LOW LEVEL FLIGHT AND LOW LEVEL ATTACK

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By an Officer of the late German Luftwaffe

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I

Low level flight, low level attack -- are fascinating words for the pilot in peace as well as war. Isn't there something therein of the old cavalry spirit of cavalry attacks of past centuries -- a bit of war romance? The rushing over the ground, the "eating up" of space drawn by a thousand invisible horses, doesn't it create a movingdashing voice in all?

In comparison, what does high level attack indicate -- it is a lengthy affair, a mathematical affair. This flight toward a hardly discernible target in a landscape which passes away slowly below us as a giant size chart is impersonal.

Let us free ourselves from such illusions, ban everything pseudo-romantic from our thoughts and consider soberly in the form of experiences, if and when low level flight and low level attack had justification in the war and could have in the future.

II

Peacetime Views

Low level flight and low level attack were foreseen as tactical movements or forms of flight combat for bomber pilots in the German air force before the Second World War. They had a large number of supporters which were composed of two groups:

The first consisted of younger aircraft owners and unit commanders with whom the thoughts of flying sport expelled tactical considerations and who had a naive joy in low level flight.

The aircraft owners and unit commanders who gave precedence, periodically at least, to low level flight on the basis of tactical grounds and the following considerations, belong to the second group:

A. Defense Measure Factors:

1. The heavy flack is not effective in the case of low level flight, light flack is hindered by the high angular velocities, by the field of fire (obstacles such as houses, forests, hills) and by danger to one's own troops.

2. Low flying formations will be detected later by the defense and the attacking enemy than high flying; therefore the moment of surprise is easier to maintain if one flies low.

3. The enemy pursuit defense cannot detect low aircraft as easily as high flying aircraft (camouflage). The pursuit attack against low flying aircraft is made difficult and dangerous at the lowest altitudes on account of the nearness to the earth. In the case of horizontal pursuit, the pursuit airplane flies in the propeller wake of the enemy and is hindered in firing. After the attack, it can only escape by flying upward and thereby flies into the fire of the mass of all defensive weapons. (Hence the ratio of weapons which are effective upward to those which fire downward as 2:1 to 4:2).

B. Effectiveness Factors:

1. The targets -- above all troop targets, such as columns, batteries, busy positions, concentrations, busy airfields -- are easily detected by the eye in low

flying attack. Camouflage is detected more easily as such, likewise other deceptive forms (false batteries, false positions, aircraft and automobile mock-ups); therefore the attack effectiveness increases.

2. Finally, the moral effect on man is not to be underestimated. Surprise appearance, bomb tossing and aircraft weapons fire will be supplemented by the psychological effect, arouse panic easily, and paralyze the self defense of the troops attacked. The shock effect often remains for the duration of the attack and intensifies the effect of disorder caused on movements and battle actions.

III

German War Experiences

These considerations are based on the experiences of the First World War. They seemed to be confirmed later by those of the Abyssinian War and the Spanish Civil War. Here, however, certain over-evaluations of low level attack and under-evaluation of defensive possibilities were disclosed. Low level flight revealed the following disadvantages:

1. The orientation in foreign country and location of the target was so difficult that one had to avoid altitudes below 30 meters because of the low visibility.

2. Below 30 meters altitude, the effect of ground fire is considerably increased. Also, light infantry weapons cause losses and a still higher number of casualties and forced landings in enemy territory.

3. Suddenly appearing targets could not be attacked because they would be recognized too late and a second pass in formation was not possible without heavy losses. Also, the main target was frequently discovered too late in the first pass, so that a repetition of the attack became necessary; this is a difficult matter however against an intact defense.

4. In mountainous territory, unobserved ground contacts were not rare. As a consequence of the differences in elevation of the terrain one may unintentionally come into a position which offers the best view to enemy flack for shooting down aircraft.

5. An elevation of at least 30 meters was required for bomb dropping, considering the airplane bombs, an altitude which offers good possibilities to the defense.

6. Technical disturbances increase with long low level flight because of overheating of the motors.

7. The dangers of forced landing from technical grounds or on account of anti-aircraft fire increase.

8. The observation of the target was made more difficult for the following crews after the first bomb drop. Dust and dense smoke covered every target. Consequently, the effectiveness did not increase with increasing unit strengths. Small formations are only suitable, however, for the mission against a fatigued opponent without intact defense.

9. The danger to our own aircraft by fragments and aircraft arms was not insignificant.

Nevertheless, the Germans needed longer and more bitter experiences before the widespread fondness for low level flight caused a sobering reflection and the relatively limited use of the low level attack tactics moved into the correct perspective.

The Polish war appeared to have been the next to confirm the superiority of low level attack effectiveness in contrast to high level attack. The bombing of He 111- and Do 17 Z-formations was, in so far as dealt with target areas which were not large (Warsaw) but rather targets of small area (railroad stations) -- of point targets to be kept completely silenced -- unconvincing at drop altitudes of between 3000-5000 meters. An enduring military effect did not set in. The damages would have been too easy to paralyze the Poles with suitable organization. If this did not happen, it was not caused by actual German bombing action but had other causes.

The best bombing results of a particular battle squadron of that time, Air Fleet 2, were transferred, as full scale hit-distributions to the London docks, to show that a destructive action of this type which might neutralize harbor traffic and the use of the harbor was not to be attained in this manner.

The disappointment over the imperfect high level attack results was universal. The conclusions drawn from it read: Bombing performance is to be improved, an order which was easier to give these execute, because other conclusions repudiated it. In contrast, the friends of low level attack tactics rejoiced, because their views appeared to be confirmed by combat.

The improvised formations of the late Field Marshal Freiherr von Richthofen had their impressive results especially since recognized by the army also, thankfully, in which with bomber formations (Do 17 Z), dive bomber formations (Ju 87), interceptors (Me 110), pursuits (Me 109) and ground-strafing aircraft (Henschel 123), mostly in low level flight against field positions, troop columns, reserves and prepared positions of the enemy army, were won. The losses, above all of the ground-strafing aircraft, were relatively small. We recognized, however, that a few meters increase in altitude caused the losses to increase considerably and a main cause for the increased losses of a battle formation were those which flew at about 100-200 meters in an attack.

In the meantime, the battle against the British fleet in the West had been prepared for. For this, the aircraft model (Ju 88) was constructed for dive bombing tactics. Low level flight was confined to the approach. Soon after the beginning of unlimited naval warfare, the low level attack with He 111 and Ju 88 against enemy merchant shipping gained significance. The ships were attacked from the side at about 10 to 20 meters altitude, so that the bombs should strike the side of the ship in the flattest trajectory possible with a bombing path of 150 to 200 meters, the so called mast head method. After good initial results, above all against individual ships with weak defense, these tactics swiftly lost their adherents when only escorted convoys were to be encountered which resisted vigorously.

The Offensive in the West in 1940 again offered the Luftwaffe rich opportunities to employ low level attack against airfields and groups of men, above all in the retreating battle of the French, where the moral effect of the effective bombing action was obviously overpowering. Only occasionally, with strongly armed targets, as for example Paris and Dunkirk, did it prove necessary to initiate high level attack above 3500 meters on the basis of tactical considerations. In other cases, it was preferred for safety reasons, where a relatively weakly effective bombing action on account of reasonable hit results was taken into consideration. In order to achieve a penetrating effect, we had to employ dive bombers when a low level attack was not recommended on account of the light defense (2 cm.).

The first phase of the war against England (to 6 Sept. 1940) saw only individual low level attacks with one exception, namely a nuisance raid of flight squadron 77, which was initiated by an inexperienced flight leader of 37 aircraft, in order to attack individual targets on the island and that suffered 50% casualties, 9 of them total losses; an incident which aroused considerable sensation. Field Marshal Kesselring covered for his officers, in that he took the blame upon himself, while actually, the mission instructions of the high command had been followed too strictly.

After the wrecking of high level attack in the huge air offensive against London in September 1940, we turned again to low level attack tactics. But only voluntary, specially qualified troops were sent against important industrial targets in England on destruction raids where approach and departure resulted, with utilization of darkness or bad weather, at high or average altitudes. The majority of crews were used, on the other hand, for high level attacks at night. A penetrating effect was still lacking. With lucky hits attained by individual aircraft, no influence on the course of the war could be attained. Besides, such lucky hits were too rare. Above all, very frequently the secondary targets were attacked rather than the difficult to find, or strongly armed main targets. The British camouflage measures and dummy installations proved to be very effective in such bad weather employment.

Despite the unpleasant experiences and high percentage of losses, we wished to employ the same methods in 1942/43 against Russian industrial centers. It proved of just as little value there as in England.

In contrast, the Balkan Campaign helped low level attack methods to new standing. As in 1940, in France, the resulting battle offered frequent and favorable opportunities of employment. The retreating movements of the British and Greeks, directed on the few mountain roads, offered favorable targets. The result was significant, above all in the break-through in the Thermopylae position, in which in the "hard cracking" air pursuit of the exhausted rearguard of the Greeks by night and day, retreats couldn't be halted any more.

The experiences in Crete were similar. Although, a noticeable increase of losses was determined in this war sector which limited the pure low level attack and low level flight to the cases in which intact air defense was no longer to be reckoned with. The same applied to the attack on light war vehicles in the Mediterranean region. The self defense of the troops, especially with machine guns and rifles, inflicted such large losses and the light anti-aircraft, fewer, that the altitudes of attack steadily increased and the combat aircraft attacked, in the mountains, at an altitude of not lower than 800 meters above the ground, on an average, an altitude which made possible the unobjectionable recognition of movements and clear targets. The fighter-bombers (Me 110) were preferred for low level attack because of their good aircraft weapons effect and high maneuverability. Dive bomber pilots limited themselves mostly to dive bombing attack. Fighter pilots were seldom concerned with attacks on ground targets during this period.

Again, it was Richthofen who had collected experiences in flying close combat against Spain, Poland, Belgium and France. Therefore, we set his flying corp against various strong points in the advance toward the East. We valued the supporting action of his tactics so highly, that in August 1941, we permitted the cutting off of Porchow to Novgorod (Lake Ilmen) then downwards to the Wolchow around Leningrad by pure infantry thrust without tanks, by the forward pincers of its air corp. It is noteworthy in this connection that this experiment, in spite of brilliant tactical results, did not lead to attainment of the ultimate goal, the junction with the Finns in the Aunus sector (between Lake Ladoga and Lake Onega), just as we had failed in estimation of our own and of the enemy strength in the emphasis of strong

points on the ground, according to weapons, by addition of armored divisions to the 16 Army (Busch). The strength of the infantry dwindled in the difficult terrain and before the toughness of the Russians, as the blows of the Luftwaffe lost their force through considerable losses and moreover, the Wolchow sector and the space southward of the Lake Ladogo had to be divided on the Newa front. Fighter-bombers and fighters (Henschel 123) shared the actual low level attack during the summer battle in 1941, the former against street movements, the latter against infantry and artillery positions, while the combat pilots, as in the Balkans, attacked initially at altitudes between 800 and 1500 meters, later above 2500 meters and the Ju 87's took care of dive bombing attacks. The losses of the fighter bombers increased more and more, principally due to the defense of ground troops, while those of the strafing pilots were held within tolerable limits.

These experiences gradually led to an increase of single motored fighter aircraft, while the heavier and medium types were no longer employed for the actual strafing attack. Despite the resistance of fighter pilots and despite the bad experiences, as seen from the point of view of losses, against England, every pursuit squadron was required to form a pursuit bombing wing (Jabo). Their value remained slight because of the loss of interest of pursuit formation leaders, who usually gave these wings the worst pilots and aircraft. The planning did not take into consideration the altitude of the pursuit pilots. The formation of pure Jabo-formations would have had more timely fruition.

The thought of creating mixed squadrons inside and outside the squadron unit (Standard complement = 9 groups of 12 aircraft) is wrong from a psychological, technical and leadership basis according to German experiences. The combination of various arms branches is possible only with the highest leadership and -- indeed according to the task -- necessary.

Even if pure low level attack was mostly reserved for ground-strafing pilots from 1942 on and especially appeared in tank defense, several special tactics were formulated from it which employed low level flight. Railroad reconnaissance by night (Do 17 Z, later Do 217), locomotive pursuit (Me 110, Ju 88) during night and day, as well as tank pursuit by Me 110, Ju 87, and Ju 88, later FW 190. The advances of Russian military aircraft forced a conversion of the type of application. Henschel 123 and Ju 87 disappeared from the daytime attack, we had to give up the classical dive bombing; the Me 110's became the night fighters and were available as army reconnaissance, and bombardment formations, principally He 111, Ju 88, Do 217, had to be used by night in combined attack in all theaters of war.

Therefore, those periods of low level attack began in which we -- since no further development occurred -- with conclusion of the war by both parties, could refer to as "modern" and as could only be modified by future experiences.

IV

Low Level Attack Tactics of the Allies

A. In the East

Although the Japanese developed a few special units for low level attack, we exclude them from consideration, since they served almost exclusively in naval warfare, just as the German naval experiences only deserved consideration, from the Swiss point of view, where an influence on the low level attack on land could be expected in the future. We shall come back again to this later.

On the other hand, the low level attack tactics of the Allies are to be discussed especially those of the Russians who, as the first to develope these combat methods in large-scale, created the technical principles with clear sighted energy and attained the absolutely highest number of sorties, since they specialized almost exclusively in these forms of attack from 1943 on.

One could hardly go wrong in the assumption that it was the German ground-strafing results which made the Russians cognizant of the significance of this flying attack. The advantage of swift training, small crew number, and technically favorable production conditions would have further encouraged the formation of ground-strafing crews. So the Russians based -- if we consider their offensive strength alone -- everything, after numerous failures of their heavy bombardment formations on one card, the ground-attack aircraft. The high number of sorties, over 1000 daily sorties in autumn 1943 already, on the Ladoga front, 3000 to 5000 combat sorties per day in the battle around East Prussia and in the advance to the Oder, were concluded with promising effect.

The Russian ground-attack aircraft Il 2 (Stormovik) was especially well suited for low level attack because of its good armor protection. Aircraft weapons and bombing had extensive effect on mobile and lightly armored targets. In spite of this, the effective action with heavy sorties was slight in itself but the effect on the morale, in contrast, was considerable.

Naturally, the results were weakest in position warfare. For this, the following reasons applied:

1. The view is restricted in low level flight, the orientation made difficult, especially in the uniform Russian terrain, which lacks marked delineation. A search for targets was therefore, exceptionally difficult. If they are spotted too late, the attack is possible only with a second pass. Then, however, the surprise to those attacked and their defense is lost.

2. The Russian commands permitted little freedom of action. They bound the squadron leader strictly to the attack orders. Free combat missions were not customary. The forms of attack were strictly schematized. A changing adaptability to the situation was lacking.

3. In position warfare of long duration, heavy movements of troops are rare. Groups of men ride or march, dispersed at air-attack interval, or at night. Supply depots, prepared positions, forest billeting areas, airfields are better camouflaged than in mobile warfare; shelters are walled; positions protected against shrapnel, their occupants widely dispersed. Massed targets are rare; dummy positions and mock-ups are deceiving; the defense is balanced.

If one reflects on these different points collectively, then it is clear that very limited effective results are obtained in position warfare, even with heavy attacks.

Nevertheless, the effect on morale was considerable, since it gave to the attackers the knowledge of the defects of special air defense and exposure of positions. The effect on this morale by these low level attacks of troops and commands of the German Army was exaggerated. The exaggerations mounted and caused corresponding agitation. If, therefore, precise results on losses suffered were demanded, then the loudly complaining voices became silent and were embarrassed.

At the time of the German offensives (1941) this kind of air sortie by Il 2 could have been effectively destructive as was frequently the case in 1943. The nature of position warfare, however, restricted large-scale results.

Also as the German retreat began, the effection action remained below that expected. The German movements frequently took place at night and with utilization of bad weather situations. Heavy massing of formations was avoided in day time. Small and medium units moved cross-country through the territory. Their detection by Russian reconnaissance was difficult. Three years of experience in war in the east had trained the German troops in utlization of terrain. The breadth of the territory also acted, once again, in favor of the Germans. Strict basic sorties of the Russians who preferred attacks on definite points, sectors and streets, made the withdrawal of German troops easier. Therefore, the accomplishment of Russian sorties failed in planning. Definite strong points were rarely to be detected. One gained the impression of a definite stubbornness similar to the Russian infantry combat tactics. "The masses will surely bring it to a conclusion in time."

So the overpowering superiority of the Russians in the air did not work out completely at all in the course of operations.

B. In the West

The air and ground situation developed in a completely different manner in the west under the influence of Anglo-American low level attack tactics. Although up to the beginning of the invasion, no massed sorties was used, the light Anglo-American squadrons had still gathered experiences in frequent attacks in the German occupied western territory and did not enter on large scale blows unprepared. To discuss the operations themselves, further, is unnecessary since they are generally known. On the method of their execution, the following may be said as seen from the German viewpoint:

From the viewpoint of command, the combined sortie awakened the impression of large scale splanning and clarified setting of objective. The enemy command seemed to feel the pulse of German defense experiments and supported the continual development of ground and air situtation computation. Their reconnaissance and evaluation appeared to work exceptionally well. Heavy, medium, and light squadrons were established in turn, according to the requirements. The massed concentration of weapons was consequently analyzed and resulted in a full summoning of all forces until the desired purpose was attained. All operations demonstrated the freedom from illusion, clear deliberation, certainty and calmness of the command. Patience and decision held the balance and imprinted itself on the progress of the undertakings. At no time did one gain the impression of that boldness which was rampant on the German side. The tendency to spare bloodshed was unmistakable. Therefore, the attacks were not carried out "blindly", with little deliberation, as on the part of the Russians but rather with clever adaptation to the situation. The German defense was tightly packed, losses were not shied from, therefore, we reduced costs doubly in that one flyer who sacrificed himself saved the blood of 10 comrades on the ground.

The ability of swift reaction of the sportfully trained Western Europeans and Americans in comparison with brave but often unmanageable Russians, exhibited itself in considerable manner in individual tactics and squadron leadership. Swift analysis of the situation, rapid discussion and decisive treatment showed individuality and instinct. In typical manner the flyers worked ahead of the army, so that under the strong umbrella of its air force, troop concentrations followed the attacking spearheads or could prepare themselves in massed groups for ground attack (without camouflage or flight march interval). Similar pictures resulted as during the German advance of 1941 in Russia and in the Balkins. The effective action of Anglo-American low level attack was considerable, their moral effect no less. The German movements, whether they were in counter attack or retreat, were retarded,

the troops "nailed fast" in daytime, finally did not fight any longer according to the plans of the higher command, but for their lives. The planned command was eliminated by destruction of almost all ground connections. The bringing up of supplies was at a standstill and was a sacrifice to the bombers or an easy prize to the attackers.

We may say in summation: In the East, the Russians would have also been able to carry out their operations without their air corp, in the same manner, considering their definite ground superiority. In the West, the attacks of combat pilots contributed up to 50% to the success of the invasion and the breakthrough to Germany.

The German ground-strafing pilots were seldom available. Their number was very small and couldn't have exerted any influence on the course of the war. The conversion to the Me 262 jet-propelled fighter aircraft had come too late. With the difficulties of retraining and education in continually contricted, more dangerous area, the results of the few squadrons which were available were unsatisfactory with few exceptions. The bombing results were catastrophic at this time. The error in range in low level attack amounted to up to 2000 meters. The desperate blow, on January 1, 1945, of all German pursuit and ground-strafing flyers against the Anglo-American Bases was as bloody as a hari-kari. The essentially foreign scheme of individual tasks in attack was tested, it found few adherents and could not save the situation.

So we stand at the conclusion of the war, neglecting the high level attack in the interior, under the imprint of the triumph of Anglo-American low level attack tactics which were drained from all previous combat experiences.

V

Conclusions

The detailed display of the role of low level attack tactics in the Second World War did not occur without reason. They lead us to conclusions for the future.

Before the war and at the beginning, high level attack tactics and low level, stood in direct contrast to one another. One was either for the one or the other. The Commands even allowed both to be in force and made the choice dependent on the situation. People distinguished them, however, in principle. One side saw all the advantages in high level attack and campaigned for it. The others saw them in low level attack and rejected high level attack in principle because of its weaknesses in efficiency. The war in the West (1940-1945) proved that all forms of attack are justified, the war in the East led to the one-sided preference of low level attack by the Russians ad absurbum.

What conclusion may be drawn, what rules may apply, which forms of combat from the air to ground may one expect in the future?

a.

The impressive evidence of Anglo-American high level attack tactics in Germany and Japan is irrefutable. Whatever technical destructive agents will be found, we will not give up the full exploitation of the air space and will naturally retain high level attack. Use of low level attack, however, will be defended and there will be situations in which it earns preference.

Following the experiences of the last year of war, these situations are possible in the following cases:

1. Direct support of armored formations in offense, as well as infantry in offense or defense.
2. Protection of the flanks with advance of the army.
3. Combating of concentrations of all kinds, especially in pursuit (Air pursuit).
4. Pincers attack on enemy airfields near the front.

In all these cases, low level attack can be carried out regardless of the type of flight path, if the following stipulations are fulfilled:

a. Suitable weather situation.
b. Favoable time of day.
c. Slight enemy defense.

In an area strongly protected by light or medium anti-aircraft fire, one will avoid low level approach in good weather and full daylight and in its place initiate high level approach with diving or inclined attack (30°, or $60-80^{\circ}$ inclination angle of flight path). The receding flight usually takes place at low level after the attack. Climbing into enemy defense area is avoided as far as possible.

Attacks against an opponent protected by weak air defense and massed human targets (troops) promise the greatest result with avoidance of our own losses.

Low level attack is ineffective against:

1. Strong targets (entrenched positions, villages, or massive installations).
2. Explosive targets.
3. Targets strongly protected by anti-aircraft.
4. Unsheltered ground troops with strong protective fire.
5. Targets in the interior of enemy territory with strong fighter defense.

We do not believe, among others, that heavy movements or attacks of enemy tanks are still to be combatted with low level attack because they have exceptionally strong air protection. One avoids this type of solution of difficulties, which is easily ordered but difficult to execute.

The futher development of long distance bombing will exert a considerable effect on low level attack tactics since bombs can be dropped from great and medium altitudes outside of the anti-aircraft zones. After the world war experiences in naval warfare against merchant shipping, these weapons which make low level attack unnecessary, are to be taken into account in various situations and its disadvantages avoided.

b.

The battle against ground targets will continually take the form corresponding to the situation of technology and defense. An adherence to a definite favorable tactic is to be avoided just as in every plan in the making. Furthermore, one should watch the proportions, in order to attain the greatest possible results at the least cost. Therefore, one must strive to surprise the enemy defense continually by new methods and avoid the repeated repetition of definite kinds of attack, even if they had the effect of surprise.

c.

As far as rules could be formulated chiefly for tactical forms, they were formulated as follows:

1. The low level attack is a form of combat which is based on definite situations. It has advantages and disadvantages. If the advantages outweight the disadvantages for the attainment of the military purpose, it is justified.
2. Low level attack is not an end in itself but a means to an end. It should be immedfately discontinued if it is recognized that the determinative conditions

for its initiation are no longer to be met (e.g. defense situation).

3. The squadron, attacking at low level, cannot defend itself from enemy anti-aircraft defense. It requires, therefore, a fighter protection of at least equal strength.

4. Every low level attack must be preceded by intense topographical, weather, and enemy reconnaissance which especially covers the defensive situation and is advanced directly to the squadron before the attack takes place (radio telephone).

5. The choice of ammunition is to be adapted to the main target. Against living targets (troops of all types), light fragmentation bombs in spreading receptacles (about 10 kg.) are indicated. Against armoured targets, bombs of 50-250 kg., against fortified targets 250-1000 kg. are suitable. The attack against troops of all types is to be supported by ground-strafing.

6. The types of attack are: high level approach with concluding diving or inclined attack in staggered groups from out of the sun or low level approach (5-10 meters) with low level attack following (30 to 50 meters).

7. The attacking unit is a group of three squadrons. With mixed targets (living and entrenched targets), the useful bomb load is to be varied between the squadrons.

8. Besides the main target, secondary targets are to be established which will be attacked at the decision of the squadron leader, if the main target can't be attacked for tactical or weather reasons or an attack would not be rewarding because of a change in situation.

9. The leader of the attacking squadron obtains a combat mission or an order of attack. Within the frame of the combat mission, he acts independently. He is bound to the attack order. He regulates the execution of the attack according to the situation in so far as the order doesn't specify anything more. In single attack of a formation, the rule of the combat mission is formed with space or time dependence on the attack order.

VI

Conclusion

The above statements make no mention of duration of applicability of the views expressed therein or of absolute correctness. They may easily be refuted by new experiences with new means of attack and defense. The limitation of all tactical theory is the only certainty. However, experiences of even a past epoch have their value. Their discussion should excite steady critical thoughts before overvaluation of theories developed in peacetime, chill and banish the formulae and schematics of command and tactics. In addition, they should refer to the significance of necessary basic properties and stipulations which are to be obtained by training and technology:

1. Clear military concepts, cool estimation of the situation, firm decision and swift treatment.

2. Basic flying plan, both in diving and low level attack by day and night.

3. "Shooting out" with aircraft weapons and bombing from every point of attack; accurate knowledge of all means of combat.

4. Unobjectionable command of squadron flight at every altitude of flight.

5. Combined work with all squadrons of suitable weapons, the army and suitable anti-aircraft.

6. Control of all channels of communication.

7. Further development of suitable aircraft, armor piercing weapons and airplane bombs.