914 – 18. For instance, during the Battle of the Somme commencing July 1st, 1916, our superiority was so pronounced that it had a very marked effect on the German Army, causing considerable bitterness between their army and air service. By the winter months the superiority was less marked, and by the spring of 1917 the balance was almost as much in the Germans' favour as it had been in ours the previous July.

The changes can be attributed to the fact that the Germans were quicker in producing new and better types of fighters, and the reorganisation of their fighter squadrons in a circus under Von Richthoven. During the Battle of Verdun the superiority fluctuated, the French having it at the start; a change of policy then enabled the Germans to gain the upper hand for a short time, and before the end of the battle the French regained it. It is evident, therefore, that air superiority is liable to fluctuate and has to be contested continually. Consequently it is felt that the term 'superiority' is better suited to air operations than 'supremacy'.

FACTORS AFFECTING ATTAINMENT OF AIR SUPERIORITY

In fighting on land the object of the military commander is to bring his enemy to battle and defeat him. He knows that with his own and an enemy's army in proximity, it is only a matter of time before they meet. During that time interval, the general topography of the country will play a big part in the moves of the 2 armies. Possibly there is a race to secure some physical feature, or possibly the terrain offers an opportunity to one side to defeat the other side in detail. It is evident, therefore, that topography has a very important effect on land operations, and that contact with an opposing army cannot be delayed very long. This being the natural military idea of bringing the enemy army to battle, it is often difficult for the military mind to realise that in air fighting, not only is it not inevitable that the 2 air forces should meet in battle, but that actually it is the most difficult matter to bring the enemy air force to battle, unless he is just as willing as you are to fight. Why is this?

In the first place it is extremely difficult to find aircraft when once they are in the air. The size of the atmosphere alone makes this most difficult. One knows how difficult it is, when standing on the ground, to see aircraft flying over 7,000 feet, even on a clear day, but the factor which enables one to focus one's eyes on to the aeroplane is the sound. This factor is entirely eliminated in the air by the sound of one's own engine, so one has no clue as to where to look.

Being able to see objects when in the air is very largely a question of the contrast of the object with the background. In the air itself there is no background, and, if an aeroplane is suitably camouflaged, it is exceedingly difficult to see against the background of the land when flying below one. When one adds to these difficulties the possibility that the large and indefinite space may be divided up by various stratas of clouds, it will be obvious that the business of finding other aircraft in the air is exceedingly difficult.

Another point to be borne in mind is that any air fighting is apt to be inconclusive, because aircraft can only carry a limited amount of ammunition and petrol, and consequently a fight usually has to be broken off before any decisive results have been attained

Then supposing you have found an enemy formation, what are your chances of stopping it? An important point to consider in answering this question is that modern fast day bombers are very nearly equal in speed, and when travelling light, in climb, to fighters. This means that if a formation of fighters sights a formation of bombers and it is not flying at a greater height than the bombers, then it definitely cannot catch them up, for as soon as an effort is made to attain greater height then the forward speed is slower and the bombing formation merely draws farther away. The best the fighters can hope to achieve is then to gain sufficient height to be able to intercept the bombers on their way back, assuming that they can keep them within sight and that the bombers return by approximately the same route. Supposing a formation of fighters does meet a formation of bombers of equal size, it is misleading to think that the fighters can easily disperse the bombers; the very reverse is the case. The fighters attack with their front guns, which will only fire straight along the axis of the aeroplane. This means that, when attacking, the fighter dives straight at the front of attack and consequently only one fighter can attack a certain point at a given moment, otherwise in converging on one point the fighters would run into each other. The result of this is that each fighter, in carrying out an attack, has the fire of several pairs of light automatics concentrated on him. Consequently, for fighters to stand a good chance of defeating a bombing formation, they must have a considerable superiority in numbers.

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off before any decisive results have been attained. To summarise these factors which dominate the question of gaining air superiority:

a. There is a considerable tactical advantage to be gained in having superior height, because there is more chance of being able to bring your enemy to battle when once one has located him.

b. The powers of evasion in the air are very great.

c. Even when 2 formations do engage each other, air fighting is apt to be inconclusive.

The obvious retort to all this is, if fighting in the air is so elusive and inconclusive, the course to pursue is to go and attack his aircraft while they are on the ground.

THE ATTACK ON AERODROMES AS A FACTOR IN ATTAINING AIR SUPERIORITY

In discussing this problem one always gets the impression that it is considered rather odd that the Air Force do not advocate the bombing of enemy aerodromes. Either there is some queer free-masonry in the air not possessed by other services, or airmen fear that their own activities might be restricted if reprisals were carried out on their own ground establishment. Needless to say these are complete fallacies; if the air force could find so easy a solution to so knotty a problem, then they would be only too delighted to concentrate their energies on bombing the aerodromes of their enemies. There are, however, the following disadvantages which render systematic bombing of the opposing aerodromes unprofitable.

If regular bombing of aerodromes is resorted to the enemy will obviously scatter his aircraft widely round his aerodromes, possibly even placing them in surrounding fields; consequently after the first surprise is over, the targets presented will be very scattered, with the result that very little material damage will be done, and the casualties to personnel be insignificant. The aircraft destroyed can be very quickly replaced. At the end of the last war we were producing 100 aeroplanes per day; when one considers the increase in efficiency of our industries it is not unreasonable to assume that that figure would be equalled within the first year of another war. It is therefore maintained that air superiority cannot be attained by simply destroying aircraft; it will only be achieved by killing the enemy pilots, and so gradually gaining a moral ascendancy.

Although the systematic bombardment of the enemy's aerodromes is not advocated, for the reasons already stated, yet there are 2 occasions on which it is thought such attacks would be profitable. The first of these 2 occasions is when the enemy, owing to the unsuitability of the country, is forced to concentrate his aircraft in a very small area. An instance of this occurred during the war 1914 – 18, when the French concentrated 630 aircraft on to 7 aerodromes in the Verdun area. On one of the aerodromes there were 150 aeroplanes. All 7 aerodromes were covered by a circle of 3 miles radius, the centre being about 10 miles from the lines. The first night attack by the Germans, which was directed against 2 of the aerodromes which contained 75 aeroplanes each, destroyed no less than 60 aircraft. It is rather interesting to note, in substantiation of the argument advanced above against systematic bombing of aerodromes, that on the next night the Germans attacked 4 of the aerodromes, which between them contained 390 aeroplanes, and the casualties dropped down to 25 aircraft destroyed and 20 damaged.

The second opportunity would be a surprise attack carried out to disorganise the enemy air force, on the eve of some important military operation. Before this could be undertaken with success, it would be necessary to have photographs of the enemy aerodromes, to decide which would present suitable targets. Having selected the enemy aerodromes they should be attacked with the greatest possible intensity, first by night and then by day.

Having reviewed some of the factors which affect the attainment of air superiority, it is now possible to discuss the different methods of attaining it.

DEFENSIVE PATROLS

It is highly possible that in a land campaign a demand might be made by the army for the close protection of some important area by a system of defensive patrols. In asking for this they would have the precedent of the Home Defence Force to refer to. Would an Air Force commander be right to adopt this policy? In the first place the possibility of the fighters in the Home Defence Force intercepting enemy bombers, depends absolutely on receiving warning in sufficient time to enable them to get their height soon enough to intercept the enemy bombers. What makes it possible to receive this warning in time is an elaborate system of listening posts and observation posts scattered over a very wide area. The information from these posts to be of any use must reach the RAF commander, under whose orders the fighters are working, within a very few minutes; otherwise their report will be too late to be of any use. This, then, necessitates the most perfect system of communication. What is applicable to a Home Defence Force is obviously unsuitable for a land war, in which we shall have a foreign system of communication to deal with, probably a foreign language, and the absence of a trained observer corps living in the country. It is evident, therefore, that we could not operate our defensive patrols in a land campaign on the same system as in the Home Defence Force. Consequently it would mean maintaining aircraft continuously in the air in the neighbourhood of the place to be defended. To do this would mean having at least 3 fighter squadrons in order to maintain one in the air. One squadron alone flying at a more or less fixed height would obviously be little good. Several squadrons would be necessary flying at different heights. Even with these squadrons constantly in the air, an enemy might easily penetrate to the vital spot and drop bombs without being intercepted. It is unlikely that more than one of the 3 squadrons would actually engage any one raid; this would probably be insufficient force to prevent an enemy bomber squadron achieving its object.

Consequently it is considered that defensive patrols, carried out with the object of defending an area for an indefinite period, are too ineffective and expensive to be recommended for use in a land campaign in a foreign country. It is, however, suggested that defensive patrols might be of great value, when some vital spot has to be defended for a short period. Supposing a long column had to pass through a defile, in daylight, when it would be very vulnerable to air attack. Not only might defensive patrols be very useful for that short period, but it is possible that it might afford such an opportunity of bringing the enemy air force to battle as to justify the concentration of every available fighting aeroplane at that spot.

ESCORTS

The second demand which might be made by the army is for escorts to be provided, to enable some important reconnaissance or bomb raid to reach its objective. When an escort is mentioned in this connection, a formation of single-seater fighters is meant, as these are the only recognised fighters we have at the present moment.

It must be remembered that these fighters can only use guns firing straight forward, and consequently they can only engage the enemy by turning and fighting. The result of this is that, should the reconnaissance or bomber aircraft be attacked, the only course is for the escort to go for the attackers. A general fight between our own and the enemy fighters then ensues, and the reconnaissance or bomber aircraft continue to the objective unescorted, because the moment the fighters start to engage the enemy, they automatically cease to be an escort. The result of this is that the moment the fighters leave the bombers, the latter case to have any protection.

It is suggested that the more effective means of protecting long reconnaissance and bomb raids, is either to provide a formation of 2-seaters with a high performance which can protect the reconnaissance or bombing formation without leaving it, or alternatively to increase the size of the reconnaissance or bombing formation, so that it is sufficiently large to provide its own protection. The latter alternative would appear the most economical and effective course to pursue.

Apart from the arguments already advanced concerning defensive patrols and escorts, it must be emphasised that these policies, being passive, would never establish air superiority. They would result in the enemy being left alone, if he was satisfied to leave us alone. Wars in the air can never be won by such means as these, but rather entail an aggressive policy, the main object of which must be to force the enemy to battle and destroy him.

OFFENSIVE PATROLS

The first step in this direction is to have offensive patrols, carried out by fighter squadrons in the neighbourhood of enemy aerodromes. The question as to whether these should be single or 2-seater fighters is not fully discussed in this article. It must, however, be obvious that, given approximately equal performance, which should be quite possible at the present time, the man who can bring the greatest volume of fire to bear from the greatest number of directions must obviously possess a distinct tactical advantage. The man who can do that is he who fights in a 2-seater.

The task of the fighters employed on offensive patrols is to seek out the enemy aircraft in the neighbourhood of their aerodromes, and destroy them. It has, however, been previously pointed out how difficult it is to bring an enemy to action if he wants to evade you. Naturally by flying in the neighbourhood of enemy aerodromes it should be possible to bring an appreciable number of enemy aircraft to action. However, the enemy will probably possess many aerodromes and our fighters cannot be everywhere at once, and consequently enemy formations will undoubtedly be able to elude our offensive patrols and carry out their missions. Consequently, the offensive patrol is not felt to be the complete answer, because it is not sufficiently decisive in its results.

COMBINED BOMBING ATTACKS AND OFFENSIVE PATROLS

The difficulty always is to bring the enemy to action in sufficient numbers to make the issue of any one air fight or series of air fights have a vital influence on the air situation. It is suggested that the best opportunity of bringing this about will be by attacking some absolutely vital spot which the enemy is bound to defend if he hopes to avoid defeat.

It is suggested that, in future wars, the combined use of bombers and fighters will be necessary for the attainment of air superiority

A B-17 bomber escorted by P-51 Mustangs

In a land campaign this might be some particular factor, a railway, or some defile. To bring about the air action desired, the target should be within easy distance of both our own and the enemy fighters, and it should be attacked with such intensity that the enemy will be compelled to use the greater part of his air force to defend it. An opportunity of this nature occurred during the August 8th battle in 1918. The Germans had 2 main roads along which they could retreat. Very early in the battle one of them, and to a lesser extent the other also, became a congested mass of troops, guns, limbers and lorries. The Germans were faced with a crisis and saw that intense air action against these retreating columns would have a most disastrous effect. They immediately concentrated the major portion of their air force on that front to counter our attack. Had we attacked these columns in far greater force, and concentrated most of our fighter squadrons there for a short period, it seems highly probable that we could have brought about a series of engagements in the air which might have crippled the German Air Force for the rest of the war.

It is suggested that in future wars, the combined use of bombers and fighters will be necessary for the attainment of air superiority. Further, for this combination to be used really effectively, advantage must be taken of critical military situations to bring about the big air battle.

It is desired to emphasise, in concluding, that the attainment of air superiority cannot be regarded from a parochial point of view. One must study the enemy, his war organisation, his communications, find his weak spot, and then strike a blow, concentrating one's whole offensive effort at the decisive spot. To achieve this, it will be desirable to parcel out bomber and fighter squadrons to military formations. The control of our bombers and fighters must certainly be flexible, but must also be centralised so that should an opportunity to attain air superiority present itself, there will be nothing to prevent us concentrating all our available forces to that end.