USAF HISTORICAL STUDY NO. 182

PRELIMINARY DRAFT

FIGHTER - BOMBER AIRCRAFT

P.R.C.

DECEMBER 1956

PREPARED BY THE USAF HISTORICAL DIVISION
THROUGH THE COOPERATION OF THE HISTORICAL DIVISION
HEADQUARTERS USAREUR

DEPARTMENT OF THE AIR FORCE

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FIGHTER-BOMBER AIRCRAFT

by

Josef Kammhuber

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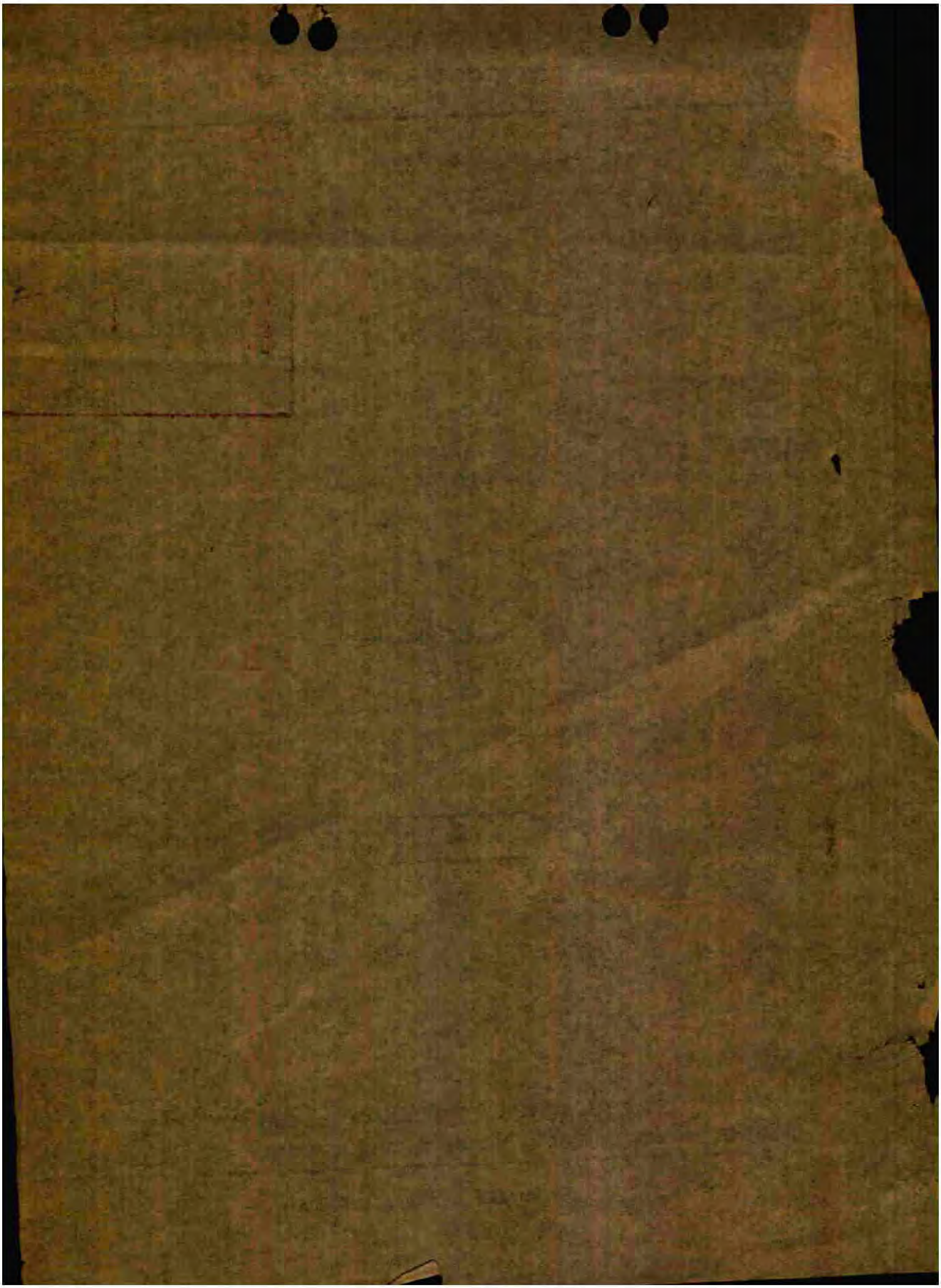

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F O R E W O R D

This study is one of a series prepared for the USAF Historical Division by former leaders of the Luftwaffe on the operations and problems of the German Air Force in World War II.

The author, former General der Flieger Josef Kammhuber--now Generalleutnant and Chief of the new German Air Force--is well qualified to write on the subject of the fighter-bomber. He is the only German officer during World War II who held, at different times, high command responsibility over bomber, fighter, and fighter-bomber aircraft, both conventional and jet-powered.

In examining the historical development of the fighter-bomber, its role in Luftwaffe operations in World War II, and its adaptability for employment in future conflicts, General Kammhuber has drawn on a wealth of personal experience. While the present study was written prior to General Kammhuber's assumption of his new command, serious students of modern air warfare will be interested in his observations, as they represent opinions he held on the eve of his appointment to head the new German Air Force.

To supplement his own wide experience, General Kammhuber, in preparing the present study, has utilized the contributions of a number of younger Luftwaffe officers who know the fighter-bomber from the pilot level.

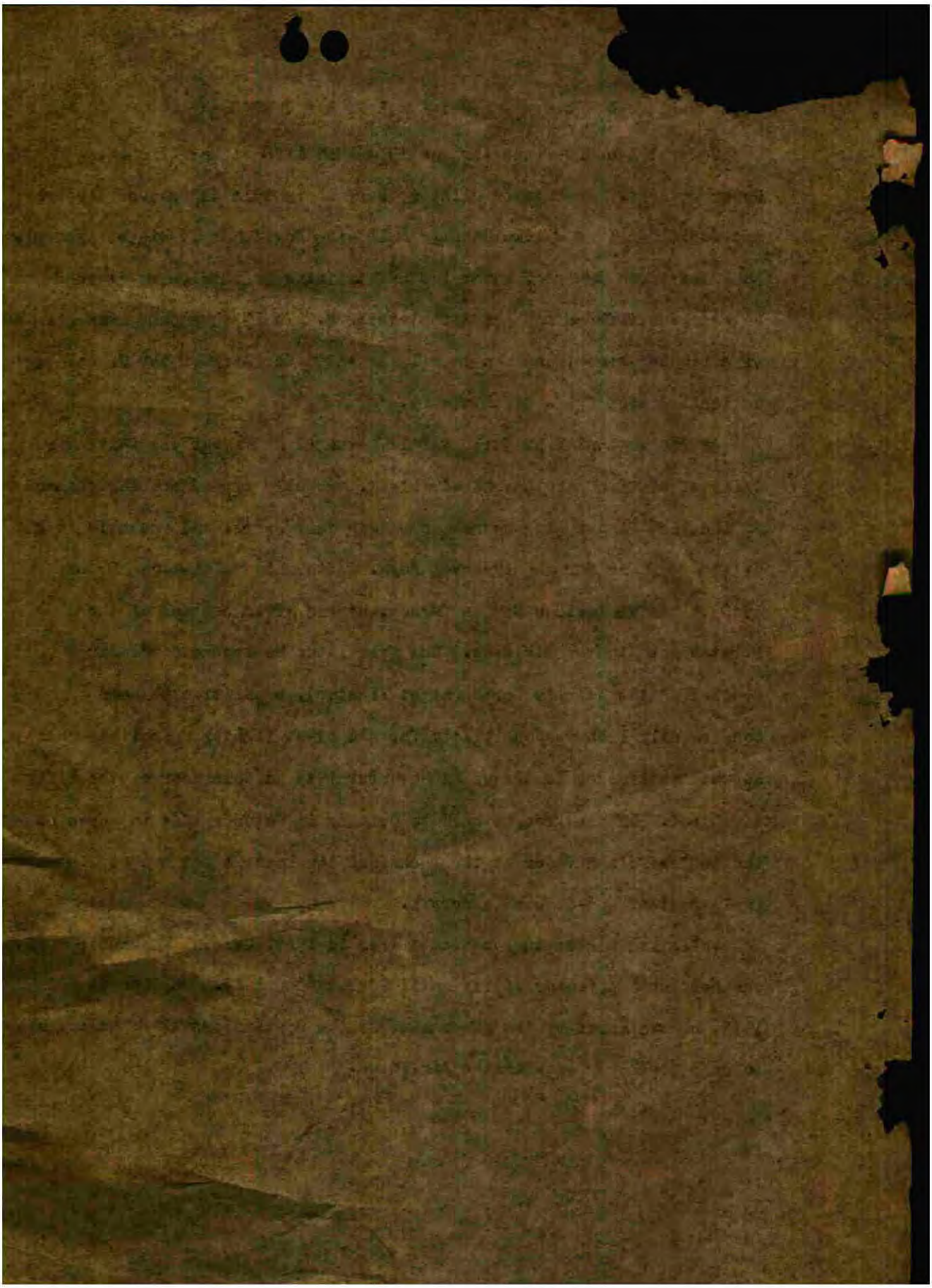
FIGHTER-BOMBER AIRCRAFT

BIOGRAPHICAL NOTE

General Kammhuber was born on 19 August 1896 at Burgkirchen, Upper Bavaria. He entered military service in 1914 and served throughout World War I as a lieutenant. Following World War I, his assignments included three years of general staff training and six years divided between the Defense and the Air Ministries. In 1936 he was given command of a fighter group, and one year later was made Chief of the Organizational Staff of the Air Ministry.

At the beginning of World War II, General Kammhuber was serving as Chief of Staff of the Second Air Fleet. Shortly after assuming command of the 51st Bomber Wing he was shot down near Paris, and was held as a prisoner of war for twenty-seven days. After his release on 30 June 1940 by the victorious German forces, he was given command of the First Night Fighter Division. One year later he became Commanding General of the XII Air Corps (night fighter), a position he held concurrently with responsibility for all night fighter operations until he was transferred to Norway in November 1943 as Commander of the Fifth Air Fleet. He was brought back to Germany in October 1944 to serve as the Luftwaffe's adviser on the technical development and combat employment of jet-powered aircraft.

Following his capture by the Allies in 1945, General Kammhuber was held as a prisoner of war until 22 December 1947. On June 6, 1956, he was named by the government of the German Federal Republic to head its newly established Air Force.

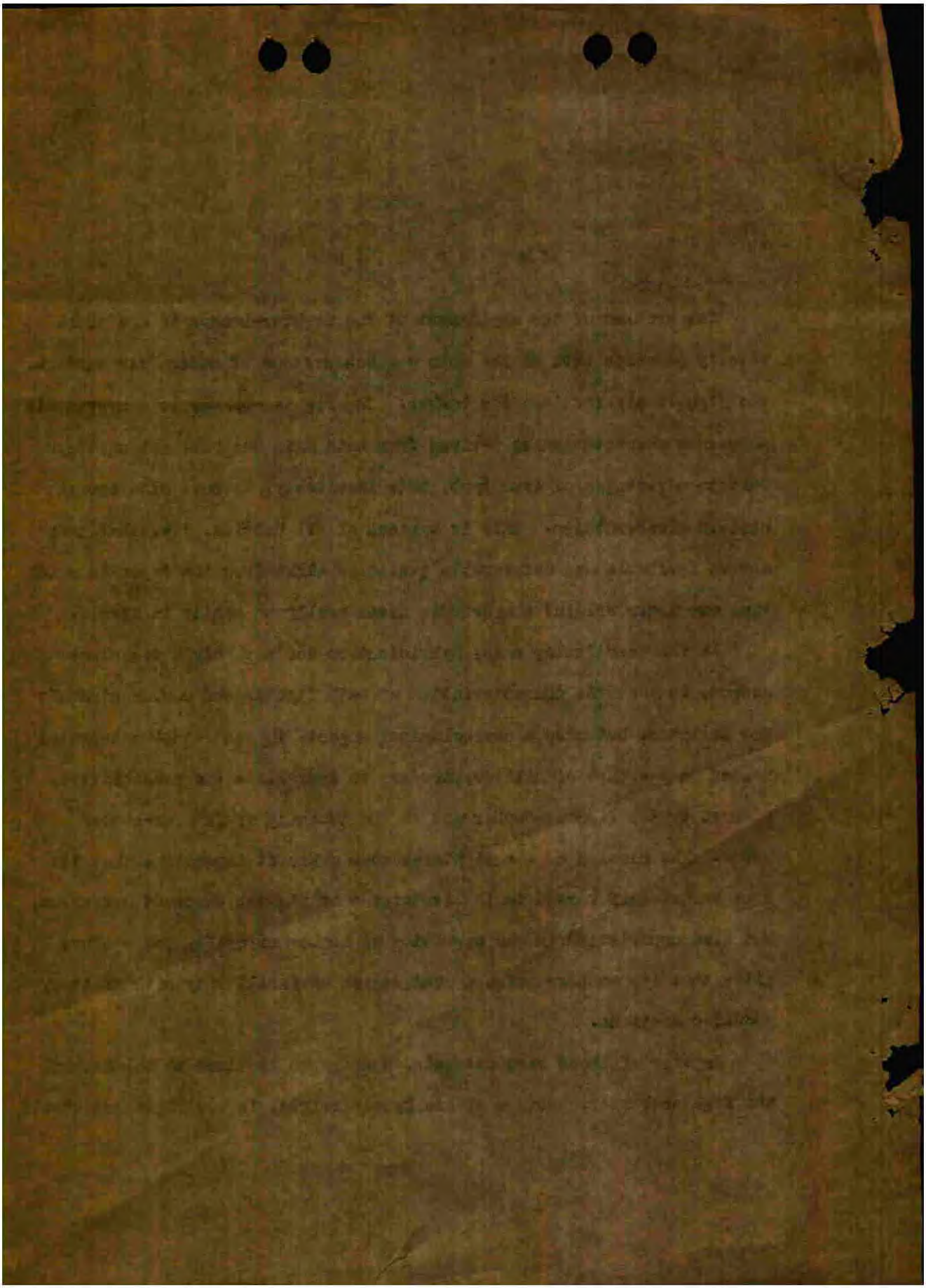


INTRODUCTION

The problem of the employment of the fighter-bomber is one which vitally concerns both of the main weapons systems of modern air warfare, the fighter aircraft and the bomber. The fighter-bomber is a hybrid; it possesses characteristics derived from both main weapons. It unites certain advantages of each type, but, inevitably, it must also accept certain disadvantages. This is typical of all hybrids, i.e. that they derive favorable and unfavorable qualities alike from the types to which they owe their origin; a hybrid is never really an entity in itself.

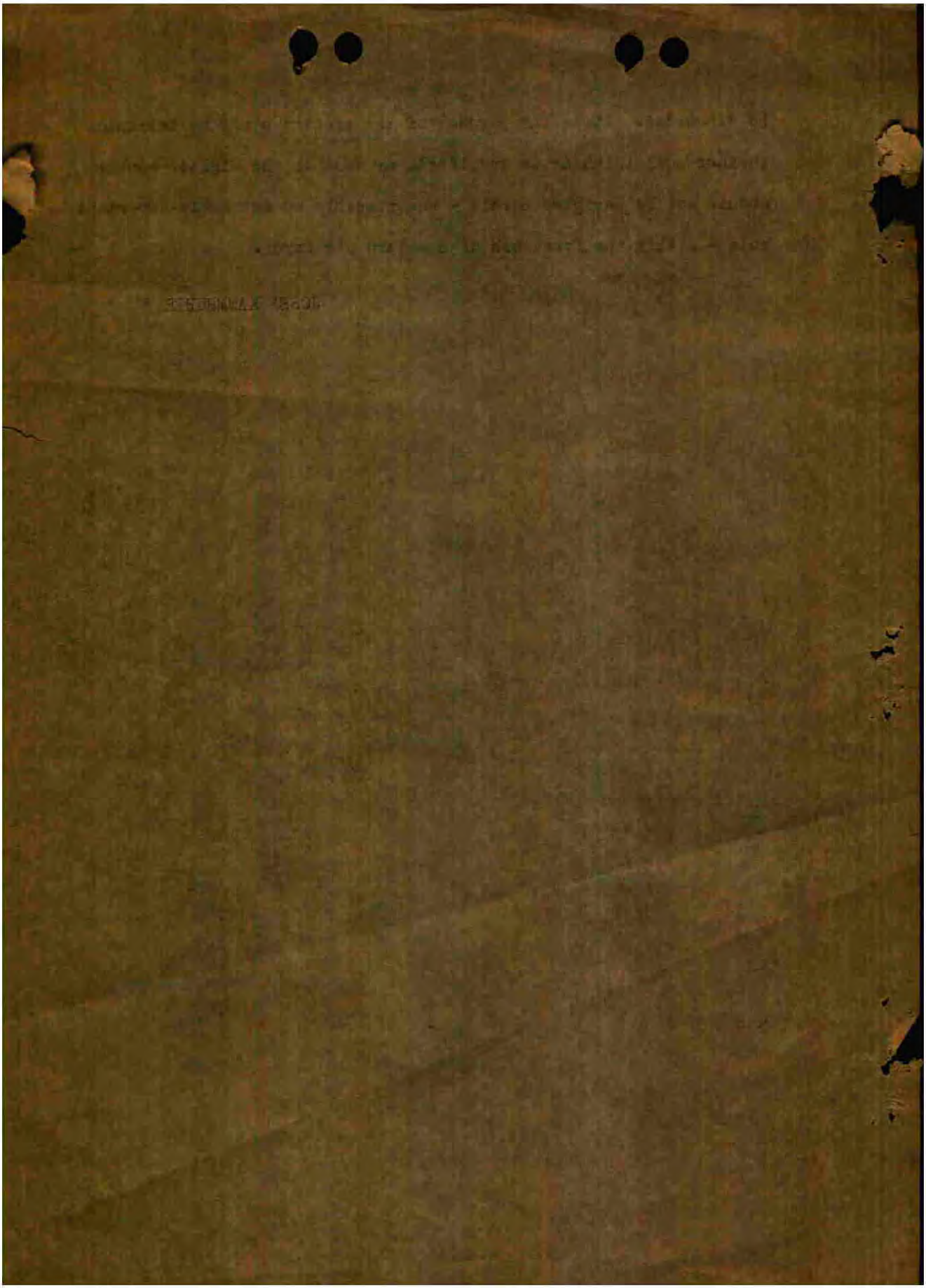
In this particular case, hybridization has not only a technical aspect, in that the characteristics of both fighter and bomber aircraft are combined, but also a psychological aspect, in the mental conversion needed on the part of military leaders to appreciate the possibilities offered by the fighter-bomber and in the training of fighter-bomber crews. The mission of the fighter-bomber makes it imperative that its crew be not only versed in the techniques of fighter aircraft operation, but also experienced in the operation of bomber aircraft, and - above all - that its members possess some degree of familiarity with military ground operations.

In view of these circumstances, one may be inclined to think that the fighter-bomber, because of its hybrid origin, is worthless and should



be discarded. It is the purpose of the present study to determine whether such thinking is justified, or whether the fighter-bomber should not be assigned a role - and possibly an extremely important role - within the framework of a modern air force.

JOSEF KAMMHUBER



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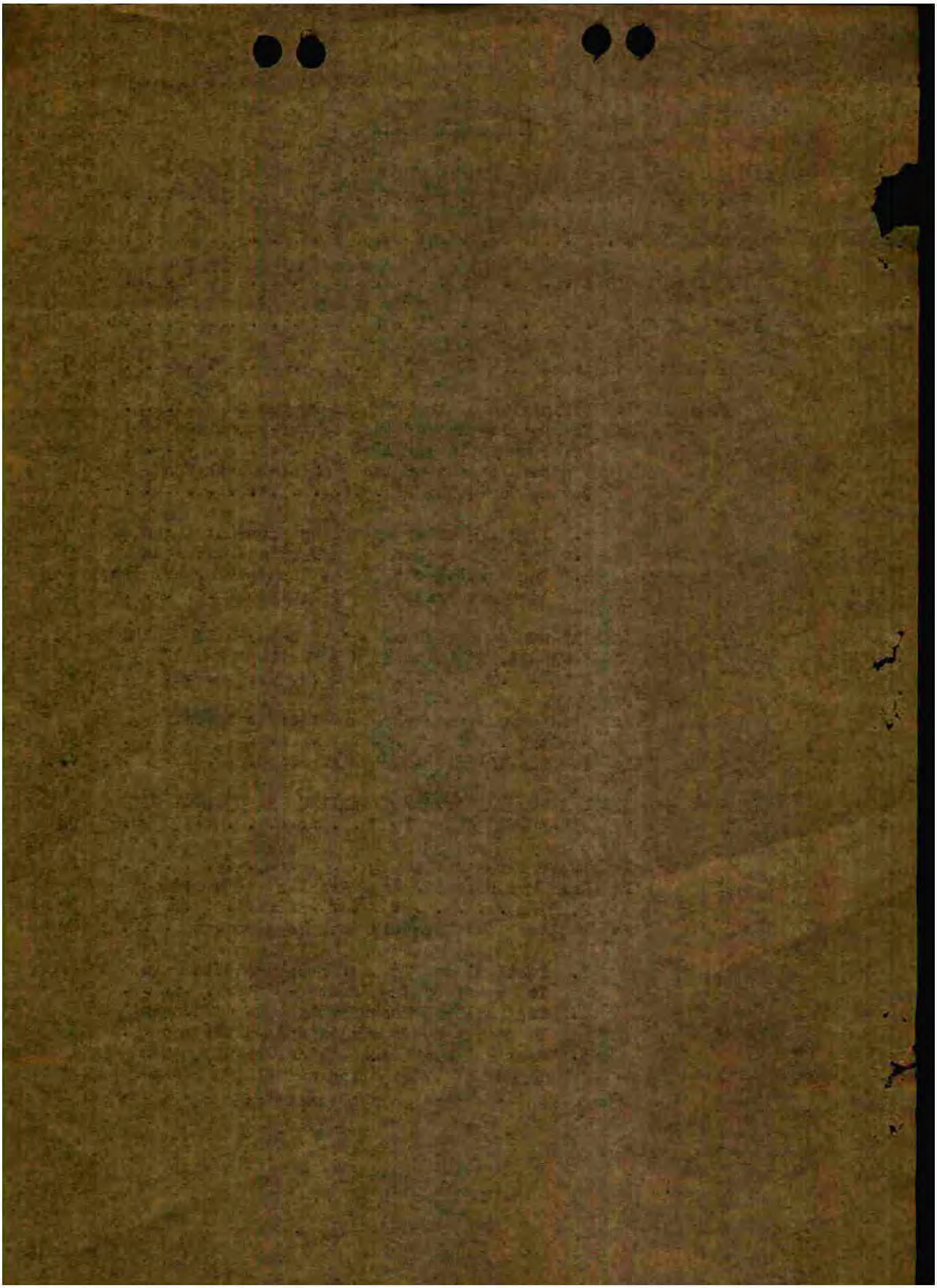

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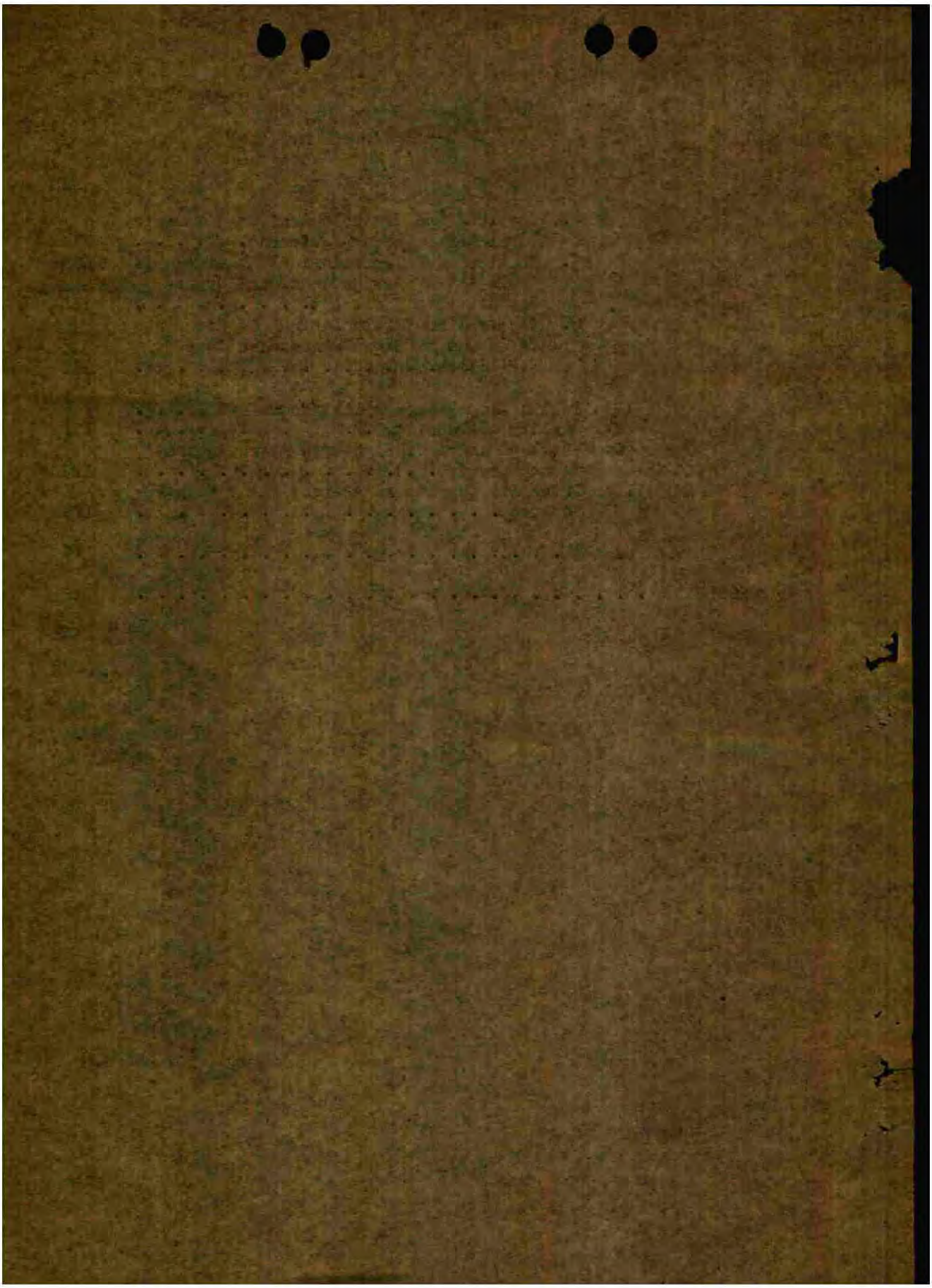


CHAPTER 1

FIGHTER-BOMBER CONCEPT

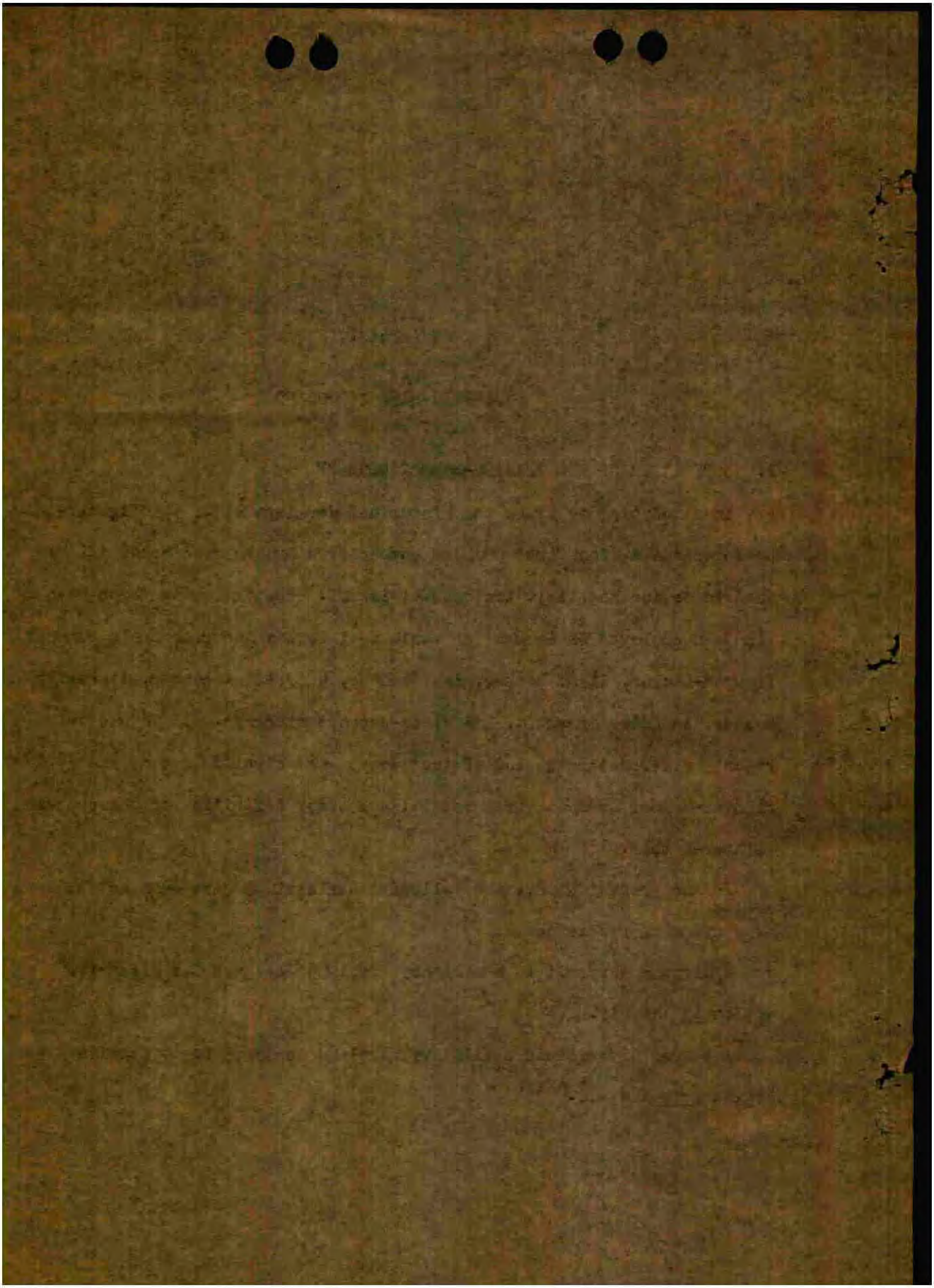
I. DEFINITION OF THE FIGHTER-BOMBER CONCEPT

In attempting to trace the historical development of the fighter-bomber concept, the first problem encountered by the researcher is the need to define and limit the concept itself. The following terms have all been employed in Germany at various times for the same basic concept: fighter-bomber, light bomber, fast bomber, super-fast bomber, lightning bomber, infantry aircraft, and close-support aircraft. If we are to reach a clear determination of the purpose and significance of the fighter-bomber we must first establish a clear definition of the concept fighter-bomber.

In the present study, the following definitions have been established as a frame of reference:

A fighter aircraft is a military airplane designed for offensive action <u>in</u> the air.

A bomber aircraft is a military airplane designed for offensive action <u>from</u> the air.



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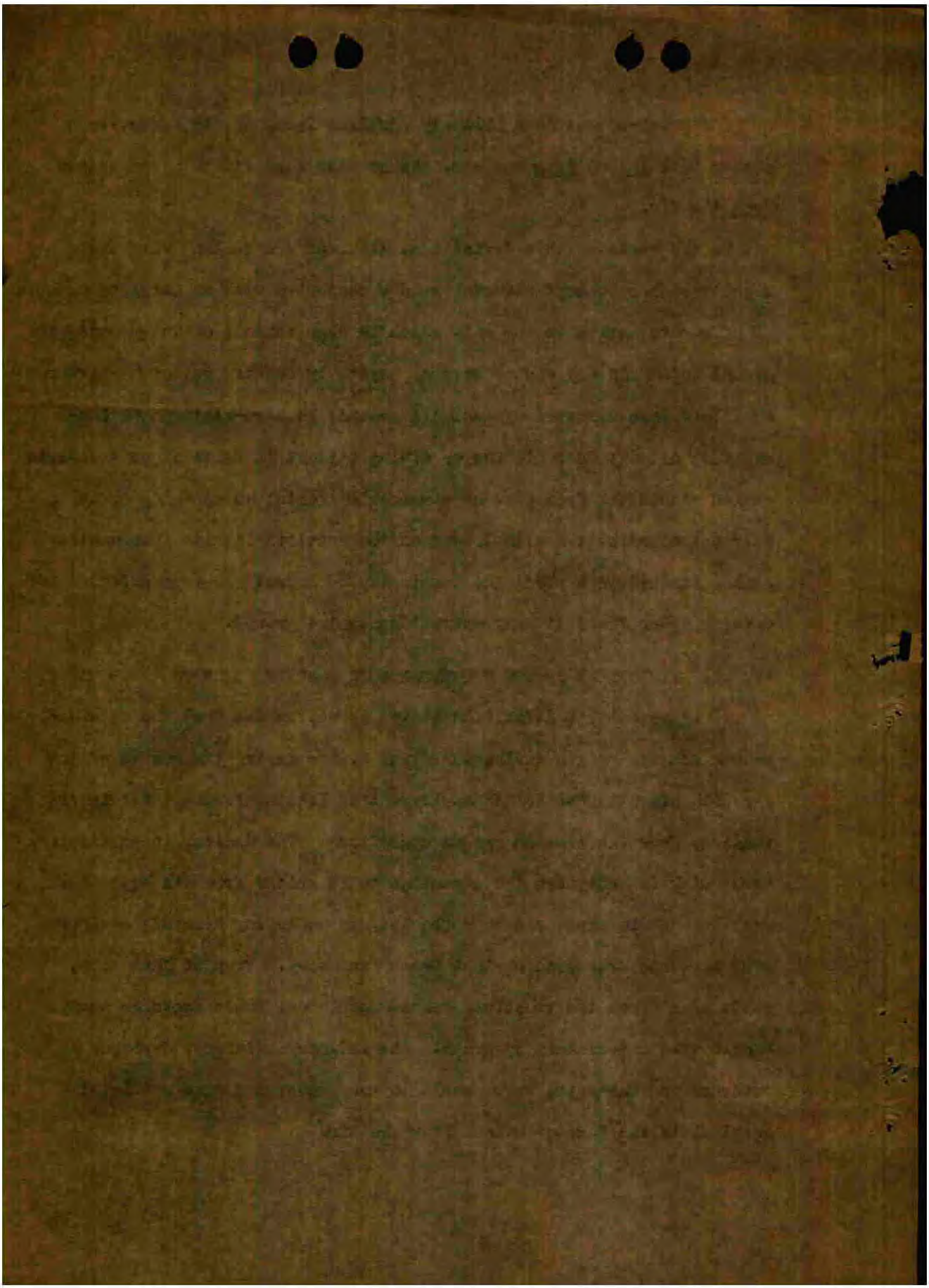
A fighter-bomber is a military airplane designed for offensive action both in and from the air, the greater emphasis being on action from the air.

On the basis of this definition, then, we are dealing with the fighter-bomber concept whenever we are concerned with an airplane capable of offensive action in the air, which is also capable of intervening in ground action in any one of several ways: by bombardment or by airborne artillery fire directed against the ground; in high-altitude or low-altitude attack; in a gliding or diving attack; in tactical or strategic action within the framework of a primarily aerial undertaking or in tactical coordination with troops on the battlefield, its intervention either limited to a specific, tactically important area, or extended to cover a wider field of army operations on the ground.

II. THE DEVELOPMENT OF THE FIGHTER-BOMBER CONCEPT PRIOR TO WORLD WAR II

If we accept the definition stated above, we see that the fighter-bomber had its origin during World War I, for during the course of the war both sides turned to the employment of fighter aircraft for intervention, from the air, in ground operations. The Allies, in particular, were quick to recognize the advantage to be gained from air supremacy over the battle area, and took the lead in employing aircraft equipped with airborne armaments against German infantry. Even at that time, quite apart from the practical results achieved, the effects on enemy morale were immediately apparent. The infantry soldiers, deployed in trenches and dug-outs, were unable to take cover and were completely helpless in the face of attack from the air.



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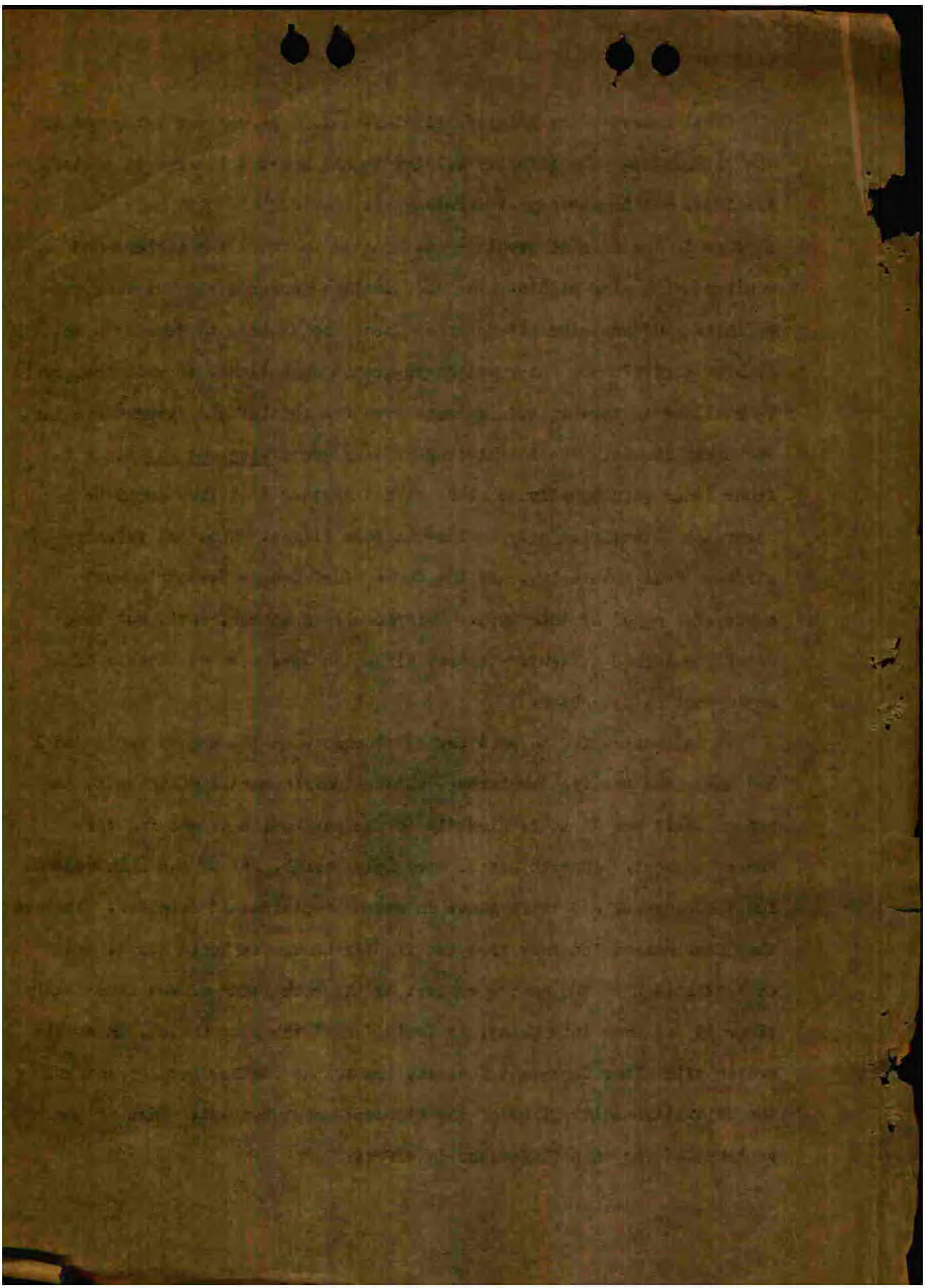
Soon, however, the original fighter-bomber concept was relegated to the background. The infantry soldier in his dug-out learned to master his fear, and technological developments provided him with some means of defense in the form of machine-guns mounted on revolving pillars and equipped with ring sights. The quantitative increase and the improved efficiency of antiaircraft defenses forced both sides to develop specially armored aircraft for intervention in ground operations, so that they could be utilized in low-altitude attacks over the battlefield without risking too heavy losses. The low-altitude factor was a sine qua non since the front lines were usually so close to one another that they could be accurately identified only in low-altitude flight. Thus the infantry airplane came into being, and the Junker Ju-4 became Germany's most successful model of this type. This model, of course, could not accurately be termed a fighter-bomber, since the Ju-4 was not capable of employment as a fighter.

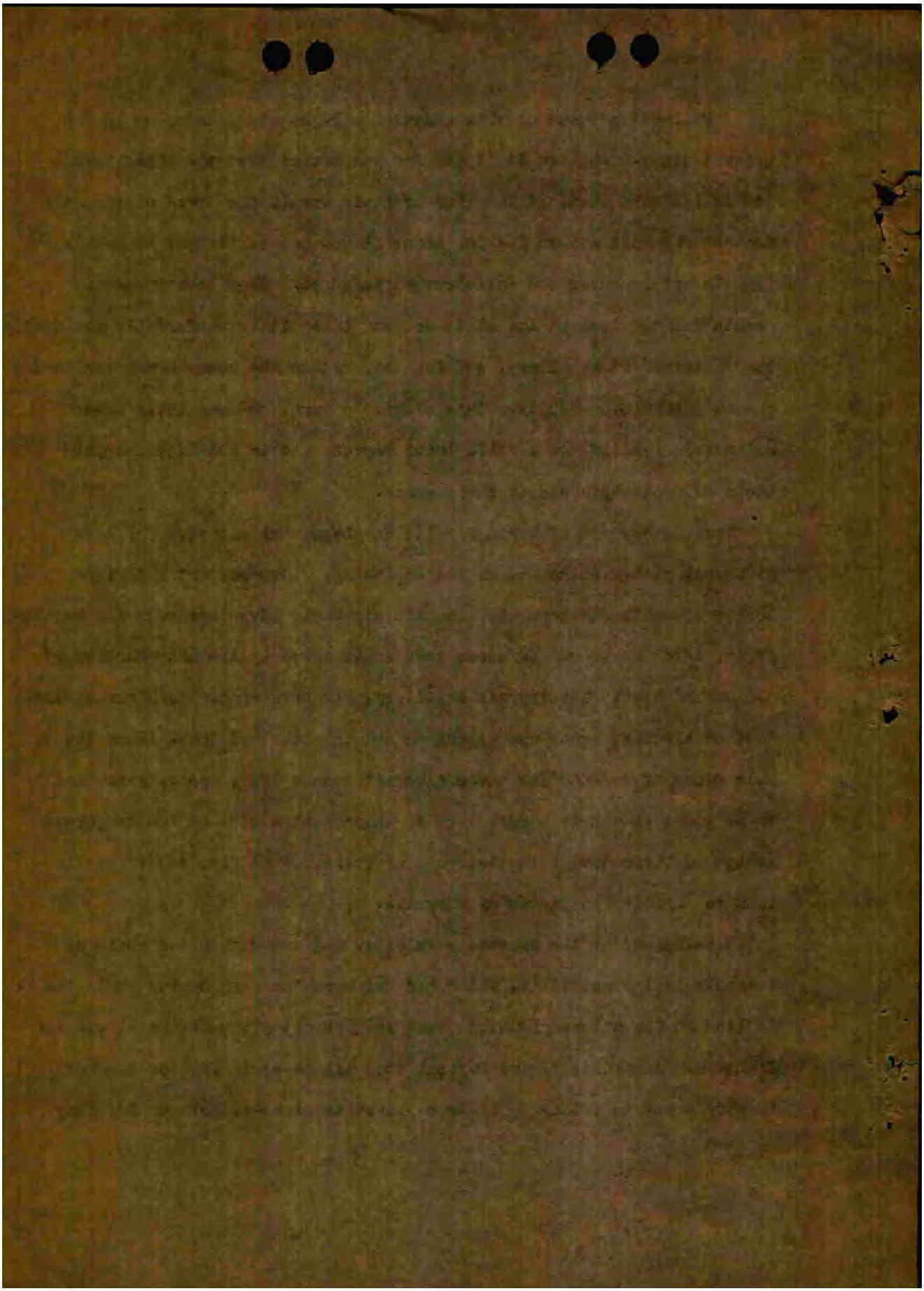
It is interesting to note why developments at the end of World War I led away from the fighter-bomber, whereas developmental planning at the end of World War II leads directly to the perfection of the fighter-bomber concept. In both cases, strangely enough, one of the main reasons was the increase and improvement in ground antiaircraft defenses. Whereas this development led away from the fighter-bomber in World War I, and in fact relegated the entire concept to the background almost immediately after it had come into being, in World War II the same reason, in combination with other important factors, led to the further development and the definitive delineation of the fighter-bomber concept. What is the explanation for this difference in effect?



A fuller treatment of this question will be given later on in the present study. Suffice it to say for the moment that the chief reason lay in the fact that, at the time of World War I, the speed of even the fastest and most modern fighter aircraft was not sufficient to enable them to out-maneuver the antiaircraft defenses. They were forced to remain far too long at low altitudes and thus within comfortable range of the antiaircraft artillery, and for this reason the heavy armor they bore was an absolute necessity. This armor, in turn, reduced their speed and maneuverability to a still lower degree, and in the last analysis their only strength was in their armor.

Towards the end of World War II, developmental activity followed a different path. Although, in the beginning, close-support and dive-bomber aircraft had been able to maintain their advantage over the battle-field, later on ground defenses were so improved by the introduction of medium and light antiaircraft artillery, with its specialized ammunition, that no aircraft armor was strong enough to withstand them. Thus the sole means of defense for these aircraft became their speed, which had to be great enough to permit them to shorten to a minimum the dangerous moment of their dive into the range of antiaircraft fire and to enable them to exploit the factor of surprise.

Development of the necessary velocity was now within the realm of technological possibility, which had not been the case during World War I. It lies in the nature of things that the fastest aircraft are always the fighters. Accordingly, the logical step was to equip fighter aircraft in such a way that they could be employed as close-support or infantry

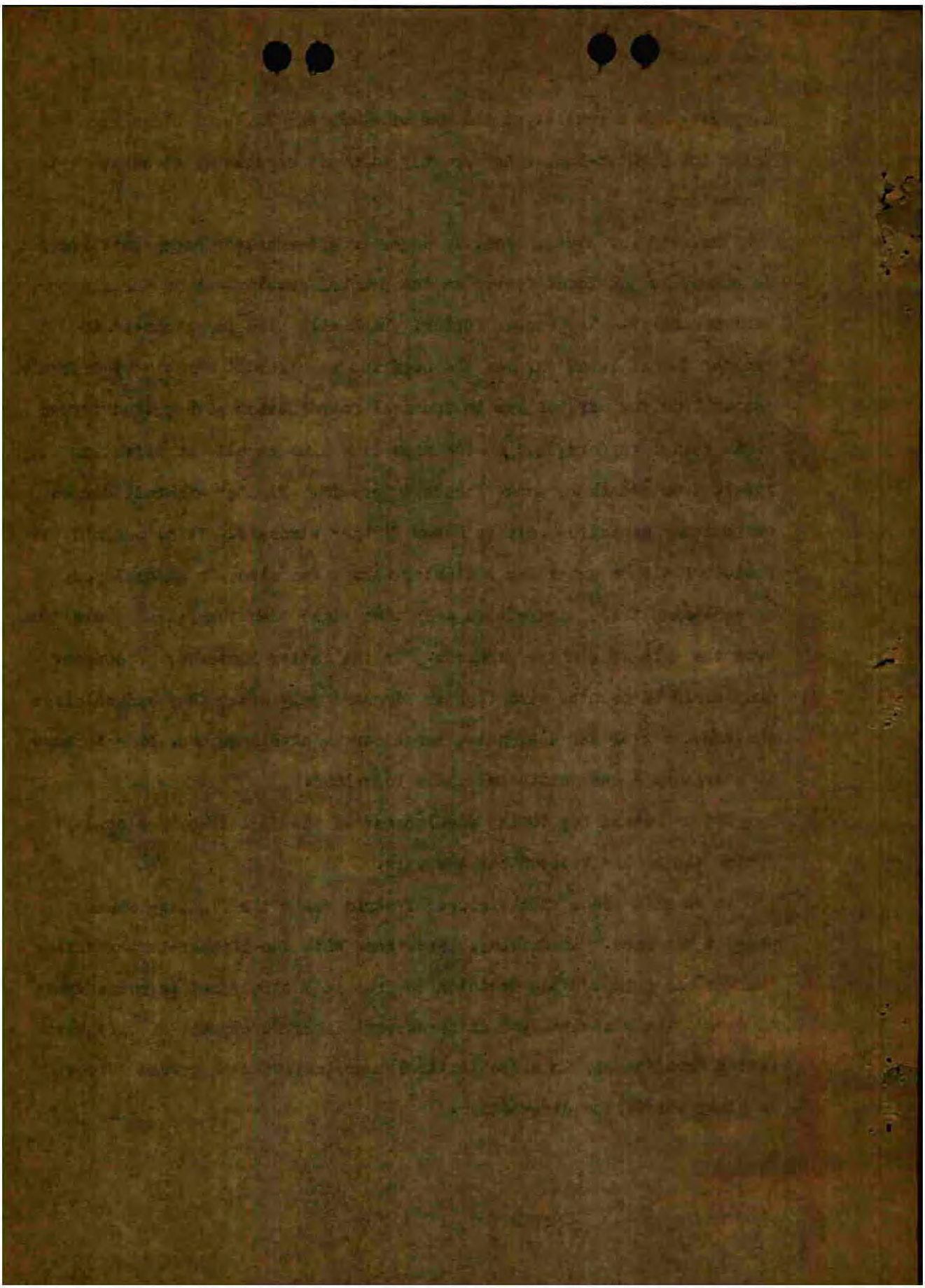


aircraft. As a result, at the end of World War II, both sides were using the fighter-bomber as the only aircraft capable of close-support operations.

The need for speed, then, in order to out-manoeuver enemy antiaircraft defenses, is the first factor in the gradual development of the fighter-bomber concept. The second factor, which will also be discussed in greater detail later on, was the need for an aircraft capable of offensive action from the air, either in tactical coordination with ground forces or in aerial warfare, and at the same time also capable of defending itself from attack by enemy fighter aircraft. Fighter aircraft can be effectively combatted only by other fighter aircraft. Thus, one had the choice of either providing a fighter escort for aircraft so employed, or equipping these aircraft in such a way that they themselves could take over the role of fighter aircraft. In the latter instance, of course, they could be equated with fighter aircraft only after they had released their bombs over the designated target or an alternate one, or - in case of emergency - had jettisoned their bomb-load.

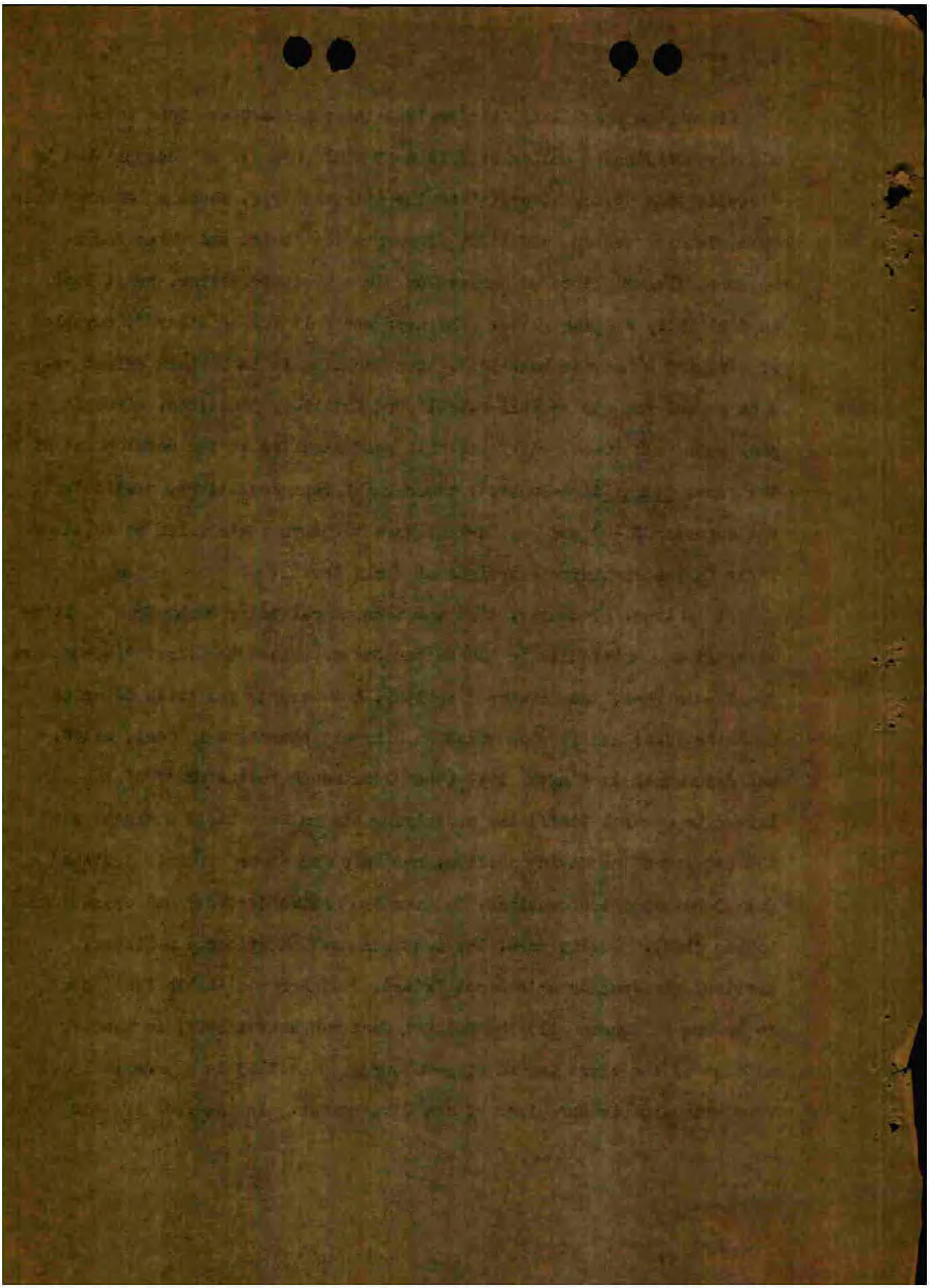
Let us return now to the development of the fighter-bomber concept during the period between the two wars.

As we have seen, at the close of World War I the fighter-bomber concept was dead. In Germany, experience with the fighter-bomber during the war had prompted the decision to drop it entirely and to concentrate on developing a specialized close-support aircraft capable of offensive action from the air in close tactical coordination with ground forces; in other words, the dive-bomber.



It was the prevailing opinion that the various operations involved in closely coordinated action of this sort could not all be accomplished by "low-altitude attack aircraft" of the existing type, whose chief armaments were airborne weapons and light fragmentation bombs, and whose target approach flight had to be carried out in a horizontal line, or at best in a slightly sloping glide. The need was felt for an aircraft capable of carrying a heavier bomb-load, thus enabling it to bombard effectively such ground targets as well-established artillery positions, aircraft shelters, tank domes, etc. And this need resulted in the development of the famed Stuka (dive-bomber), whose chief representatives, particularly the superior Ju-87 and the Hs-129, were to prove their value so outstandingly in the lightning campaigns of World War II.

It is true, of course, that the idea of releasing bombs from a diving aircraft was originated in the United States, where the first dive-bomber, the Martin MB-1, was developed in 1929, but Germany was quick to seize upon the idea, and it soon found such ardent champions in Udet, Milch, and Jeschonnek that after 1939 (when Jeschonnek became Chief of the Luftwaffe General Staff) the underlying aim in German air armament was the attainment of diving ability, not only for those aircraft destined for close-support operations, but for the entire tactical and operational bomber fleet. Furthermore, the best and most experienced officers, particularly Jeschonnek's close friend, Freiherr von Richthofen (later to become Feldmarschall) and Colonel Günter Schwartzkopff, commanding officer of the first German dive-bomber wing (killed in France in 1940) were enthusiastic champions of the dive-bomber. In the face of this



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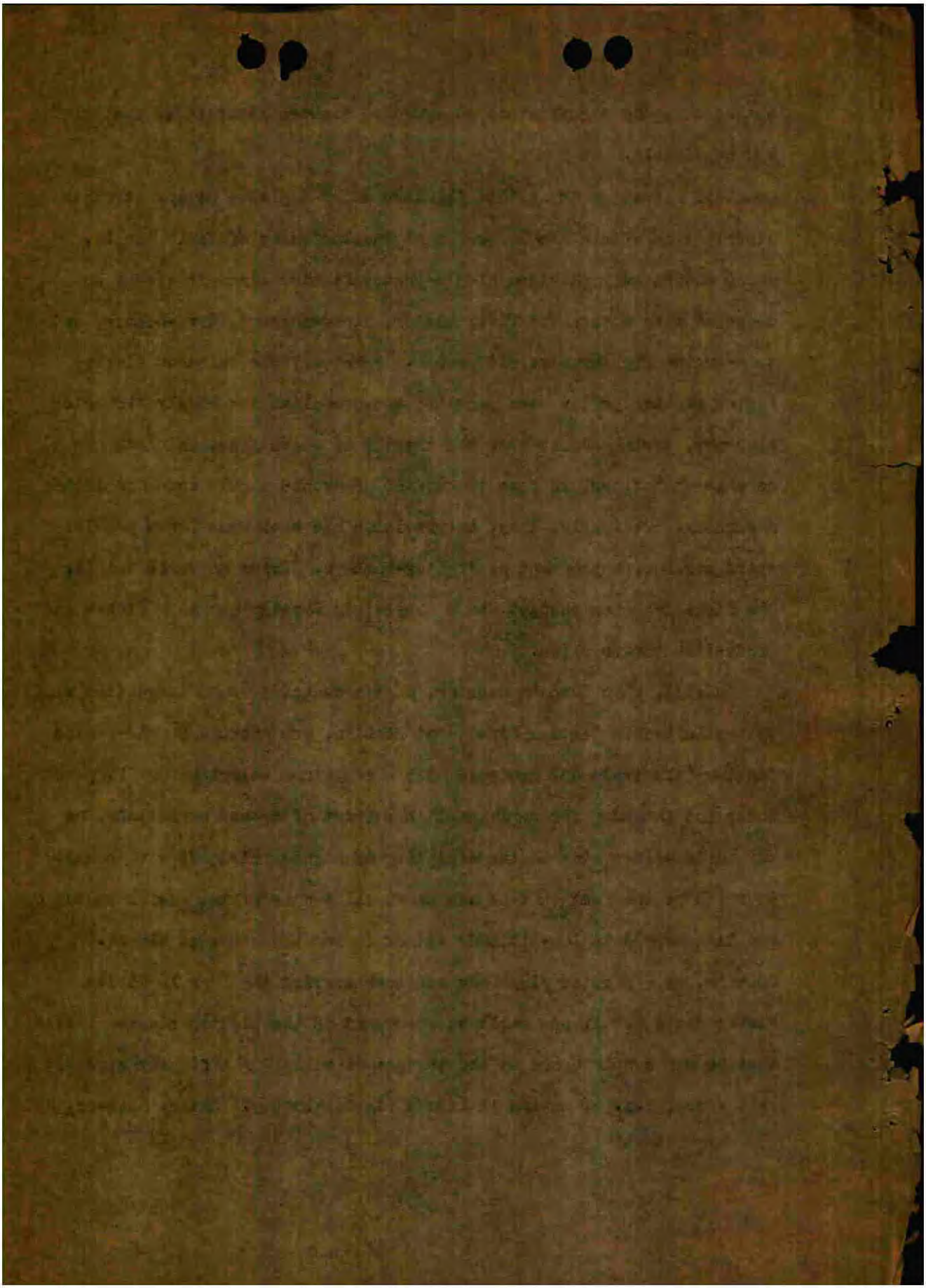
enthusiasm, the significance assigned to fighter aircraft at that time was negligible.[1]

This situation is further illustrated by a glance at the strength distribution within the Luftwaffe at the beginning of World War II, which showed only thirteen single-engine fighter aircraft groups as compared with a total of fifty bomber, close-support, dive-bomber, and twin-engine fighter aircraft groups. Moreover, the thirteen single-engine fighter groups were expected to accomplish two widely differing missions, aerial combat over the theater of operations, and home air defense operations, in case the course of events should make the latter necessary. Obviously, then, no provision had been made for a possible third mission, employment as fighter-bombers. Prior to World War II, the fighter-bomber concept was a completely foreign one to officers and front-line troops alike.

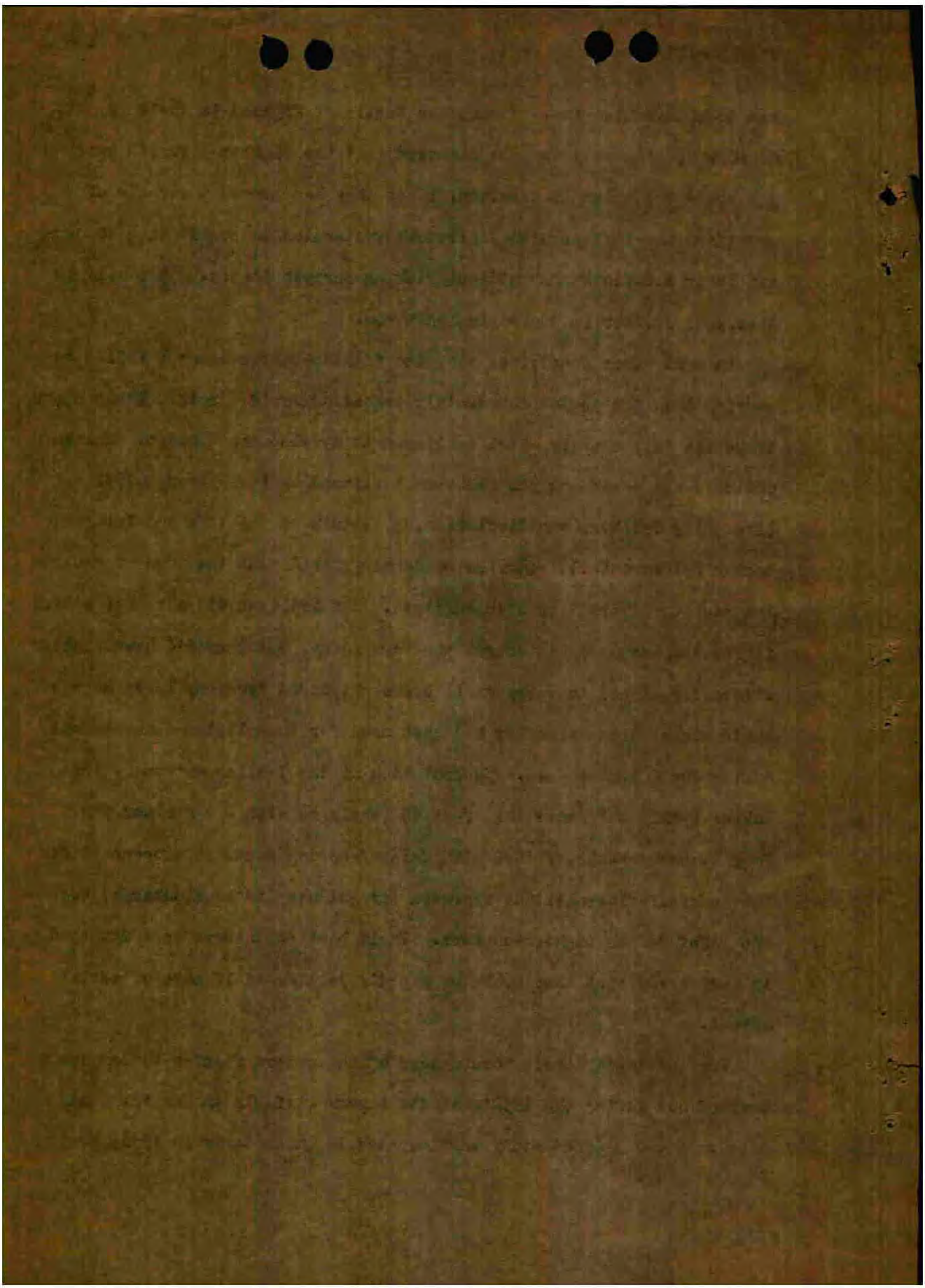
In 1933, when Hermann Goering, on the occasion of an inspection visit to the Luftwaffe Testing Station at Rechlin, was shown a single-engine fighter (the Arado 65) equipped with a container carrying four 22 pound bombs and intended for employment in support of ground operations, he put an immediate stop to the equipping of fighter aircraft with bombs, in spite of the fact that he was shown all manner of impressive photos of the hits scored in low-altitude attack during the tests at Lipesk.[2] Goering, as a fighter pilot who had been awarded the Pour le Mérite during World War I, was still so enamoured of the fighter mission itself that he was deeply upset at the thought of equipping a fighter aircraft with bombs, i.e. of making it into a fighter-bomber. Later, however, he



was to change his mind. During the Battle of England in World War II, Goering was the very one who demanded that the fighter aircraft carry the bombs to England themselves, since they had proved incapable of providing the bombers with sufficient protection to permit them to carry out their mission by day without risking serious losses. This will be discussed further in the coming chapters.

In most other countries, too, the fighter-bomber concept failed to survive into the period immediately preceding World War II. Italy seems to be the only country which continued to develop the concept. German officers and engineers who had been stationed in Italy around 1931 (including Freiherr von Richthofen, a captain at the time and later to become Feldmarschall) returned to Germany fired with the idea of equipping fighter aircraft as bomb carriers. The Italians did not have a true fighter-bomber as we interpret the term today, but they did have fighter aircraft equipped to carry small bombs suspended from the lower edge of their wings; these aircraft had been used for low-altitude bombardment during the Colonial Wars. In emulation of the Italian approach, the Fokker D-XIII and later the Arado 65 (equipped with a container for four 22 pound bombs, fitted with delayed-action fuzes to compensate for the necessary low-altitude approach and get-away after discharge) became the first German fighter-bombers. Their bomb containers were attached in such a way that they could be rapidly jettisoned in case of aerial combat.

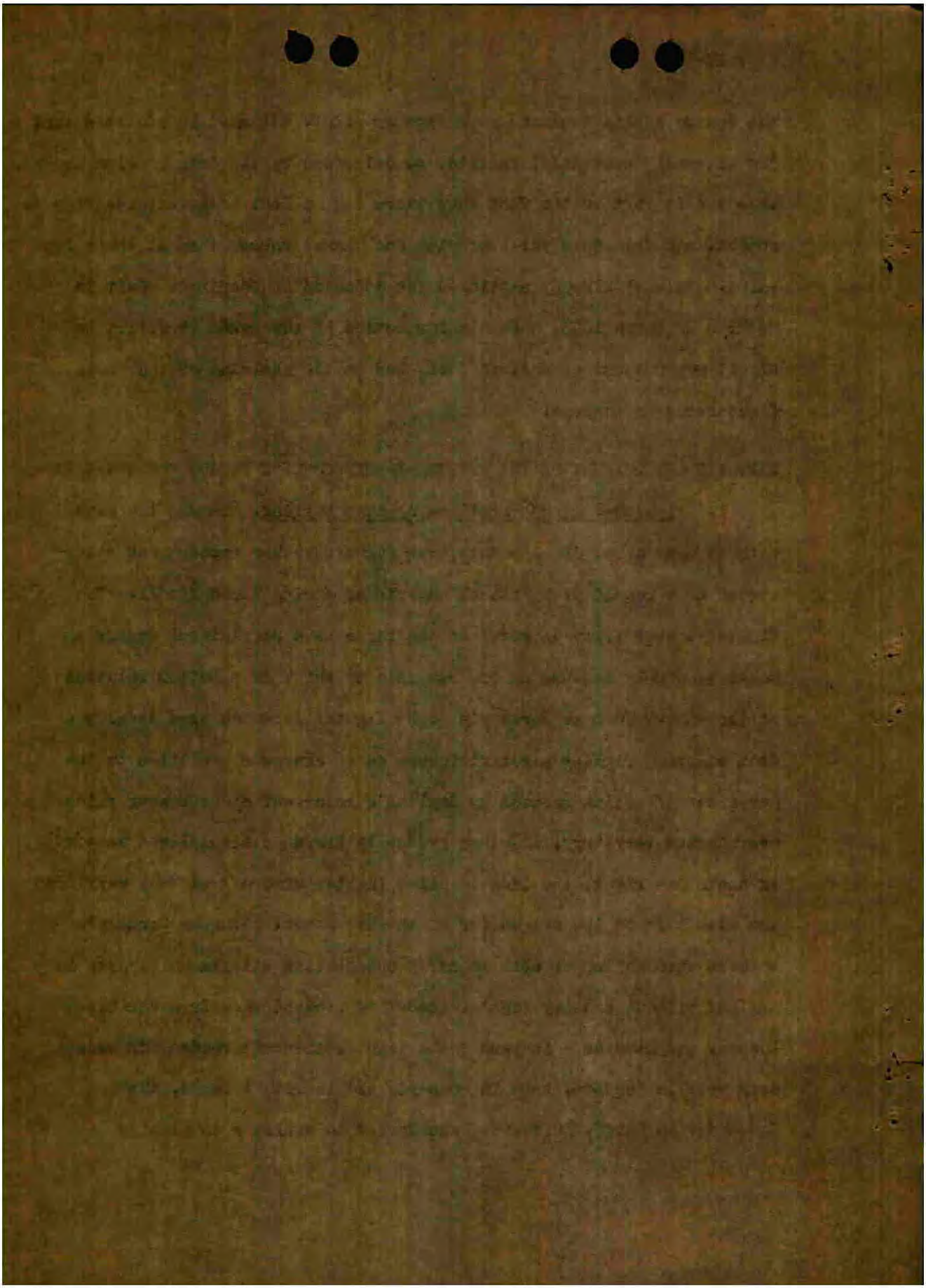
The testing of these forerunners of the modern fighter-bomber was carried out during the 1930's at the Lipesk airfield in Russia. The author of the present study participated in these tests in 1931, during



the course of his training as a fighter pilot. It must be admitted that the extremely successful results, as evidenced by the data on hits scored, were due in part to the fact that there was no real enemy intervention to combat, and from this point of view one cannot accept them at their face value. We have already mentioned the occasion of Goering's visit to Rechlin in March 1933, when his inspection of the Arado 65 failed to elicit any enthusiasm and, in fact, led to the shelving of the whole fighter-bomber concept.

III. THE DEVELOPMENT OF THE FIGHTER-BOMBER CONCEPT DURING WORLD WAR II

1. Fighter-Bomber Operations Against England. As was the case with so many other developments, the fighter-bomber concept was resurrected as a result of practical experience during World War II. The fighter-bomber first appeared on the scene as a provisional emergency measure, simply because no one was able to think of a better solution at the time. Just as Germany's night fighter defenses were developed from existing fighter aircraft forces as an emergency solution to the desperate situation created by England's recurrent night bomber raids over German territory, and then gradually became a specialized weapon in their own right, the idea of using fighter aircraft as bomb carriers was also born of the exigencies of the situation. Because Germany's bombers were no longer able to carry out daytime attacks on targets in England without a heavy fighter escort to protect them from serious losses, and because - in turn - the fighter aircraft needed for escort duty were inadequate, both in quantity and in flight range, the Commander in Chief, Luftwaffe, was forced to evolve a compromise



solution: that of using the fighter aircraft themselves for daytime bombardment of targets in southern England, including London. I do not wish to discuss the rightness or wrongness of this decision here; I merely wish to establish it as a historical fact.

This decision was made by Germany's Luftwaffe leaders during the Battle of Britain. During the third phase of this operation, which, according to Galland,[3] began on 8 August 1940 and ended on 7 September 1940 (in reality, the third phase, the beginning of the intensive air war against England, began on 13 August 1940, at 0730), the German bomber forces, accompanied by fighter escorts, had been bombarding fighter aircraft bases in southern England without any visible degree of success. Then, Germany made the fatal decision to begin the fourth phase, which started on 7 September 1940 with the first large-scale daytime attack on London. At that time, of course, Germany's leaders had no way of knowing how close they had been to annihilating England's fighter power. If the third phase, the bombardment of English fighter bases, had continued any longer, success would have been within easy grasp. Churchill himself writes the following:[4]

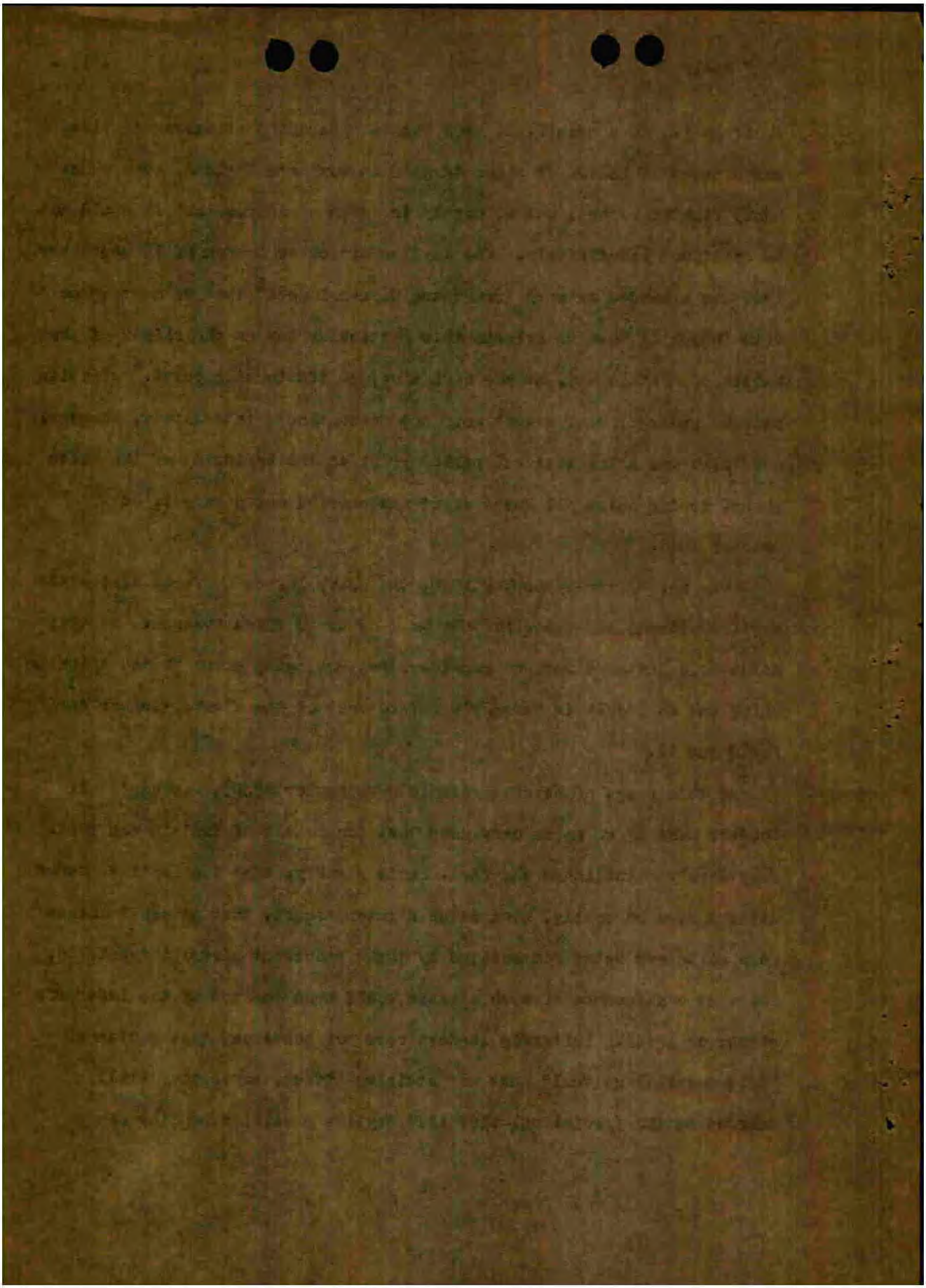
> If the enemy had continued his heavy attack, and had disrupted the fighter command centers and their communications facilities, it is quite possible that the entire British Fighter Command might have collapsed, which would have resulted not only in a fairly desperate situation for the city of London, but also in the loss for Britain of her air supremacy in a decisive area of operations."

Germany's leaders, however, let themselves be tempted to alter their objective too soon, and to give up the struggle for air supremacy through elimination of the British fighter forces without having accomplished

their goal. As a result, it soon became apparent that German daytime bombardment of London or other targets in southern England, even under heavy fighter escort, was so costly in terms of losses that it could not be continued indefinitely. The daytime attack on London of 15 September 1940 was attended by such tremendous German losses[5] that we must agree with Churchill when he selects this particular day as the climax of the Battle of Britain and, at the same time, as its turning point.[6] Daytime attacks under fighter escort were not discontinued immediately, however, and there was a transitional period prior to the beginning of the fifth phase, during which all bombardment was carried out at night, on 20 October 1940.

Even so, by mid-September 1940, the heavy losses suffered during the daytime attacks had cancelled out most of their effectiveness. At this point more and more serious consideration was being given to the thinking which was to result in Germany's development of the fighter-bomber during World War II.

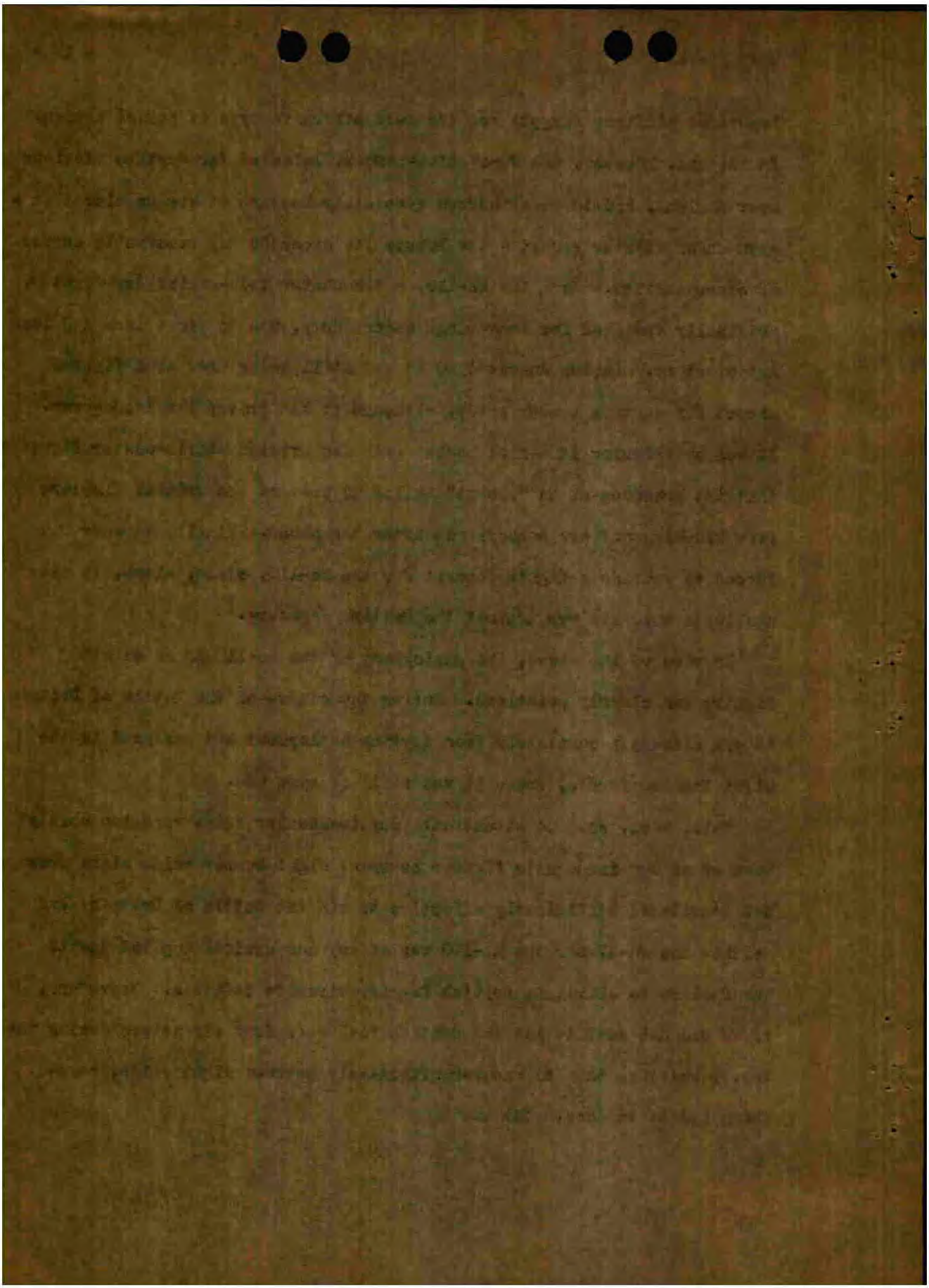
At this stage of developments (mid-September 1940), Germany's air leaders were by no means convinced that the Battle of Britain was lost. They merely established the fact, quite rightly, that the daytime bomber attacks were so costly, even under fighter escort, that aircraft losses were no longer being compensated by the replacement aircraft available, and that continuance of such attacks would mean the end of the Luftwaffe sooner or later. Luftwaffe leaders were not convinced that nocturnal bombardment alone would have any decisive effect, since they still adhered to the traditional view that daytime precision bombing of



important military targets was the most effective type of aerial action. In the end, however, the Ju-87 dive-bomber, selected for daytime missions over England, had to be withdrawn completely because it was so slow that - even under fighter escort - its losses far exceeded any reasonable degree of expendability. Even the Me-110, a two-seater twin-engine day fighter, originally designed for long-range escort duty, was to prove less and less satisfactory. During August 1940 it was still being used as a fighter escort for daytime bomber raids, although it had proved its inadequacy. It was so inferior in aerial combat with the British single-seater fighters that its presence as an "escort" failed to prevent the British fighters from knocking out our bombers one after the other. Finally we were forced to provide a fighter escort for the Me-110, since, alone, it was unable to hold its own against the British fighters.[7]

In view of the above, the employment of the Me-110 as an escort fighter was clearly pointless. During the course of the Battle of Britain it was withdrawn completely from daytime employment and assigned to the night fighter forces, where it was still of some use.

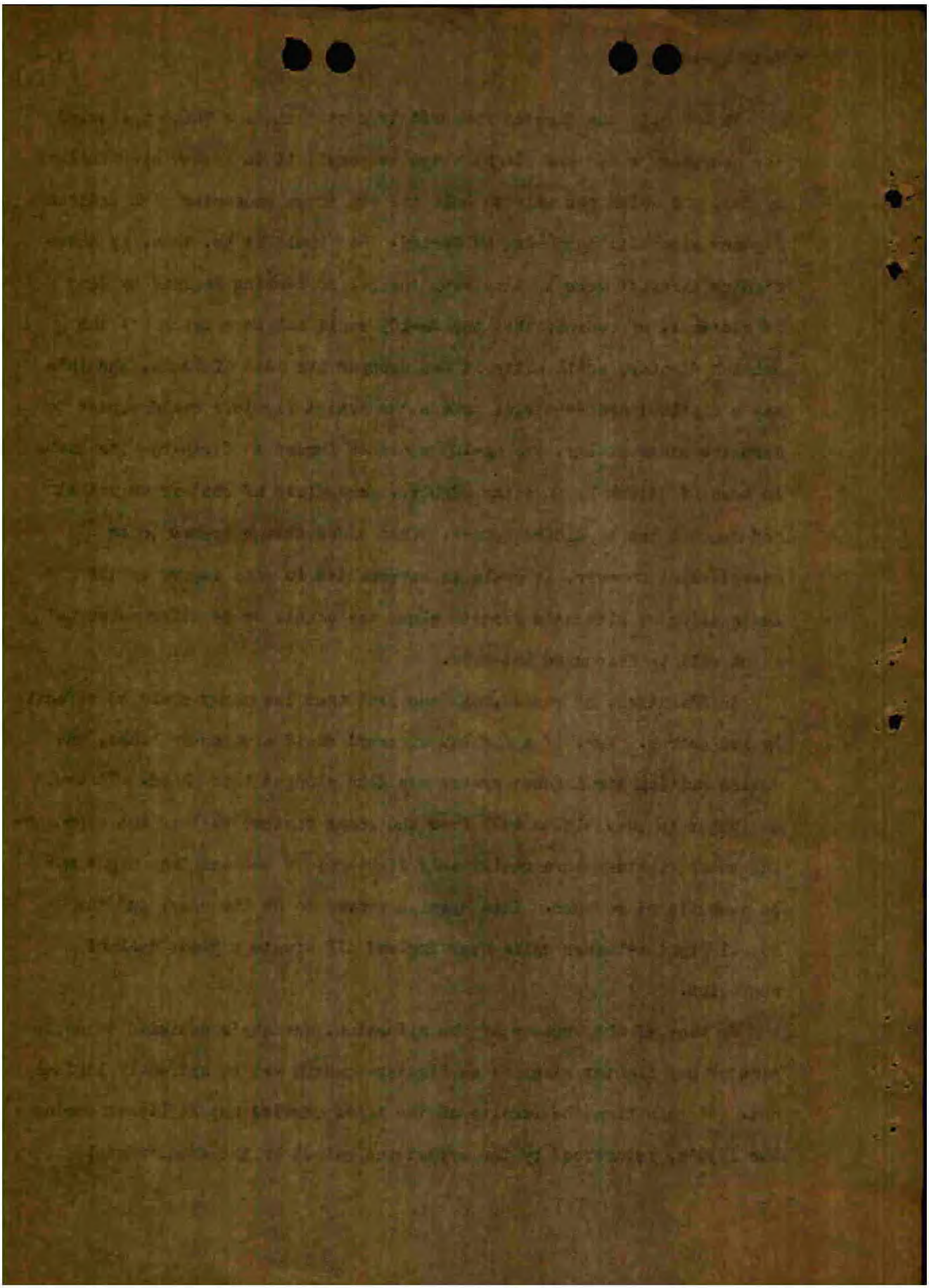
This, then, was the situation: daytime bomber raids were too costly because of our inadequate fighter escorts; night bomber raids alone were not considered sufficiently effective to win the Battle of Britain; and neither the Ju-87 nor the Me-110 was of any use against England due to our failure to eliminate British fighter aircraft defenses. Therefore, if we did not want to let the British feel safe from air attack during the day, permitting them to recover effectively between night raids, something had to be done. But what?



We had only one fighter aircraft type at that time which possessed the necessary speed and flight range to permit it to appear over England by day, and which was able to hold its own in an encounter with British fighter aircraft; that was the Me-109. How would it be, then, if these fighter aircraft were to take over the job of bombing England by day? It was true, of course, that the Me-109 could not be a match for the British fighters until after it had dropped its load of bombs, and this was a distinct disadvantage; unless the escort fighters could manage to keep the enemy at bay, the Me-109 would be forced to discharge its bombs in case of attack by an enemy fighter, regardless of whether or not it had reached the appointed target. This disadvantage seemed to be unavoidable; however, it could be compensated to some degree by the designation of alternate targets along the coast, or by other measures which will be discussed later on.

An advantage, of course, was the fact that the enemy could be effectively led astray. For, if a fighter aircraft could also carry bombs, the entire British air defense system would be plunged into chaos. It would no longer be possible to tell from the radar picture whether the approaching enemy fighters were really only fighters, or whether they might not be camouflaged bombers. This surmise proved to be the case, and the actual fighter-bomber raids over England did create a great deal of confusion.

In view of the urgency of the situation, Germany's decision to equip some of her fighter aircraft as fighter-bombers was an extremely logical one. At this time the results of the tests carried out at Lipesk during the 1930's, reinforced by the experience gained by the experimental



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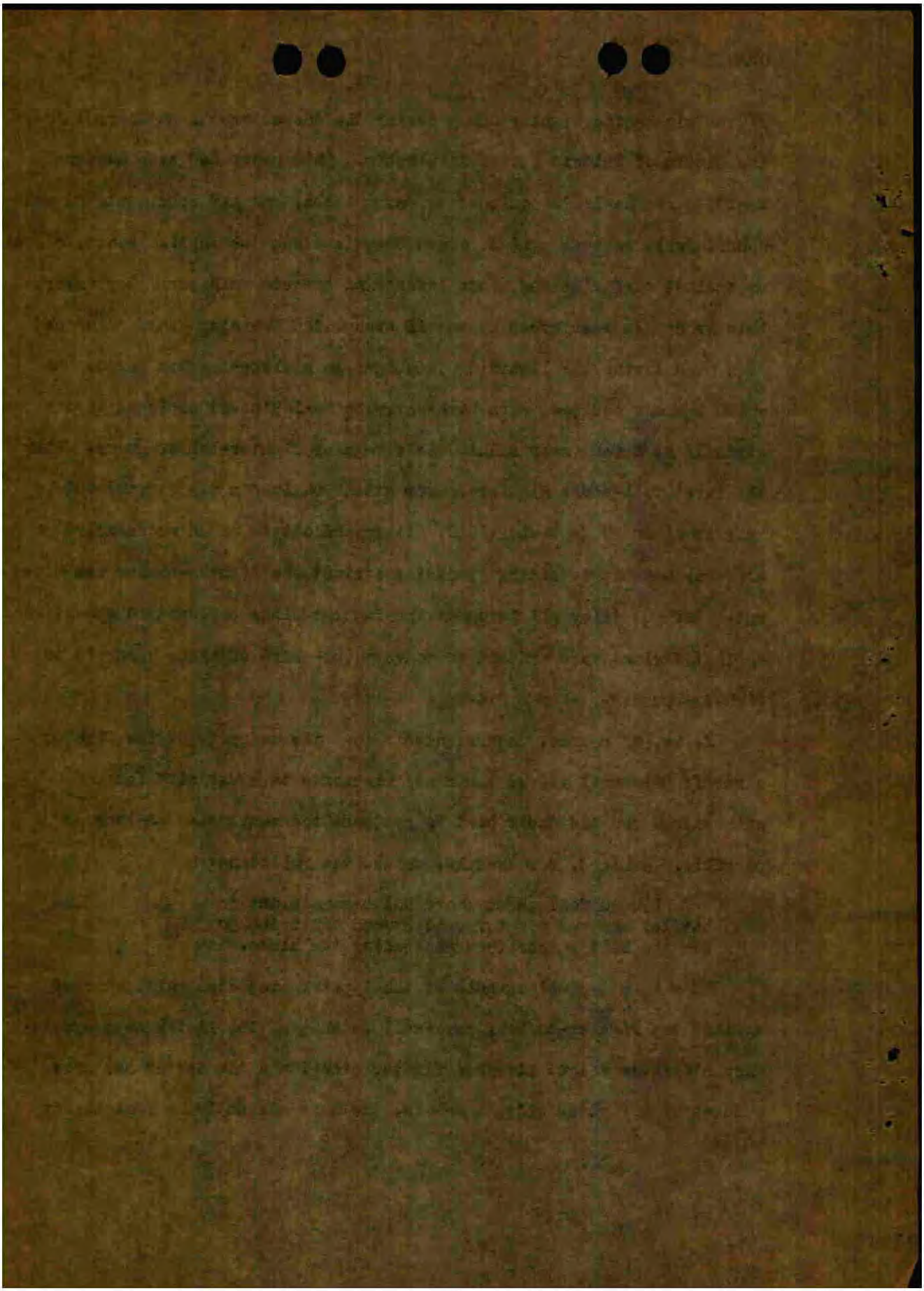
210th Twin-Engine Fighter Group during the course of its employment in the Battle of Britain proved invaluable. This group had been assigned Me-109's and Me-110's equipped to carry bombs, and had been employed with considerable success against ocean targets along the English coast, as well as against airfields and minor industrial targets. In early September, this group was reinforced by the II Group, 2nd Training Wing, which had been used during the lightning campaigns as a close-support force, and which was now equipped with bomb-carrying Me-109's and assigned to the airfield at Marok (near Calais) as a regular fighter-bomber group. When the first full-scale fighter-bomber attack on London was carried out by this group on 20 September 1940,[8] it turned out to be an unqualified success, and any remaining prejudice against the fighter-bomber was wiped out. Without delay all seven of the fighter wings employed in operations against England were ordered to convert one-third of their aircraft to fighter-bombers.

It is, of course, understandable that the majority of the fighter aircraft personnel viewed their new mission with a definite lack of enthusiasm, and did their best to postpone the conversion as long as possible. Galland, for example, writes the following:

> Like a fool whose sword has become blunt in battle, and who now turns it around and tries to use the hilt rather than sharpening the blade.[9]

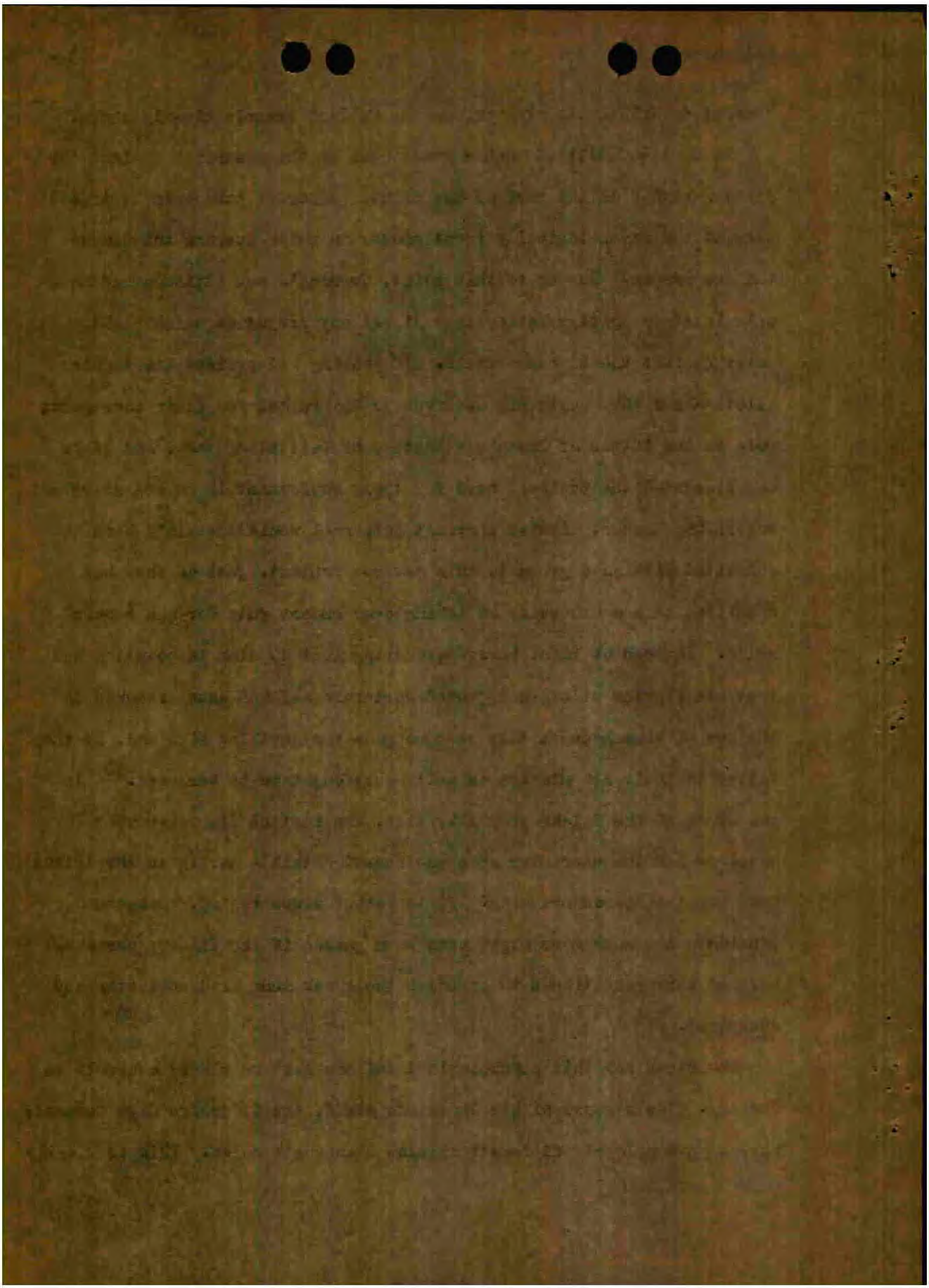
This is a typical example of the type of prejudice which existed against the fighter-bomber, precisely because of its status as a hybrid. Once a fighter pilot, always a fighter pilot, and the better and more successful a fighter pilot a man is, the more adamantly he resists any



attempt to dilute his mission, as the Galland example clearly shows.

It must be admitted that a great deal of the prejudice against the fighter-bomber on the part of the fighter aircraft men could be traced back to the psychologically inept manner in which Goering introduced the new weapon. For up to this point, Goering's own attitude had been calculated to confirm rather than dispel any prejudice which might exist against the fighter-bomber. If Goering had praised his fighter pilots - and they certainly deserved to be praised for their courageous role in the Battle of Britain - instead of belittling them, and if he had presented the tactical need for their employment in an objective and convincing manner, fighter aircraft personnel would certainly have submitted with good grace to this new requirement, just as they had submitted to the necessity of taking over escort duty for the bomber raids. Instead of this, however, Goering lost no time in pointing out that his fighter pilots had proved worthless and had been assigned to the new mission because they were no good for anything else and, if they failed in their new mission as well, they ought to be scrapped.[10] In the words of the Reichsmarschall, then, the initial fighter-bomber missions had the character of a punishment detail - hardly an auspicious omen for the new undertaking! It is rather discouraging, when one considers how much more might have been gained if the fighter personnel had not been conditioned to approach their new task with antipathy and annoyance.

The blame for this psychological failure must be placed squarely on Goering. The members of his immediate staff, the Luftwaffe High Command, were of a completely different opinion than their chief. This is clearly



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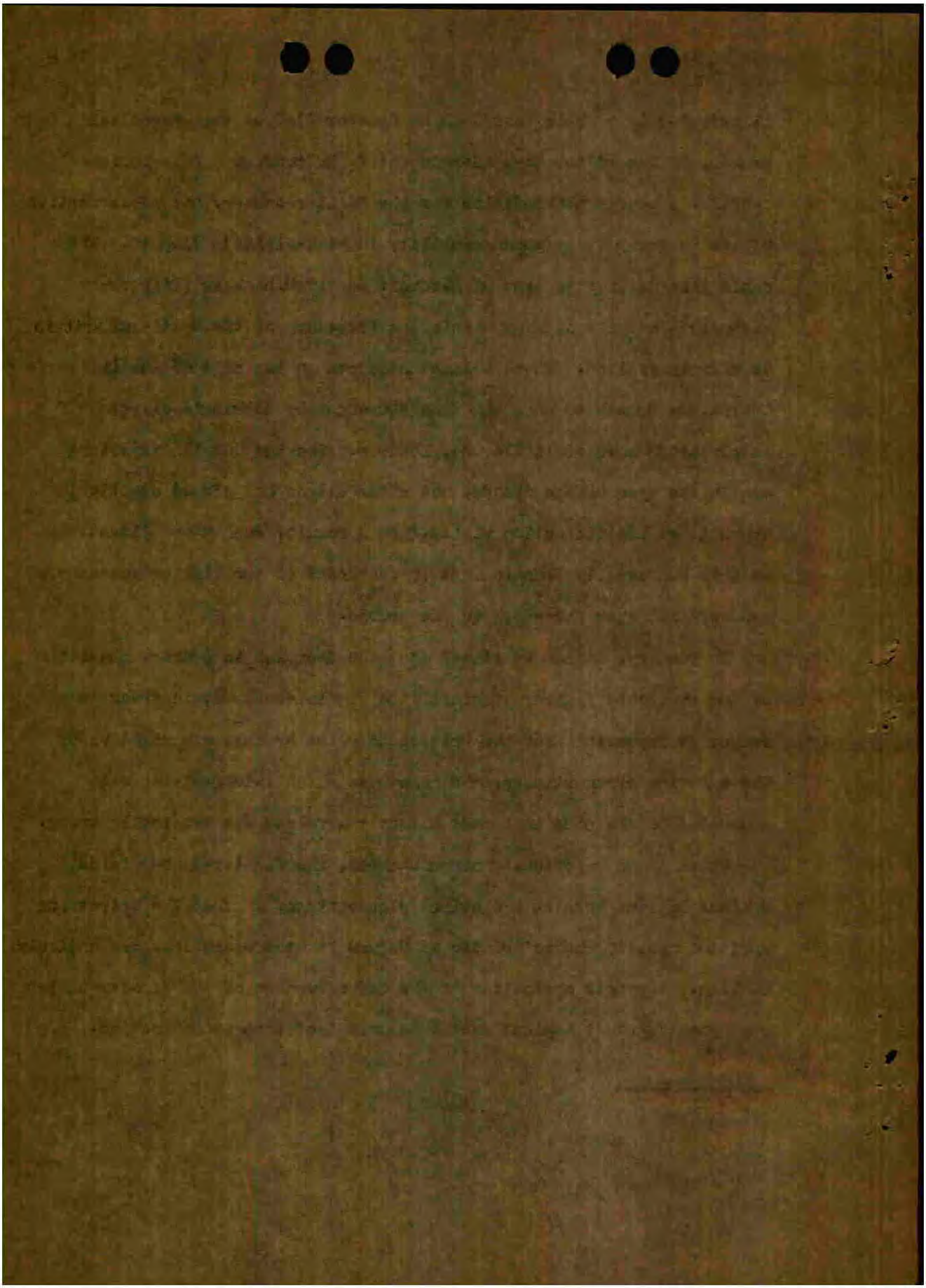
illustrated by a cable issued on 25 October 1940 by the Operations Branch, Office of the Commander in Chief, Luftwaffe. This cable contains a hearty commendation for the fighter-bomber, and makes mention of its "extraordinary maneuverability in high-altitude flight". The cable designates this type of aircraft as "light bombers (fighter-bombers)", and its mission within the framework of the Battle of Britain is clearly defined. These belated attempts on the part of the Luftwaffe Operations Branch to undo the damage wrought by Goering's direct intervention were of little use, however. Goering was the important man in the eyes of the troops, and after all he had stated exactly the opposite on his inspection visits. As a result, such paper directives as this one usually came to rest in the desks of the fighter commanders and were not even passed on to the troops.

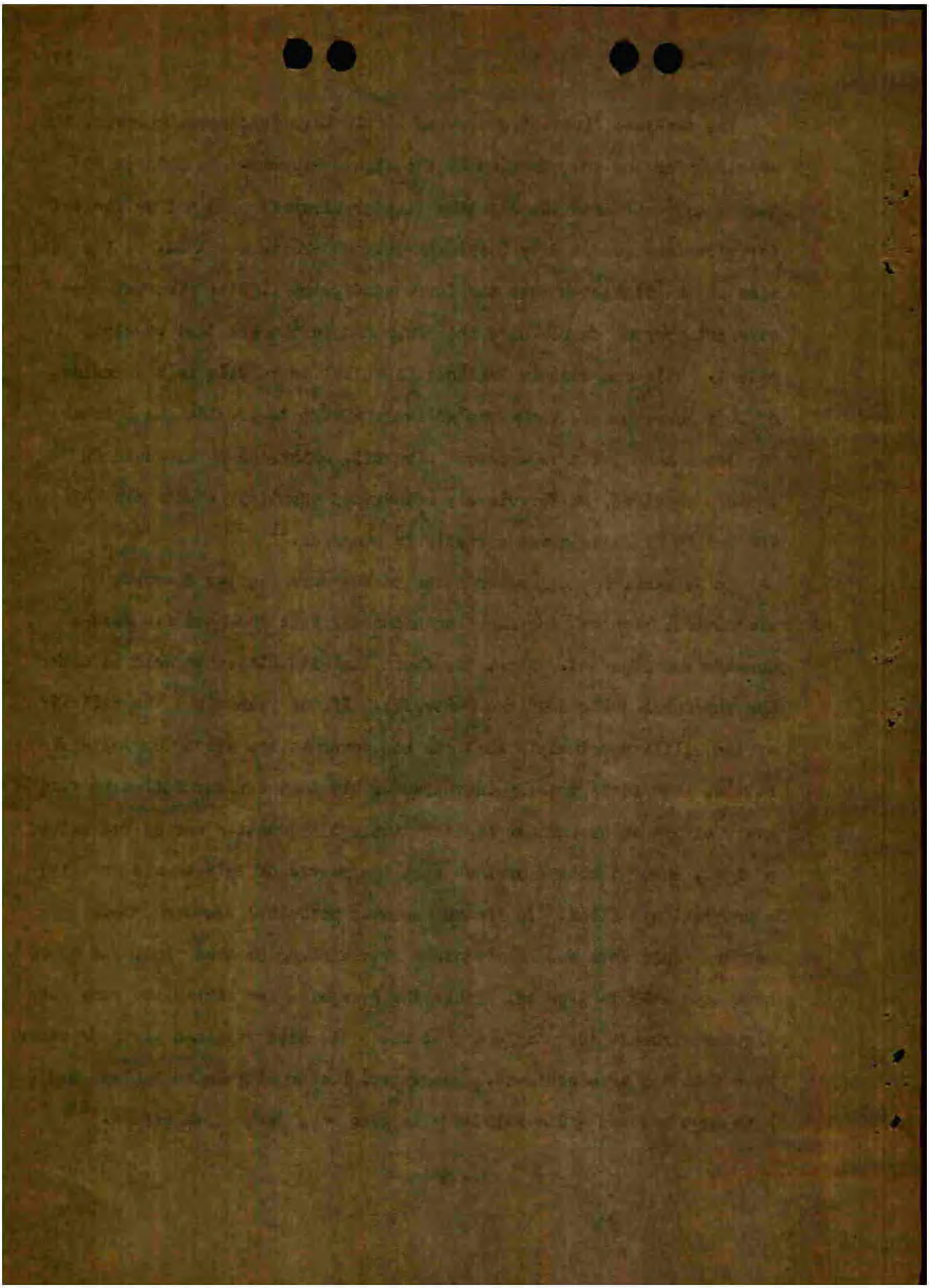
In summary, it can be stated that the decision to convert a portion of the available fighter aircraft into fighter-bombers, in order to render it impossible for the British to relax by day, was right under the existing circumstances; the manner in which this decision was presented to the personnel most directly involved was tragically wrong.

Under these unfortunate circumstances, the fighter-bomber raids against England were at a distinct disadvantage, in that the spirit and ambition usually characteristic of German fighter operations was entirely lacking. Any fair evaluation of the effectiveness of the fighter-bomber employment against England must take this fact into consideration.



The top-level Luftwaffe command should have done more, however, than merely order the introduction of the fighter-bomber. As soon as it became apparent that the existing fighter aircraft were not sufficient for effective escort duty (approximately mid-September 1940, at the same time as the fighter-bomber was introduced), the fighter aircraft procurement program should have been expanded to the greatest possible extent. This was done in England; Churchill is voluble in his praise of Lord Beaverbrook, who expended every effort to provide the British Fighter Command with replacement aircraft, either newly produced or rapidly repaired, in "previously unimagined quantity" - and this while the Battle of Britain was actually in progress.[11]

In Germany, no action was taken to increase fighter aircraft production, although one might have assumed that the need for such a measure was apparent. Here, the fault lay with Hitler as well as with the top-level command of the Luftwaffe. If one recognises the validity of the military principle that one can never be too strong during a battle, then it is totally incomprehensible that Germany failed to make every effort to expand her fighter aircraft production during the autumn of 1940, when it became obvious that the Battle of Britain was creating a critical situation. As far as manpower potential was concerned, Germany would have had an advantage over England at that time, and would have been able to produce, within the span of a few months, so many more fighter aircraft than England that she could have regained air supremacy. Once that had been achieved, the daytime bomber attacks on England could have been resumed and continued with even more power than before.[12]



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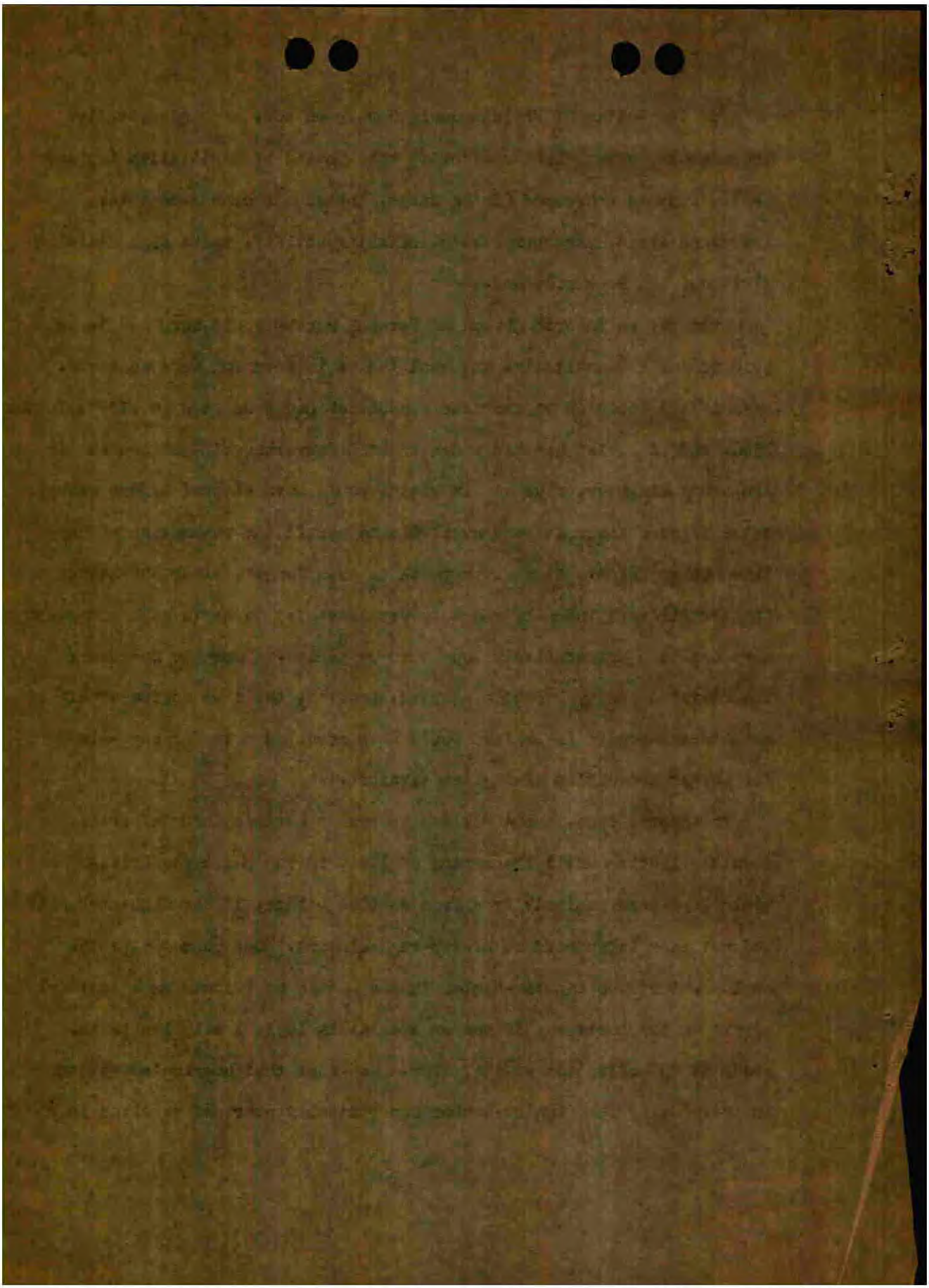
And the Battle of Britain could have been won, if a quantitative increase in German fighter aircraft accompanied by qualitative improvements, such as increased flying range, better airborne armaments, increased speed, maneuverability, climbing ability, and a high cruising altitude, had been provided.

Even so, an interim period of several months would have had to be bridged until quantitative and qualitative improvement were achieved. Even if the decision to increase production had been made in mid-September 1940, and if Hitler had had a man of Lord Beaverbrook's calibre as Air Armaments Minister, five or six months would have elapsed before enough extra fighter aircraft were available to permit the resumption of daytime bomber raids. It might have taken even longer, since the German fighter aircraft industry was not very extensive to begin with and might have needed a comparatively long warm-up period. Once the necessary industrial capacity had been assured, however, the same degree of effort which was expended in England would have resulted - in Germany - in a far larger production of fighter aircraft.

In theory, then, there would have been a certain interim period, possibly lasting until the spring of 1941, during which the British would have been entirely free from daytime attack, if the fighter-bomber had not been introduced as a stop-gap solution. One cannot view the employment of the fighter-bomber in the Battle of Britain as a tactical error; on the contrary, it was an absolutely logical solution to the needs of the situation at that time. The fact that Goering's approach in introducing the fighter-bomber was basically poor and resulted in a



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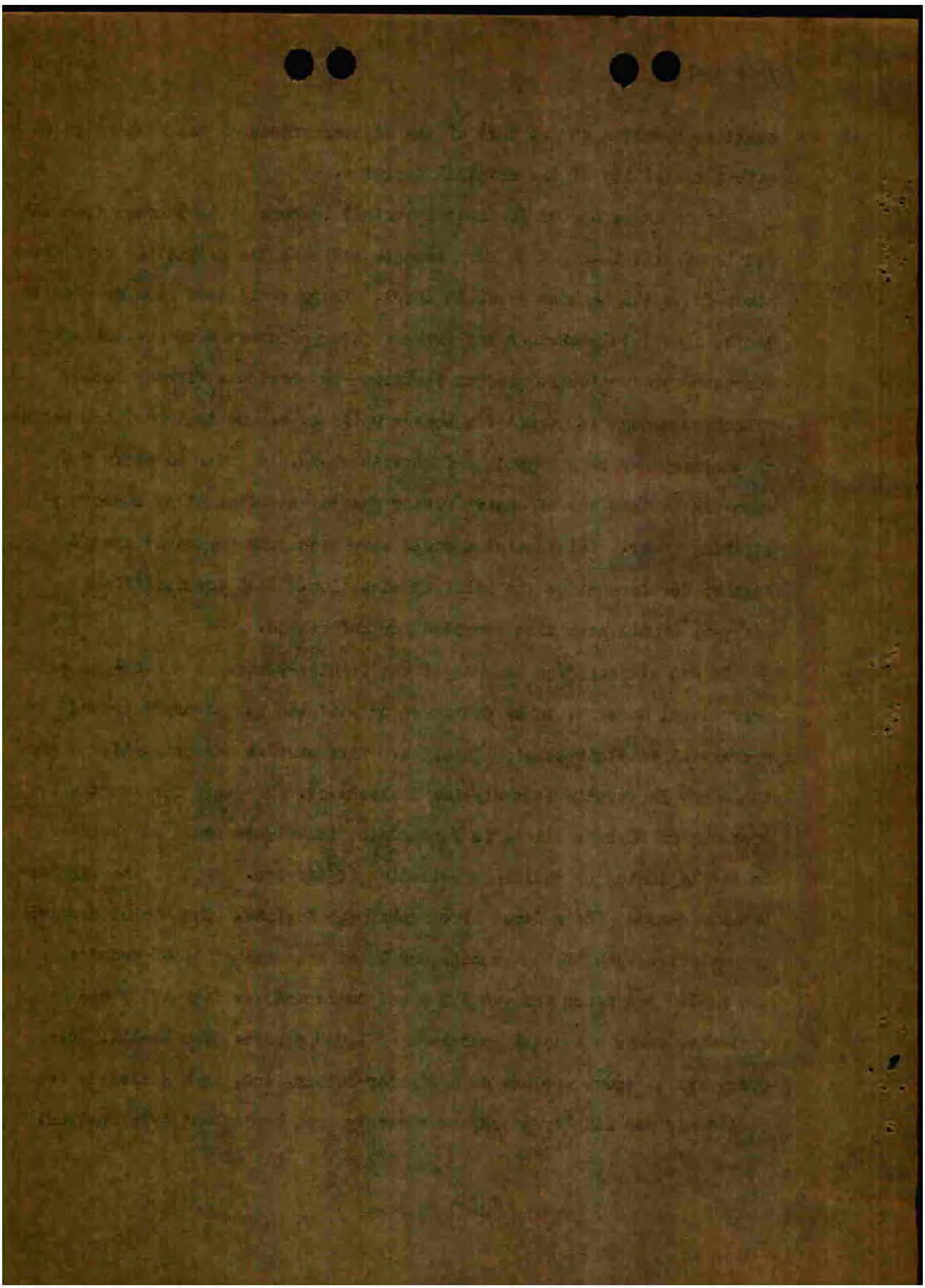
negative reaction on the part of the fighter personnel has nothing to do with the validity of the original decision.

In any case, one of the most important lessons to be learned from the Battle of Britain ought to have been to increase the production of fighter aircraft to the highest possible level. There would have been no need to decide immediately whether the extra fighter aircraft made available by increased production be used as fighters--to provide a fighter escort effective enough to permit the bomber units to resume their daytime raids--or whether they be equipped as fighter-bombers, in order to shift the emphasis to this new offensive weapon and to establish it as a decisive striking power. This decision could have been made dependent upon the further development of the military situation. Both possibilities, however, should have been provided for beforehand.

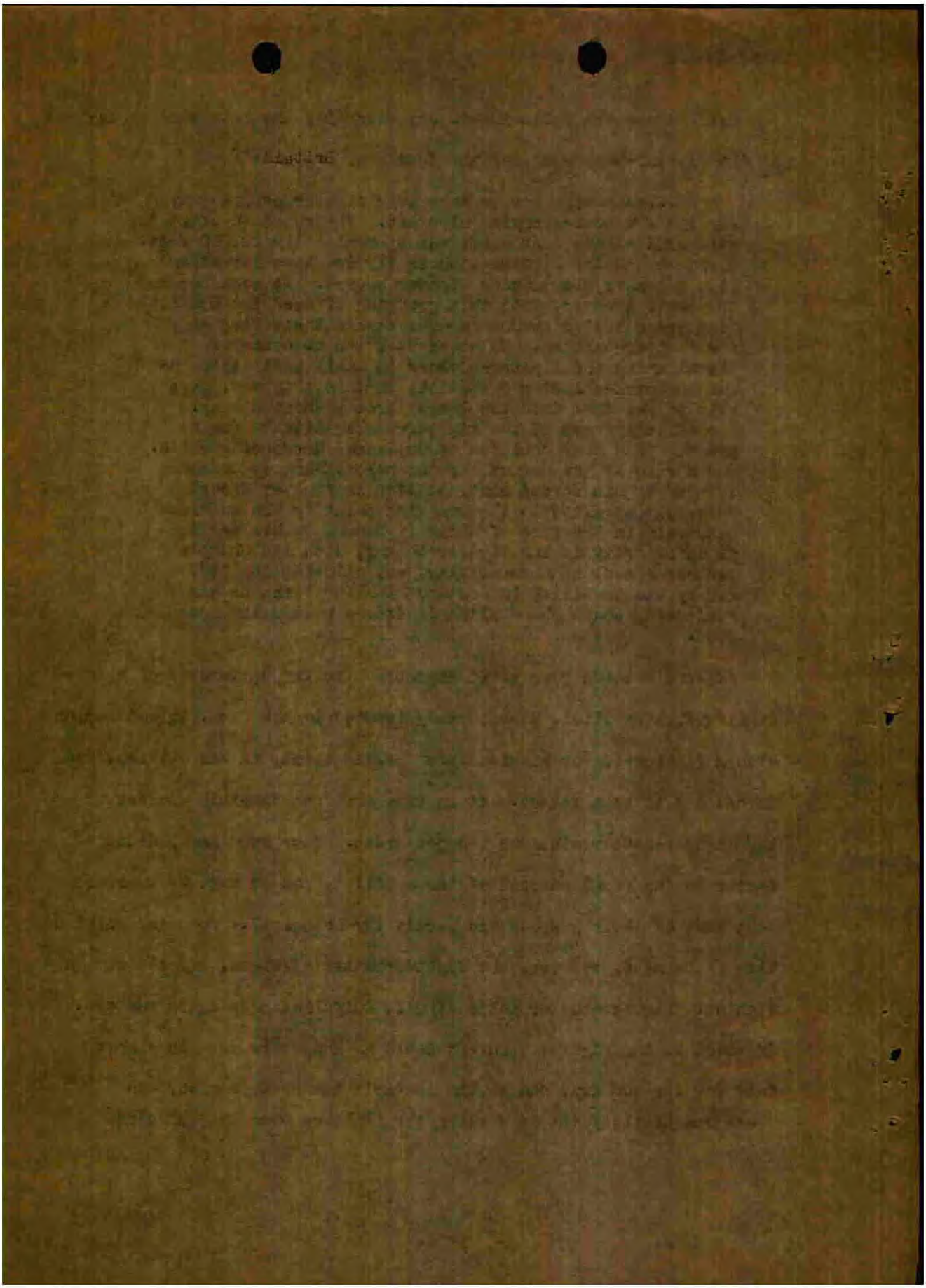
It was obvious that the use of the fighter-bomber as a stop-gap was a provisional measure, to be continued only if the new aircraft proved successful in their tactical mission. This mission was primarily to give the enemy no respite from daytime bombardment. The need for lengthy training of fighter pilots in bombardment techniques could be obviated in the beginning by judicious selection of targets. Most of the fighter-bombers dropped their first live bombs over England. The Me-109 carried an explosive bomb of 550 pounds, and later even one of 1,100 pounds; the Me-110 had space for two 550 pound bombs and for four 125 pound explosive bombs - a total bomb-load of 1,540 pounds. The Me-110, however, was to prove useless as a fighter-bomber, and, as has already been mentioned, was finally withdrawn entirely from employment over England.



Galland has the following to say regarding the method of employment of the fighter-bomber during the Battle of Britain:[13]

> "...each wing was to take over fighter escort duty for its own bomb-carrying aircraft. The approach altitude, staggered within each unit, was approximately 20,000 feet. First we had the fighter-bombers fly in close formation like a bomber fleet under fighter escort. It soon became apparent, however, that this grouping offered the British fighters a better chance to concentrate their fire on the fighter-bombers. So we adopted the practice of distributing the fighter-bombers in small units throughout the over-all wing formation, and, in this way, were able to get them into the target area without mishap. The effectiveness of the fighter-bomber attacks was no greater than that achieved by unplanned harrassing raids. The morale of the German fighter pilot, already somewhat lowered by his forced participation in fighter escort duty, was strained to the breaking point by the enforced passivity in the face of enemy fighters, by his feeling of inferiority in the fighter-bomber, with its sharply reduced speed, maneuverability, and climbing ability, and by his inability to see that the few bombs he was scattering about the English landscape were doing much good.

Galland's words give vivid expression to the bitterness of a top-ranking fighter pilot, passionately devoted to his task, in connection with a fighter-bomber mission over England which, in his opinion, had turned out to be a fiasco. It is true that the tangible success of the fighter-bomber missions was not great. They were not a decisive factor in the final outcome of the conflict, and it must be admitted that part of their purpose was purely psychological. From the point of view of command, however, the fighter-bomber missions, carried out in a fighter: fighter-bomber ratio of 2:1, fulfilled a definite purpose. Inasmuch as the fighter aircraft could no longer be used in escort duty for the bombers, due to the latter's too heavy losses, and since there was little point in sending the fighters over England alone



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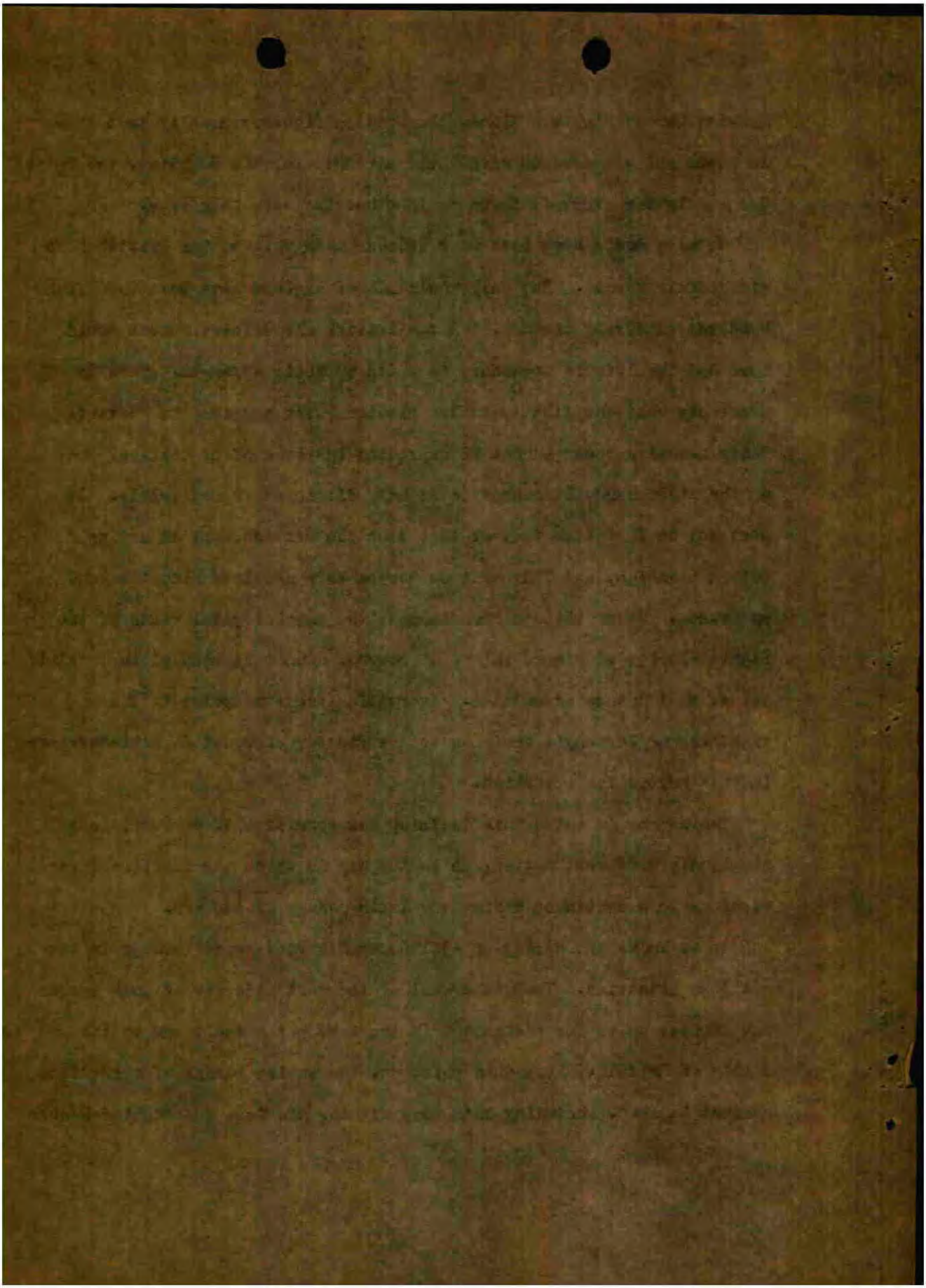
(seeing German fighters alone, the British fighters usually left them in peace and withdrew to save their strength for the bombers), the entire German fighter aircraft force would otherwise have been idle.

Nothing could have been more welcome than this to the British home air defense forces. Not only would all of England have been safe from bombardment during the day, but the British air defense forces would have had the leisure necessary to build up their strength. This is precisely what the fighter-bomber missions were supposed to prevent. Their actual success cannot be expressed in terms of statistics, but, on the other hand, it cannot be lightly dismissed as negligible. It must not be forgotten that at that time the British were expecting a German invasion, and that British nerves were strained almost beyond endurance. Under these circumstances, the psychological value of the fighter-bomber missions, which, of course, cannot be couched in tangible terms, must not be discounted. Everything seems to point to the rightness of Germany's decision to use fighter aircraft as bomb-carriers in this particular situation.

The manner in which this decision was carried out, however, is a completely different matter, as is the way in which the fighter-bomber missions were continued during the later course of the war.

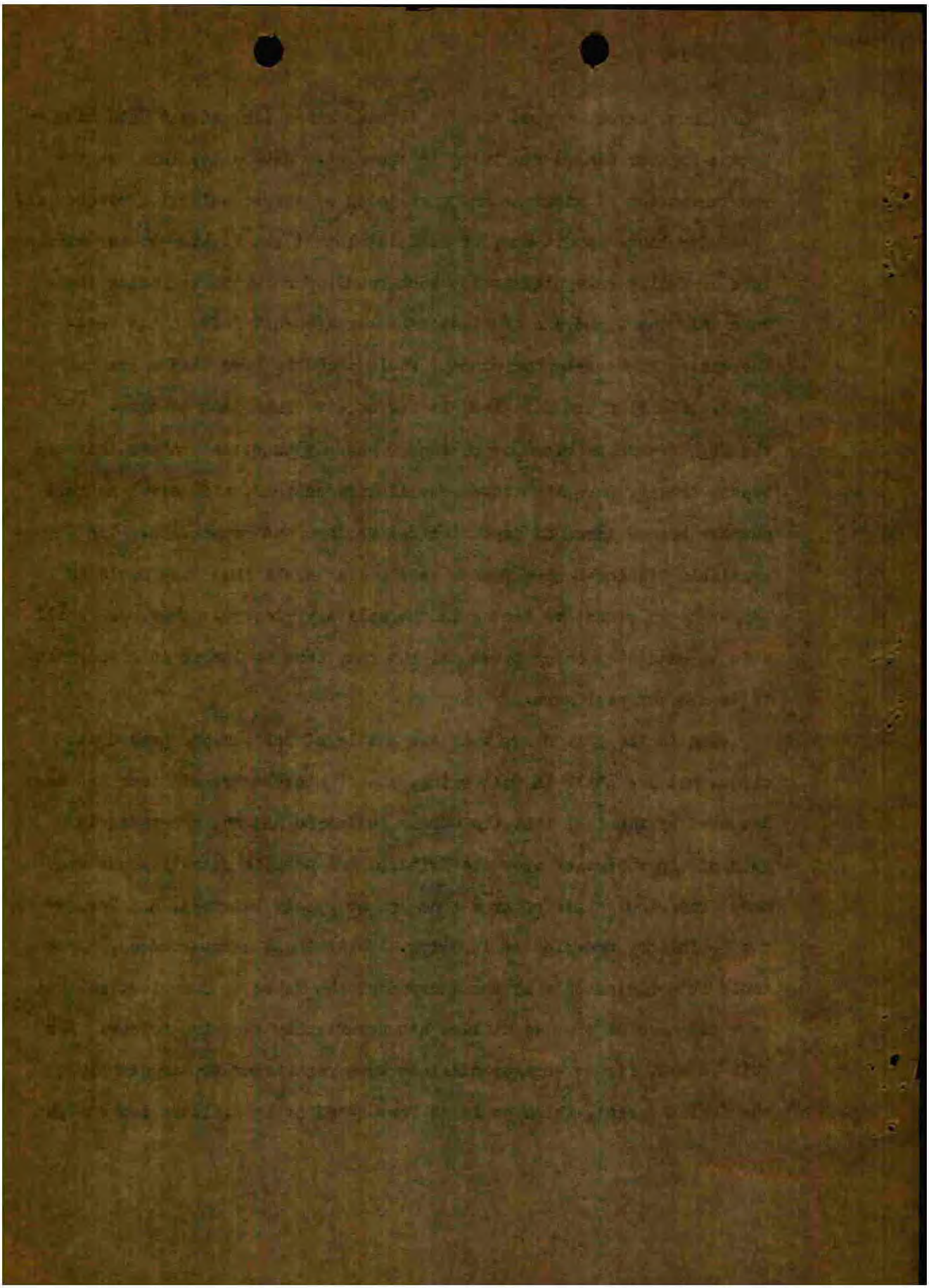
As we know, the spring of 1941 brought a fundamental change in the military situation. The withdrawal of the vast majority of both bomber and fighter units for assignment in the East put a tacit end to the Battle of Britain. From this point on, the entire burden of operations against England, including both pure fighter missions and fighter-bomber



operations, devolved upon the two fighter wings (the 2d and 26th Single-Engine Fighter Wings) remaining in the West. Naturally, this meant a reorganization of missions and a revision of target selection procedures.

Under these conditions, it is natural that the fighter-bomber missions were gradually relegated to the background, for in the beginning there were only two squadrons of fighter-bomber aircraft left in the West. The entire fighter-bomber concept would probably have died a gradual death, if Hitler had not given it new impetus from time to time. For the fighter-bomber missions no longer had any practical value; they had become nothing more than token retaliatory actions, and served no real purpose beyond those of psychological warfare and propaganda. The available fighter-bomber forces were now so small that they could no longer be an effective factor in the military picture. They were still able to annoy the enemy somewhat, but they were no longer in a position to do him any real harm.

Even in the beginning, when the Battle of Britain had passed its climax but was still in full swing, the fighter-bomber missions had been hampered by the fact that the German Luftwaffe had not succeeded in gaining air supremacy over the British; and now the situation was even more precarious - air power was no longer evenly balanced, and Germany was definitely numerically inferior. Under these circumstances, success could be achieved only if the enemy could be taken by surprise, so that he would have no time to utilize his numerically superior forces. For this reason, fighter-bomber missions were restricted to targets along the English coast, which could be approached at an altitude low enough



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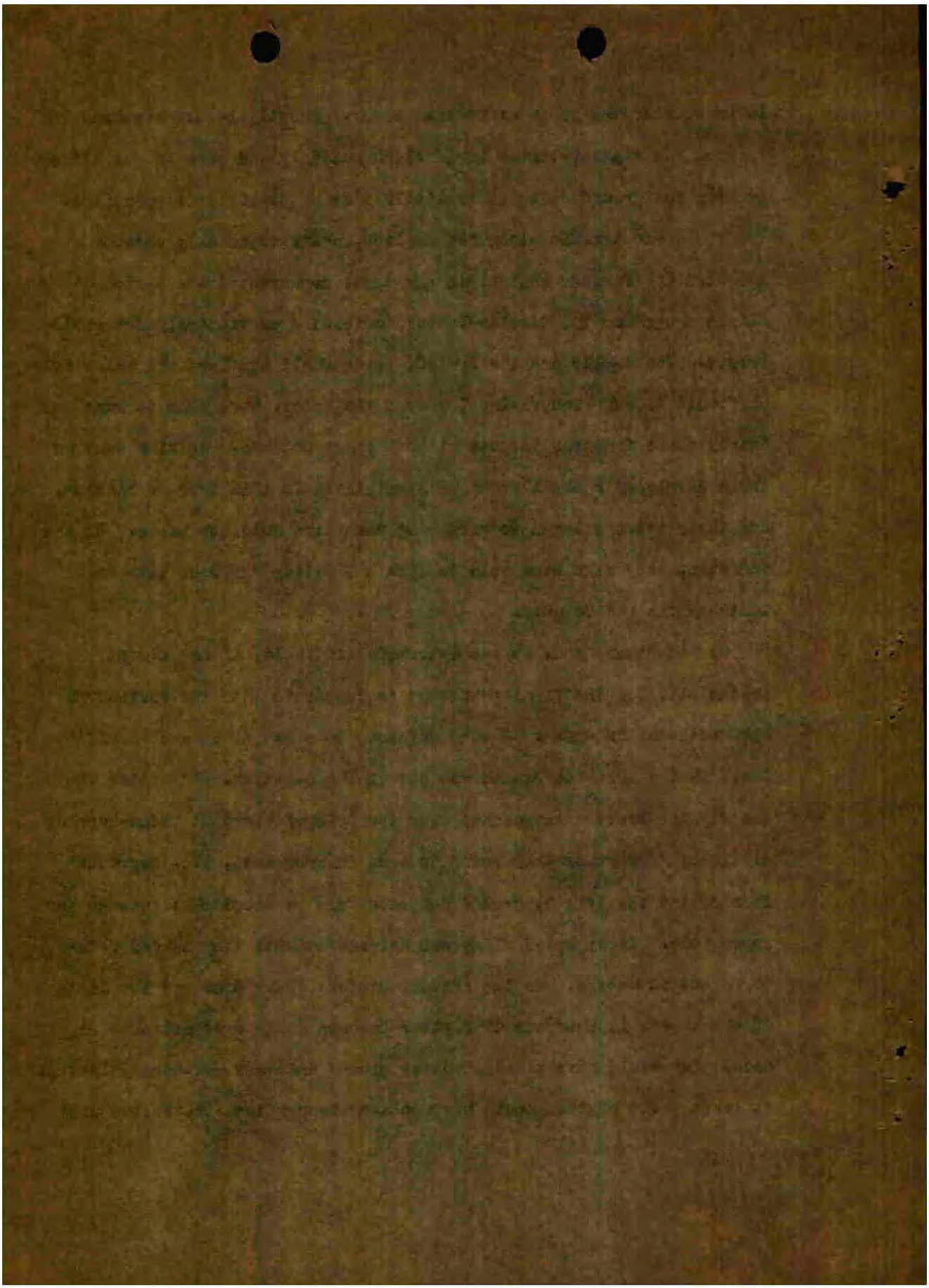
to be outside the range of coastal radar. Shortly before reaching the target, the fighter-bomber would climb suddenly and come in for attack, leaving the ground defenses as little time as possible to open fire.

The ocean traffic along the English coast, especially between Brighton and Torquay (which, in any case, represented the maximum flight range for the fighter-bomber) offered a particularly favorable target. The Me-109 and the Fw-190, being small and fast and relatively difficult to see when flying low over the water, were able to sneak up fairly close to their targets without being noticed. As time went on, there developed a small group of specialists in this type of mission, and their attacks began to have more than mere nuisance value. On one occasion, they were even able to sink a floating dry dock between Southhampton and Torquay.

On the other hand, it was extremely difficult, if not almost impossible, for the fighter-bombers to penetrate into the Portsmouth and Southhampton areas. Ground defenses were so strong and so efficient there that a surprise attack was out of the question. No matter whether the fighter-bombers approached over the Isle of Wight at hedge-hopping altitude, or whether they tried to come in over land, i.e. approach from behind the target, ground defenses were so alert that success was impossible. Their speed alone was not sufficient; they needed reinforcement in numbers. As the proverb states, "Many dogs are the death of the hare"; if hundreds of fighter-bombers could have attacked at once, they could have dissipated the ground defenses so thoroughly that at least a few of them could have gotten through into the harbor area



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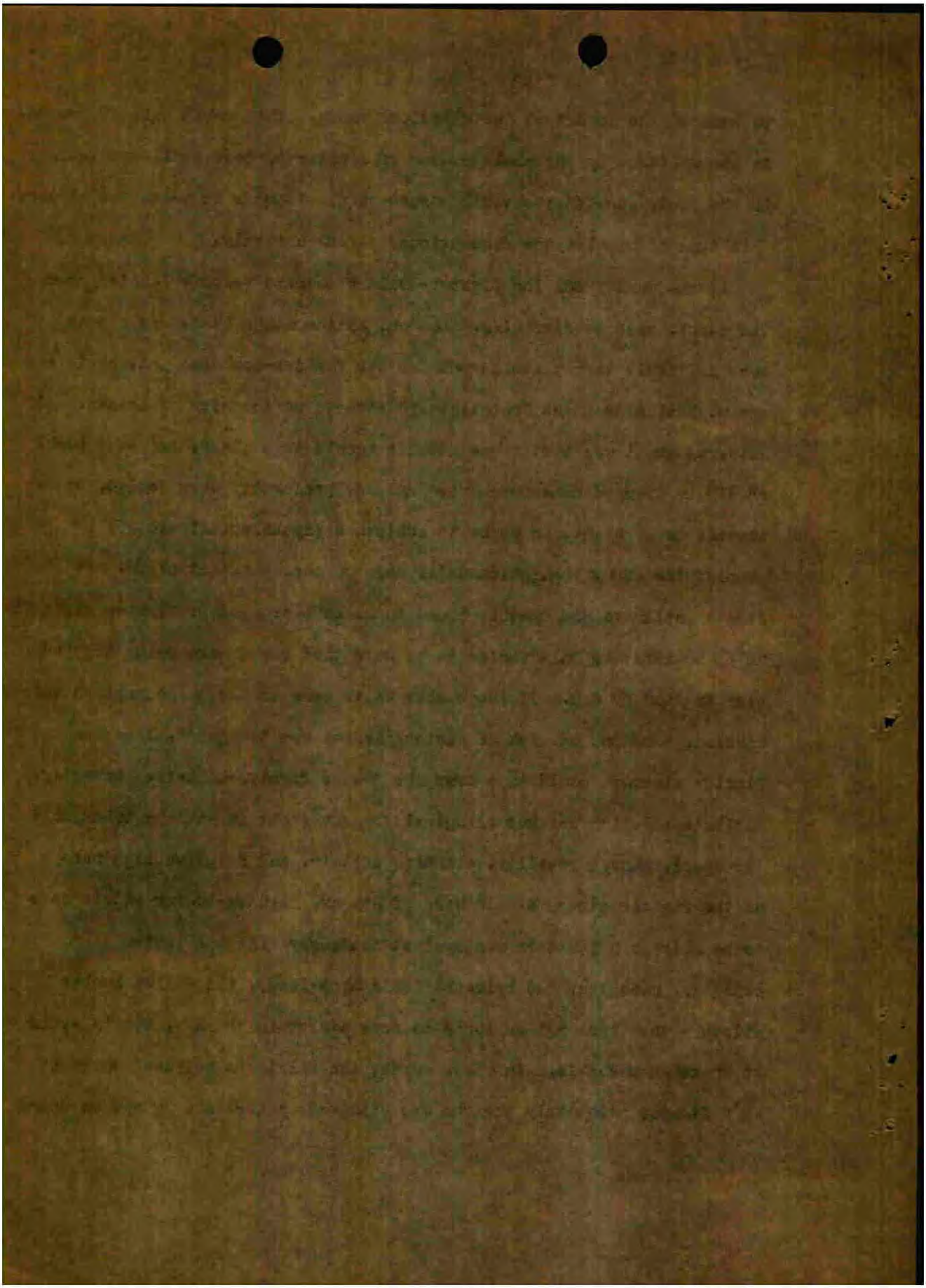
to bombard the important installations there. This could not, of course, be accomplished by the small number of fighter-bombers still available in the West, and after several unsuccessful attempts to reach the harbor, this type of mission was discontinued almost entirely.

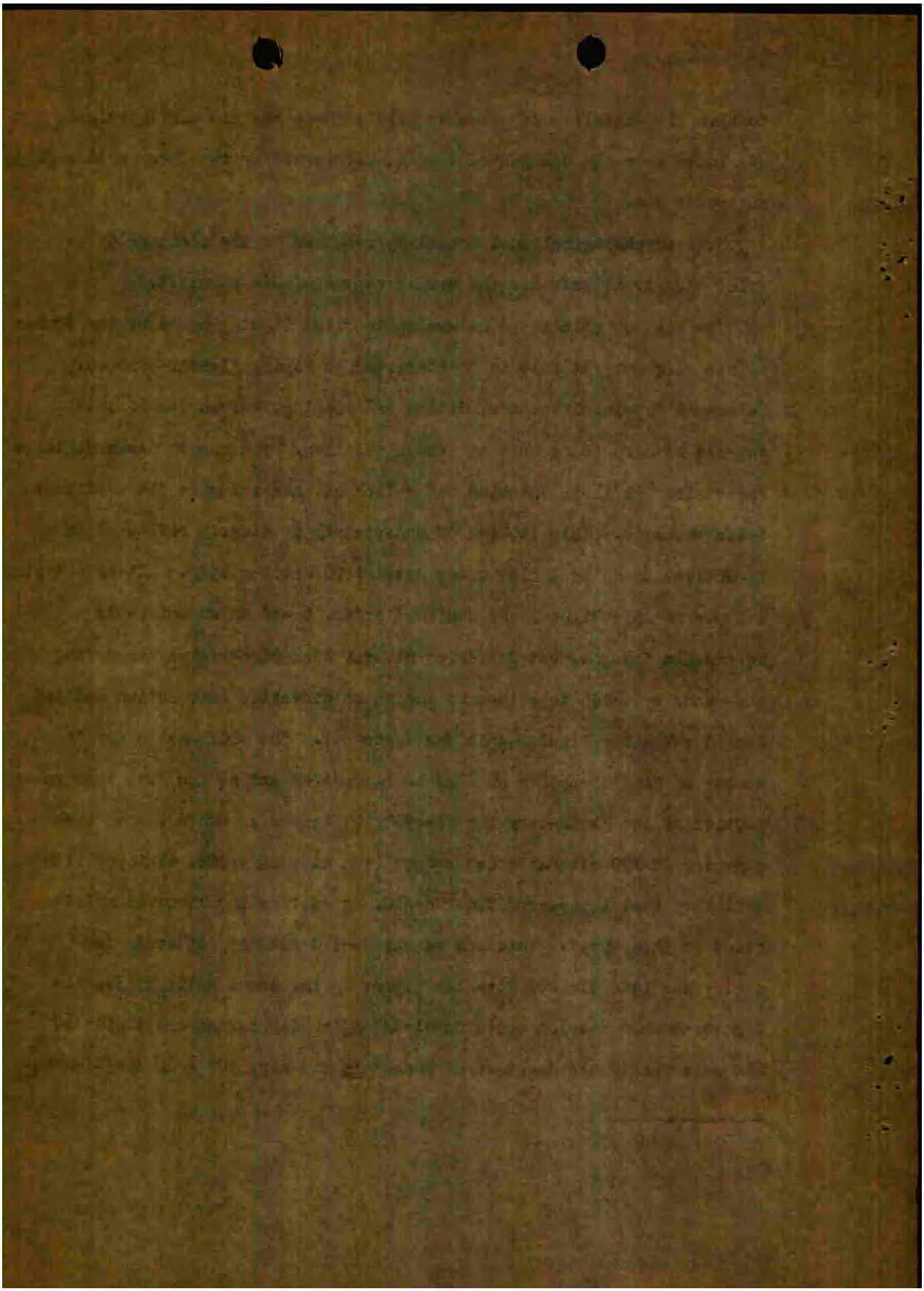
It was easier for the fighter-bombers to raid targets located near the coast, such as airfields. London, on the other hand, was a much more difficult target assignment for the fighter-bombers; yet, again and again, Hitler demanded "retaliatory" attacks on the city of London. All he cared about was that these attacks should take place, and that bombs should be dropped somewhere over England, preferably over London, by day as well as by night, in order to achieve a psychological victory by keeping the enemy population under more or less constant alarm. It didn't matter to him whether these bombs were dropped by fighter aircraft or by bombers; he only wanted to be sure that bombs were being dropped over England by day. If the bomber units were unable to accomplish this mission, because the risk of serious losses was too great, then the fighter aircraft could take over the job as fighter-bombers. Actually, Hitler's thinking was not illogical; he was right in wanting to exploit the speed, maneuverability, climbing ability, and relative lightness of the fighter aircraft. In case of attack, fighter-bomber pilots were to be able to hold their own against the enemy fighters (which they could do, once they had released their bomb-load), but - like bomber pilots - they were not supposed to seek combat in the air, but to avoid it whenever possible. In other words, the pilot was supposed to react as a fighter pilot only when he was attacked; otherwise, he was expected



to have the mentality of a bomber pilot, whose one aim was to release his bombs over the designated target, undeterred by the enemy action going on around him.

This psychological dual mentality required of the fighter-bomber pilot clearly illustrates the hybrid status of his aircraft.

The fighter pilots had no desire to pilot fighter-bombers; the bomber pilots were not yet able to be converted to flying fighter-bombers. Germany's top-level leaders, Hitler and Goering, worked around this impasse without being able to find a solution. The result was a definite uncertainty in their thinking and a lack of uniformity in the pertinent basic concepts. This feeling of uncertainty is clearly reflected in a Directive issued by Hitler under date of 28 October 1942. It is a typical example of an ambiguous and confused order, based on an eminently reasonable thought, but betraying a total lack of certainty regarding the means by which this thought was to be converted into action and the use to which the final result was to be put. The order calls for "a number of fighter-bomber or fast-bomber units" and at the same time makes mention of the "bomb-carrying FW-190" (a fighter aircraft), the "bomb-carrying FW-190 with extended range" (the same aircraft, equipped with an auxiliary fuel tank), and the "Me-410, as well as the improved models based on this type". Inasmuch as the Me-410 was not yet ready for employment (and did not actually appear on the scene until 1943), the fighter-bomber mission again devolved on the fighter aircraft pilots, who were passionate devotees of combat <u>in</u> the air, but - as dyed-in-the-

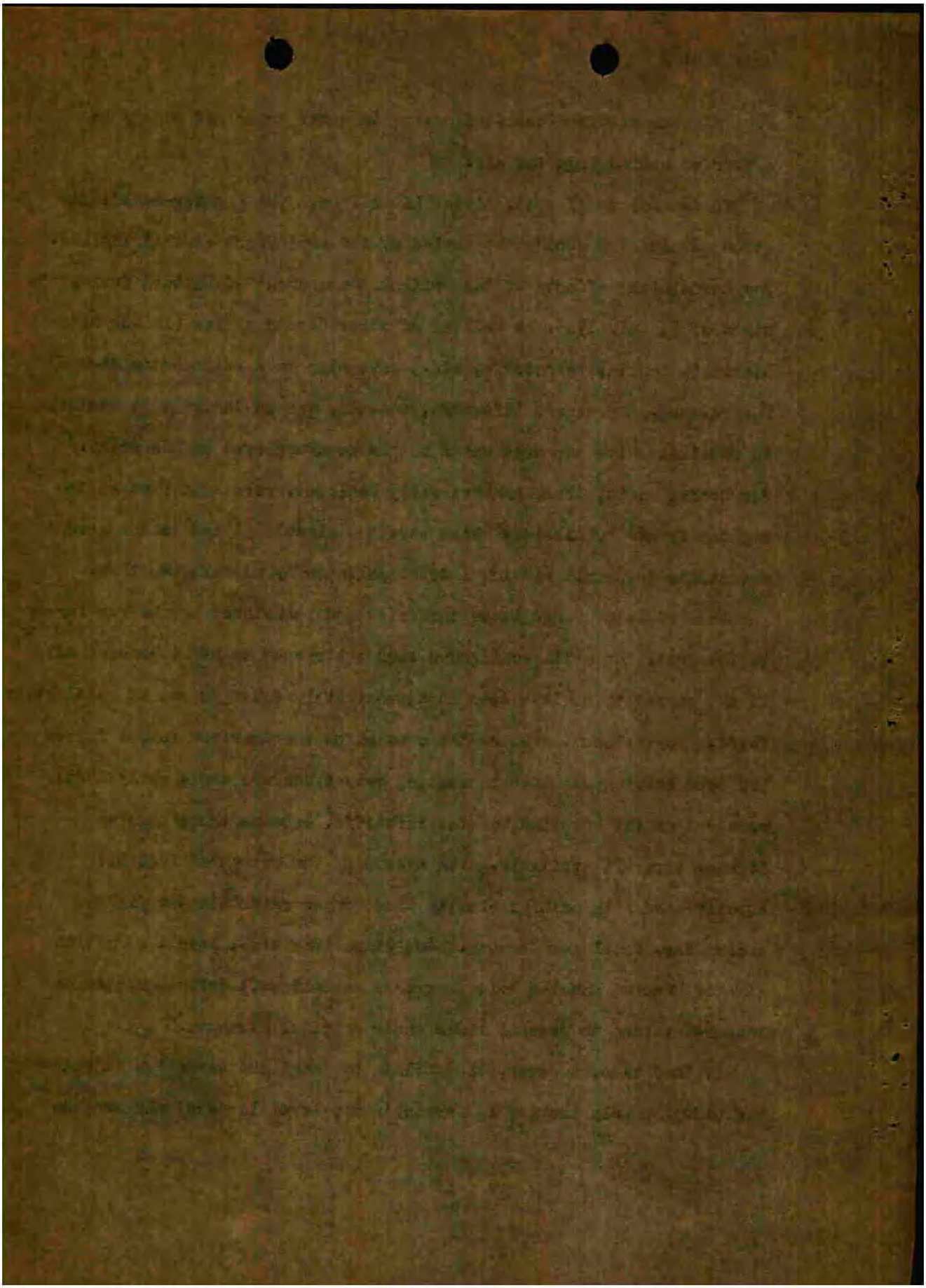


wool fighter pilots - detested having to carry bombs and engage in offensive action from the air.

In the autumn of 1943, Hitler himself gave the fighter-bomber its strongest impetus during the period of its employment against England. The devastating effects of the British bombardment of Hamburg during the night of 24 July 1943, as well as of other German cities (in the Ruhr District, Berlin, Peenemunde, etc.) gave rise to a nation-wide demand for revenge. Germany's Luftwaffe, however, was no longer in a position to retaliate with the same means as had been employed by the enemy. Her bomber units, their numbers sadly depleted, were held fast at the various fronts by missions which were too closely allied to the ground operations to permit risking a total collapse by withdrawing them.

Even if Germany had taken this risk and reassigned her bomber forces to the West, she still would have been restricted to night bombardment if she wished to achieve even an approximately equal degree of retaliatory force. Day attacks, such as the ones which the American bomber forces had been carrying out with increasing relentlessness since early 1943, were out of the question for the Luftwaffe, because there were no fighter aircraft available. The events of the autumn of 1940 had demonstrated with painful clarity that bomber raids without fighter escort were fatal for Germany. And since that time, both the British Fighter Command and the British ground antiaircraft defense system had been reinforced to several times their original strength.

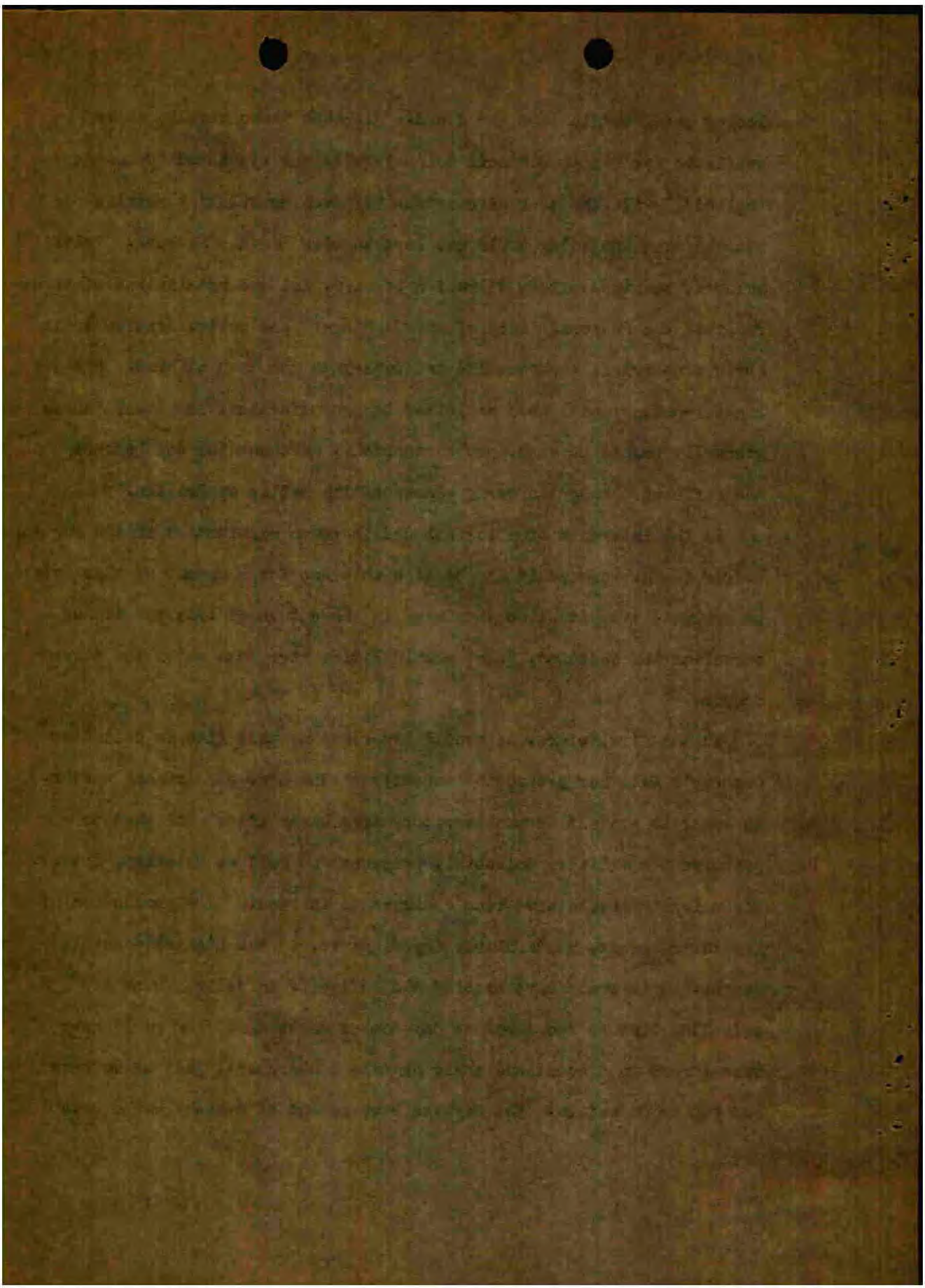
By this time, however, the ability to judge the situation objectively was conspicuously lacking in Germany's top-level leaders, who were no



longer even certain that 2 + 2 = 4. Although there were no units available for him to command, Colonel Peltz was appointed "Commander, England"[14] with the task of carrying out such devastating retaliatory attacks that the enemy would not dare to risk another Hamburg. Peltz, however, remained a king without a country, and the retaliation missions remained the responsibility of the fighter-bomber units, despite their obvious numerical weakness and inadequacy to the task at hand. Now the fighter-bomber units were exploited beyond endurance, and their losses gradually became as high, proportionately, as those the day bombers had suffered during the early phases of the Battle of Britain.[15]

In the interests of a logical and thorough examination of the fighter-bomber theme, perhaps it may be wise to pause for a moment at this point to evaluate the situation obtaining in the autumn of 1943 and to ask ourselves the question, "What should Hitler have done under the circumstances?"

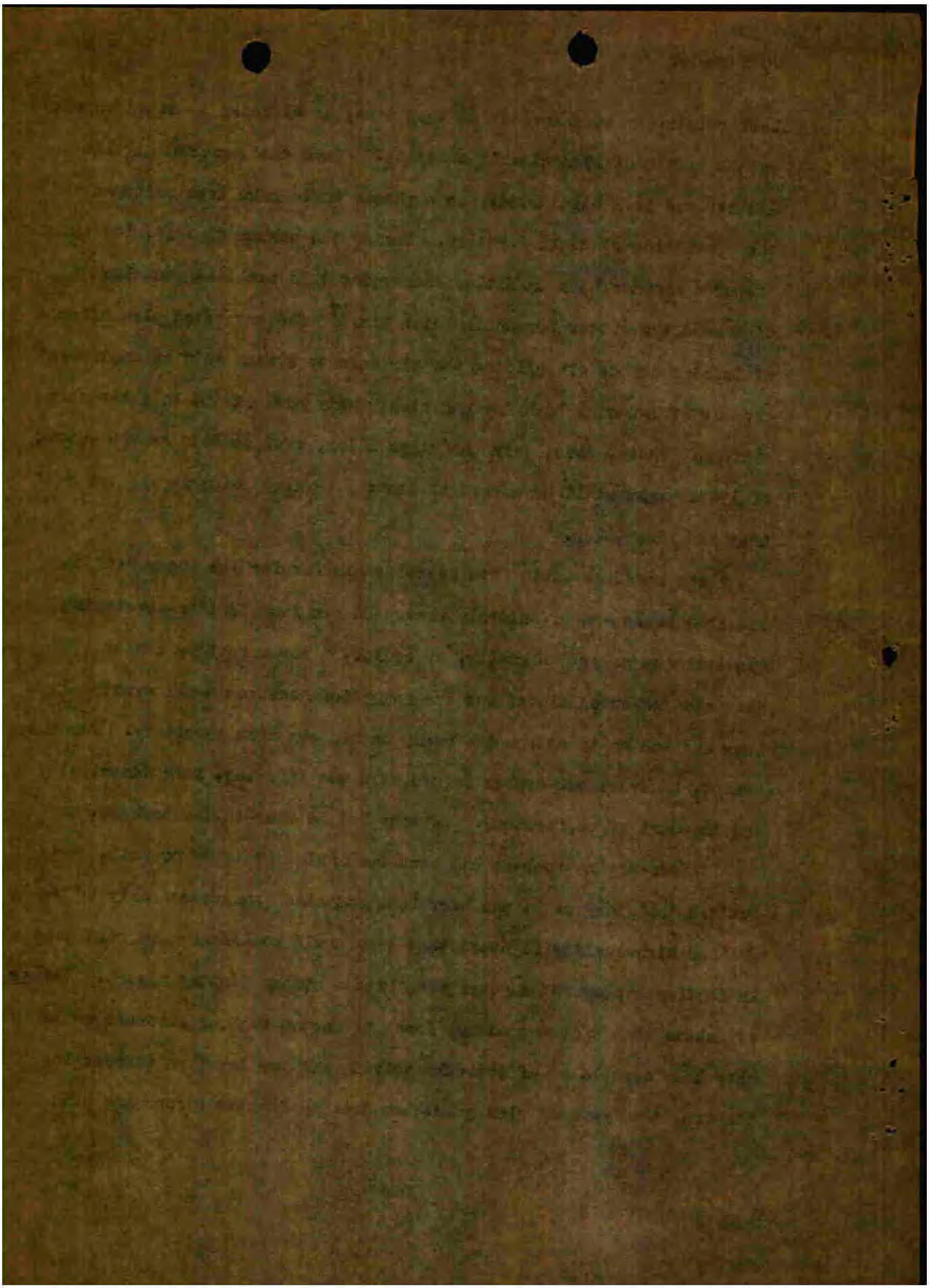
In the first place, he should have lost no more time in switching Germany's full war production capacity to the home air defense sector, in order to protect German territory from enemy attack and thus to preserve her military potential, personnel as well as material, intact. Top priority should have been assigned to increasing the production of fighter aircraft, particularly day fighters, to the highest possible degree. This could have enabled the Luftwaffe to deliver such a crippling blow to the American day bomber units that they would have been forced to discontinue their daytime bombardment, just as Germany had had to do before. The daytime bombardment of Germany would have



been relatively easy to stop at that time, as official American reports on the crisis of 1944 clearly indicate.[16] Once the American daytime attacks had been eliminated, the emphasis could have been switched to the production of night fighters. During the summer of 1943, the author prepared a memorandum to Hitler concerning this problem, and also discussed the matter personally with him.[17] The suggested plan offered at least a chance of building the air defense system into an instrument capable of reducing both day and night enemy bombardment to a bearable minimum. These, then, were the steps which, even as late as the autumn of 1943, might still have brought about a turning point in the war - if they had been taken.

These measures would have succeeded in forcing the enemy back to his home bases and effectively prevented him from further developing his striking power. Normally, of course, a war cannot be won by defensive measures alone, but the suggested measures would eventually have enabled us to attack the enemy on his own home territory. For the moment, however, our bomber forces were too inferior, both numerically and in point of performance. Germany had no four-engine bombers.

If four-engine bombers had been available, it is by no means certain that they might not have been combatted so successfully by the British high-quality fighters that they could no longer have been used in daytime employment anyway, even with a strong fighter escort. And, if we assume that a strong enough force of German fighter aircraft would have been capable of effectively driving off the American four-engine bombers, then we must also grant the British fighter forces the same



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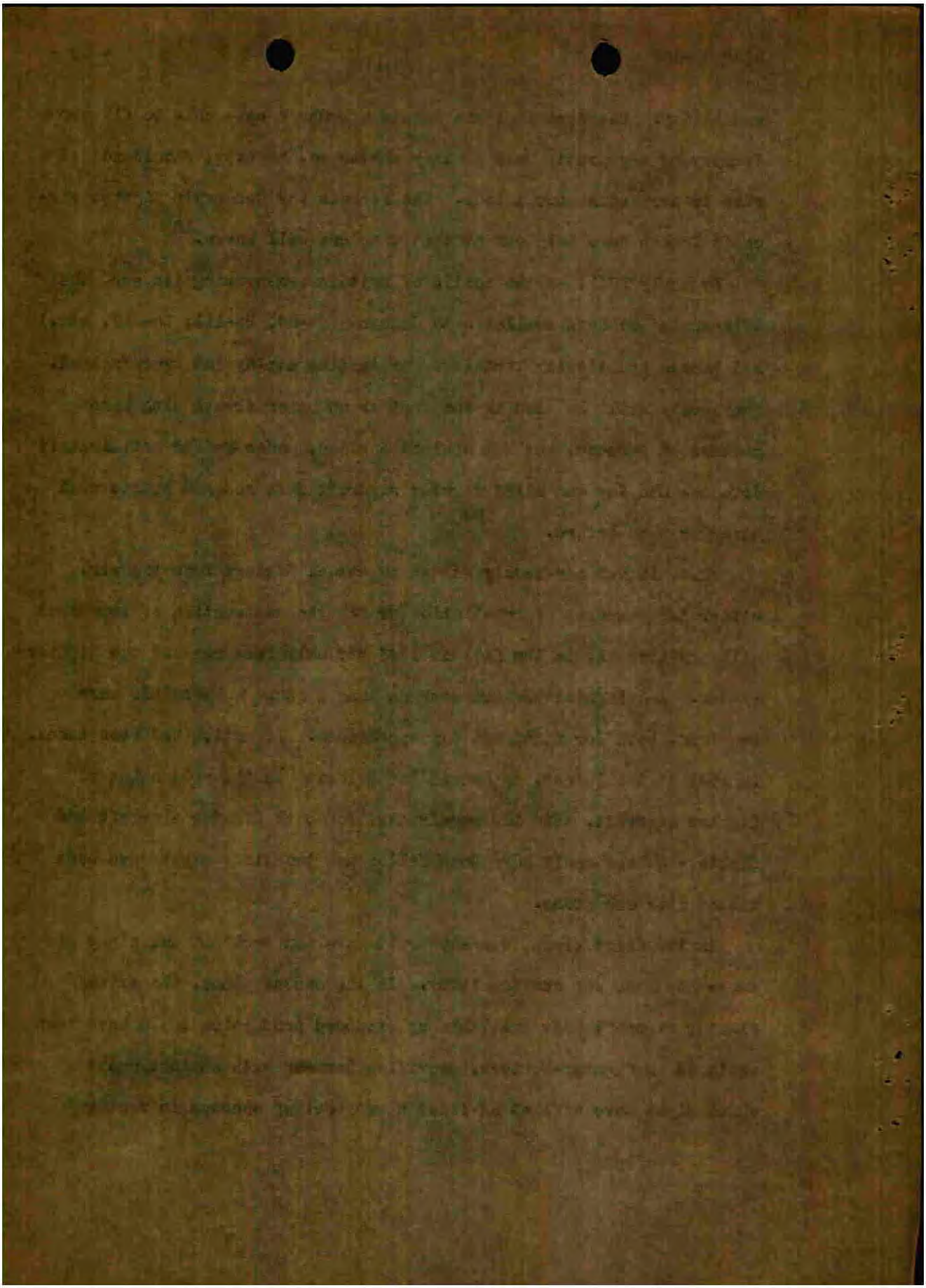
capability. The fact that the American bombers were able to fly around Germany by day pretty much as they wanted to, however, should not give rise to erroneous conclusions. The reasons why Germany's fighter aircraft forces were helpless at that time are well known.[18]

By early 1941, as the Battle of Britain was nearing its end, the twin-engine bombers available to Germany (Ju-88, He-111, Do-217, etc.) had become practically worthless for daytime employment over England. They could still be used in the East or on other fronts with some measure of success, but not against England, whose ground antiaircraft defenses and day and night fighter aircraft defenses had become much stronger than before.

Thus, if Germany really wanted to attack England from the air, either for purposes of retaliation or for the destruction of important military targets, in the fall of 1943 her only recourse was the fighter-bomber. And fighter-bombers with as long a range as possible were required, both for night and day operations. If action had been taken, in 1943 at the latest, to assign top priority to the production of fighter aircraft, then the requirement for both fighter aircraft and fighter-bombers could have been filled and two birds might have been killed with one stone.

In the first place, Germany could have won back day and night air supremacy over her own territory. In the second place, the extra fighter aircraft made available by expanded production could have been equipped as fighter-bombers, providing Germany with an instrument which might have offered at least a prospect of success in waging



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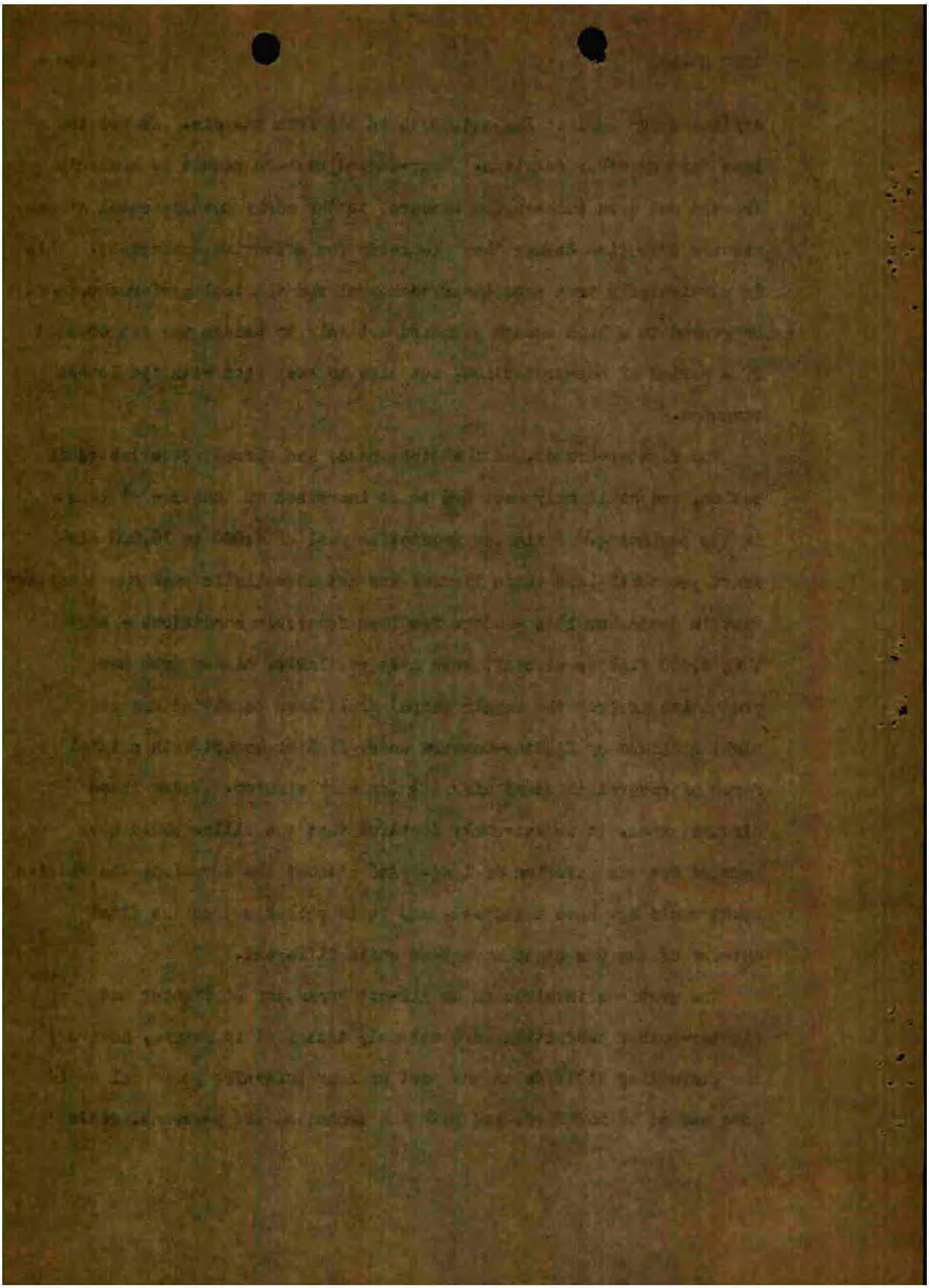
offensive war against England, both in and from the air. It was too late for any other solution. Four-engine bombers cannot be suddenly created and even twin-engine bombers, in the early developmental stages, require some time before they are ready for effective employment. This is particularly true when their technical and tactical performance must be geared to a high enough standard not only to bridge the gap created by a period of non-production, but also to keep pace with the latest advances.

The fighter-bomber, on the other hand, had already been tested in action, and would only have had to be increased in number - at least in the beginning. A fighter production goal of 6,000 to 10,000 aircraft per month (and these figures are not unrealistic when one considers that in September 1944 - under far less favorable conditions - more than 4,000 fighter aircraft were made available, either from new production or from the repair shops) would have permitted day and night missions by fighter-bombers under fighter escort with a total force of several thousand aircraft for each mission. Under these circumstances, it is extremely doubtful that the Allies could have carried out the invasion of 1944. And without the invasion, the Russian front would not have collapsed, and it is probable that the final outcome of the war might have been quite different.

The problems involved in an all-out expansion of fighter and fighter-bomber production were not only technical in nature, however; the prevailing attitude on the part of many Luftwaffe personnel would have had to be modified, and both the technical and personnel goals



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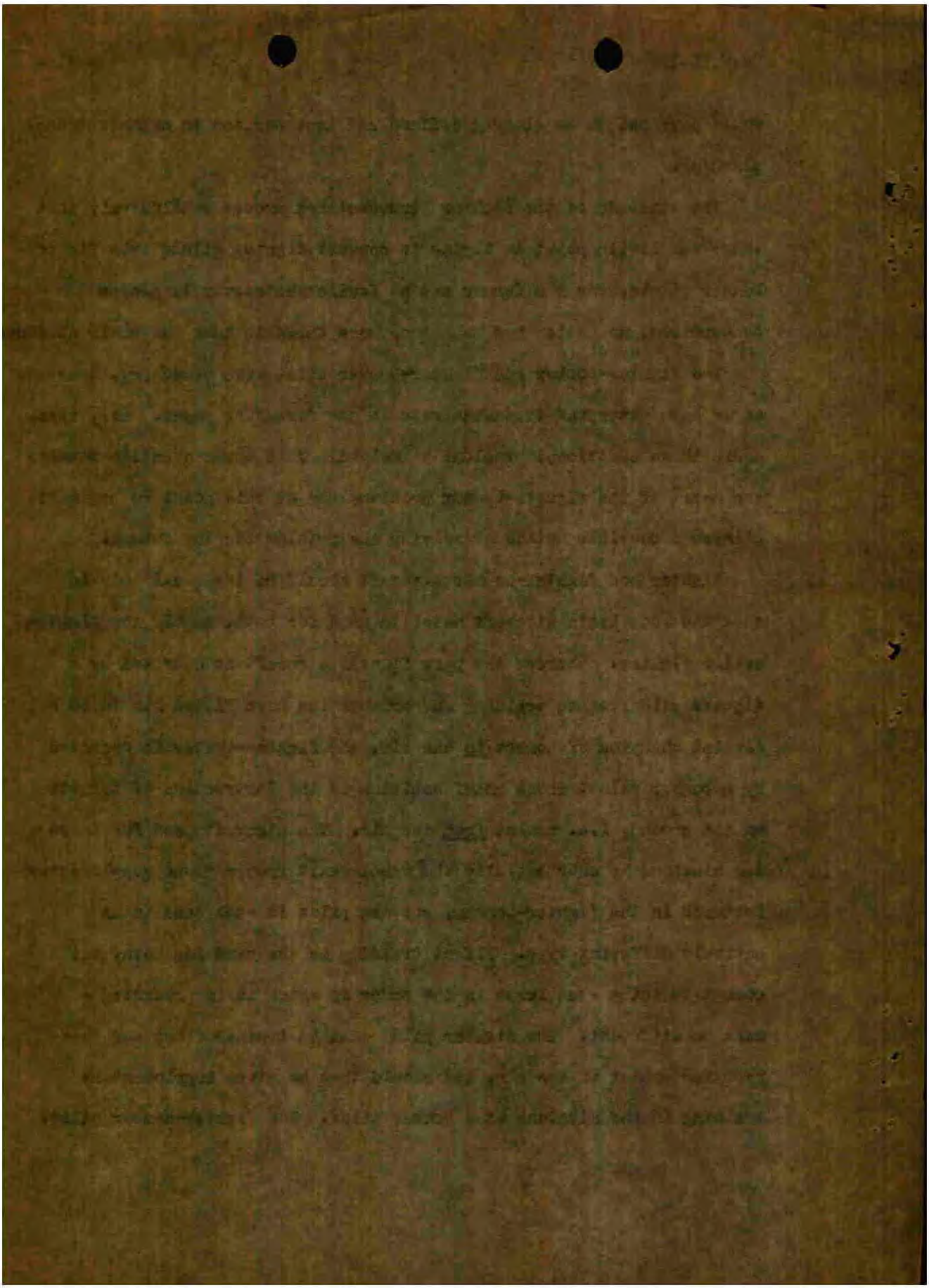
would have had to be clearly defined and incorporated in organizational planning.

The attitude of the fighter personnel had proved conclusively that there was little point in trying to convert fighter pilots into fighter-bomber pilots, for the former had no desire whatsoever to become bombardiers, no matter how much they were taken to task for their obstinacy.

The fighter-bomber and fighter-bomber pilot were necessary, however, as we have attempted to demonstrate in the foregoing pages. How, then, could these additional problems be solved? This basic question touches the heart of the fighter-bomber problem, and at this point we begin to glimpse a possible method of solving the problem for the future.

Fighter and fighter-bomber aircraft should be identical only in that the same basic aircraft model is used for both, namely the single-seater fighter. Whereas the pure fighter aircraft is operated by a fighter pilot, whose training and orientation have fitted him to be a devoted champion of combat in the air, the fighter-bomber is operated by a bomber pilot, whose chief ambition is the destruction of targets on the ground, i.e. combat from the air. The aircraft used for these two missions is substantially the same, apart from various supplementary features in the fighter-bomber, but the pilot in each case is an entirely different type. Flight training is the same for both, but combat training - at least in the order in which it is presented - must be different. The fighter pilot must be trained first and foremost for combat in the air, and should then be given supplementary training in the missions of a bomber pilot. The fighter-bomber pilot,



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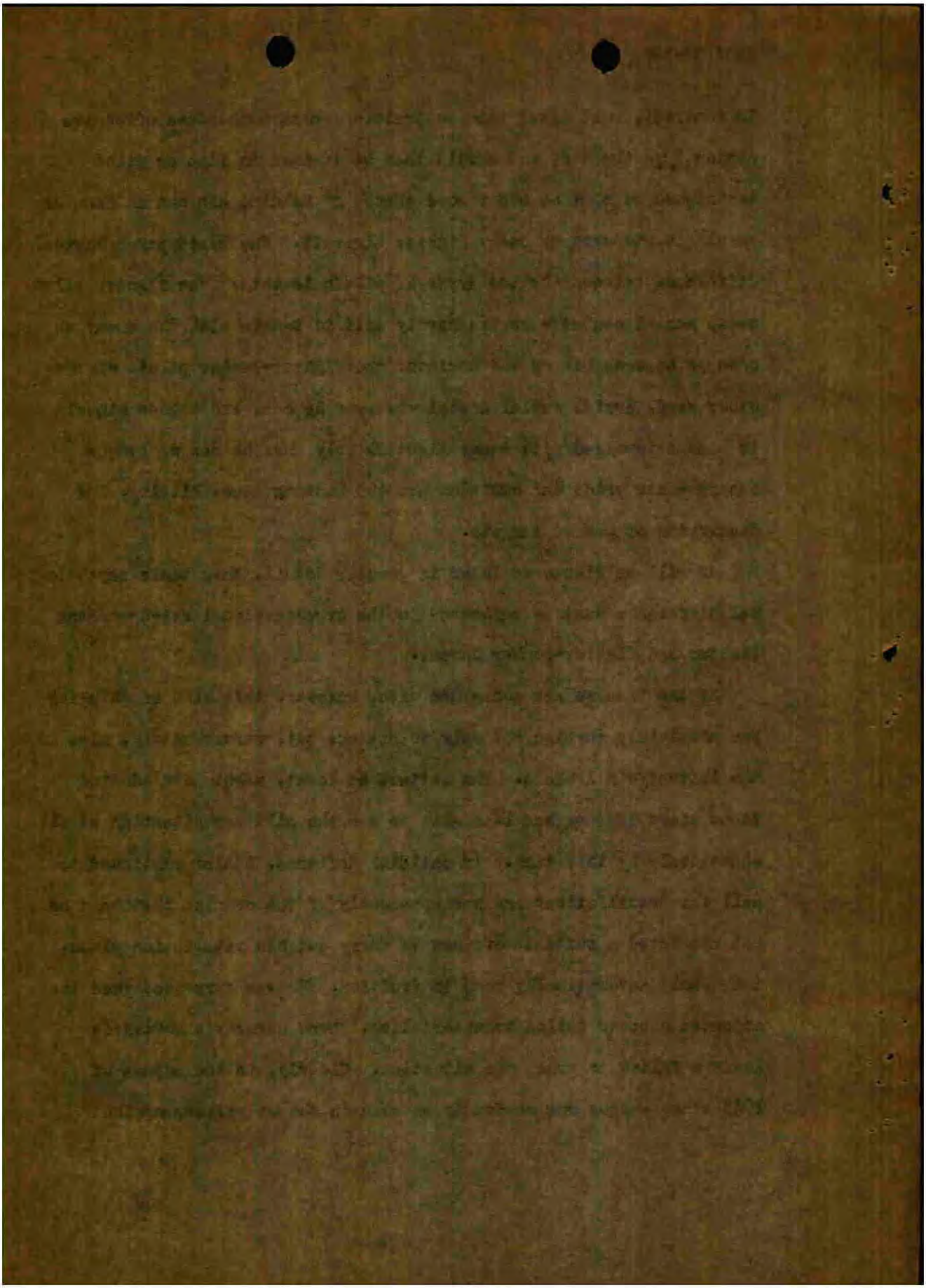
in contrast, must first receive training which emphasizes offensive action from the air, and should then be trained in fighter pilot techniques so that he has a good chance of holding his own in case he should be attacked by enemy fighter aircraft. The basic psychological difference between the two types of pilots is this: the fighter pilot seeks aerial combat - he can hardly wait to tangle with the enemy as soon as he sees him on the horizon; the fighter-bomber pilot, on the other hand, avoids aerial combat whenever he can, and allows himself to become involved with enemy fighters only when he can no longer escape - his pride and ambition are the hunting down, hitting, and destroying of ground targets.

As will be discussed later in greater detail, this basic psychological difference must be reflected in the organizational set-up of the fighter and fighter-bomber forces.

At the time we are concerned with, however, this kind of thinking was completely foreign not only to Hitler, but, unfortunately, also to the Luftwaffe's leaders. The latter, at least, might have adopted these views if they had been able to see the military situation at all objectively by this time. In childish defiance, Hitler continued to call for "retaliation" and was apparently of the opinion that once he had appointed a suitable officer to carry out his retaliation plans, they would automatically come to fruition. He was surprised when the expected success failed to materialize. Even Germany's Luftwaffe leaders failed to grasp the situation. Clearly, in the autumn of 1943 a new weapon was needed to be used in the operations against



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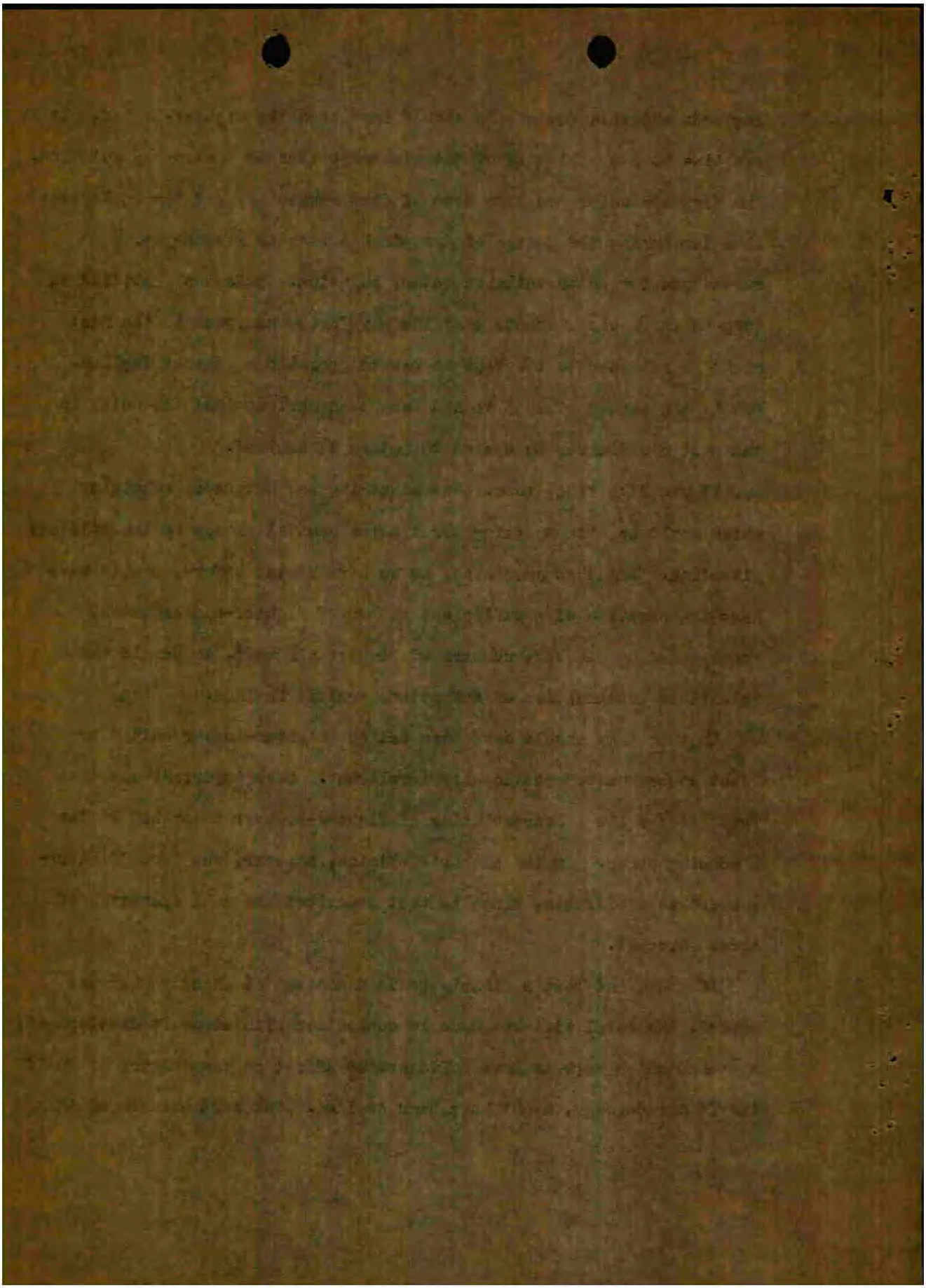
England, and this new weapon should have been the fighter-bomber. It was time to stop thinking of the fighter-bomber as a stop-gap solution. The fighter-bomber had been born of dire necessity, and its employment thus far during the Battle of Britain had been as a stop-gap, a substitute for an unavailable better solution. This was justified as long as there was a chance that the air forces assigned to the East might be returned to the West to resume operations against England. But by the autumn of 1943 it had long been obvious that the units in the East could never be spared to return to England.

It was high time, then, that something new happened, something which would be able to bring about a fundamental change in the military situation. And this something, as we have stated before, should have been the creation of a sufficient number of fighter-bomber units, accompanied by adequate numbers of fighter aircraft, to permit the relentless continuation of operations against England.

Whether they should have been called "fighter-bomber units" or "fast bomber units" was totally irrelevant. More important was that they possess the characteristics of fighter-bombers described in the preceding pages. In the author's opinion, however, the term "fighter-bomber" is preferable, since it best describes the dual character of these aircraft.

If there had been a clearly defined concept of exactly what was needed, the fatal mistakes made in connection with aircraft development, mistakes which were to have a disastrous effect on the outcome of World War II for Germany, might have been avoided. The best example of this



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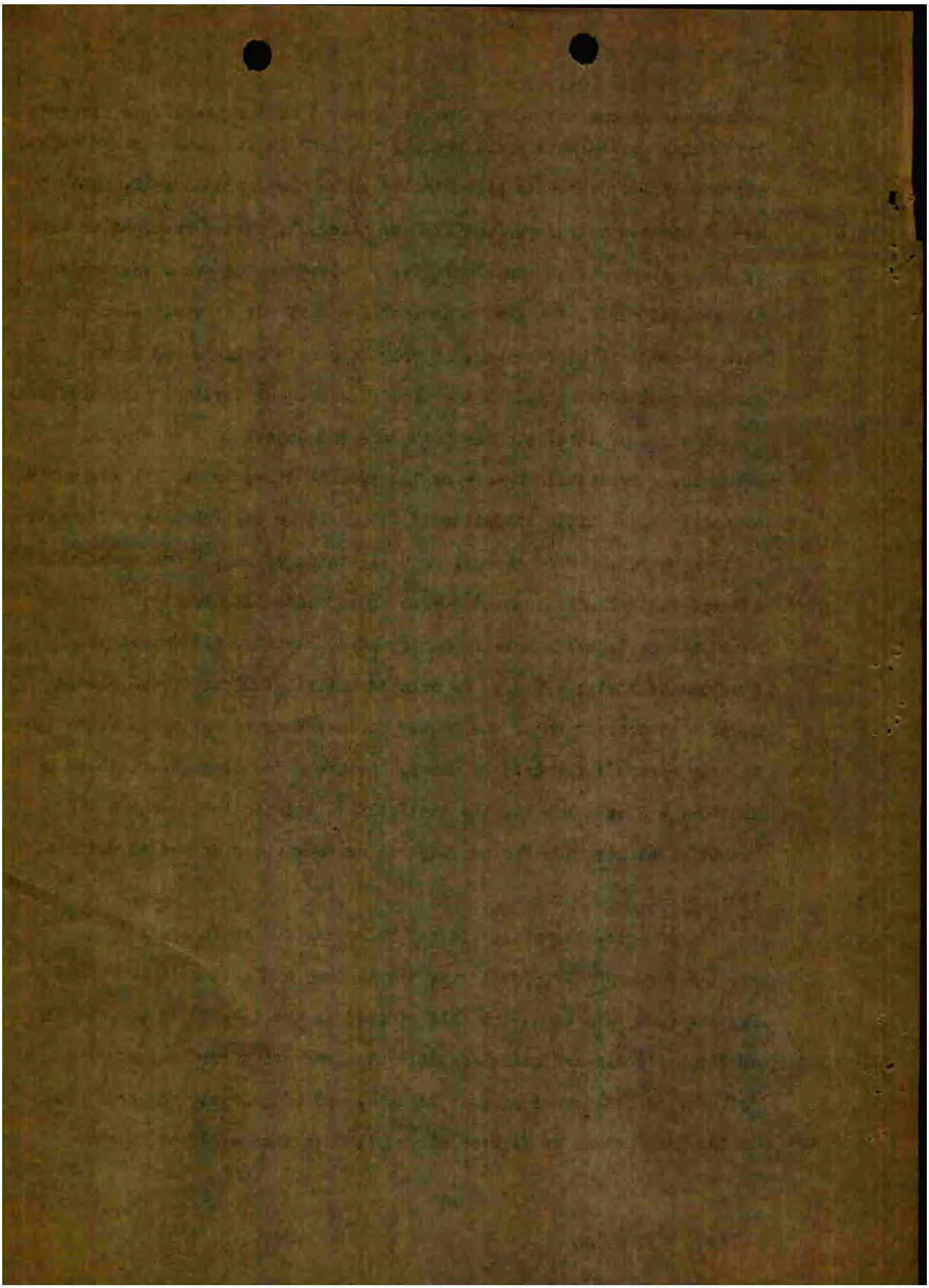
situation was the tragedy of the development of the Me-262, an aircraft type which should have given Germany the lead in air armament and helped her out of the desperate situation in which she found herself. The Me-262 was not only a perfect fighter aircraft, suited to night as well as day employment, as was conclusively proved on the few occasions when it was used during the last months of the war, but it would also have made an ideal fighter-bomber, if only Germany's leaders had known exactly what they wanted at the time it was being developed and produced.

Instead of this, the Me-262 became the object of a paralyzing struggle, a continual tug-of-war in opposing directions. The responsible officials were unable to decide if it should be developed as a fighter, a light bomber, a fast bomber, or a lightning bomber;[19] one week Hitler ordered that all developmental work on it cease immediately,[20] and the next week he demanded work be continued so rapidly that important developmental stages had to be skipped entirely; first it was placed under the supervision of the bomber forces, then it was switched to the fighter aircraft forces. In short, one wrong decision was followed by another, and as a result, the tactical and technical lead which the Me-262 might have won for Germany was never given a chance to materialize.

In general, the situation may be summarized as follows:

If Germany's top-level military leaders had made up their minds in time (and this meant the fall of 1943 at the latest) to convert all of Germany's war industrial capacity to production for home air defense, as had been suggested to them, and if priority had been given to the manufacture of fighter aircraft, then the Me-262 might have



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been able to give Germany's Luftwaffe the qualitative superiority it needed at the time it needed it most, making possible a fundamental change in the military situation. For as early as May 1943 Galland (then General of the Fighter Forces) had flown the Me-262 and had prepared a clear and unequivocal report concerning its potential significance:[21]

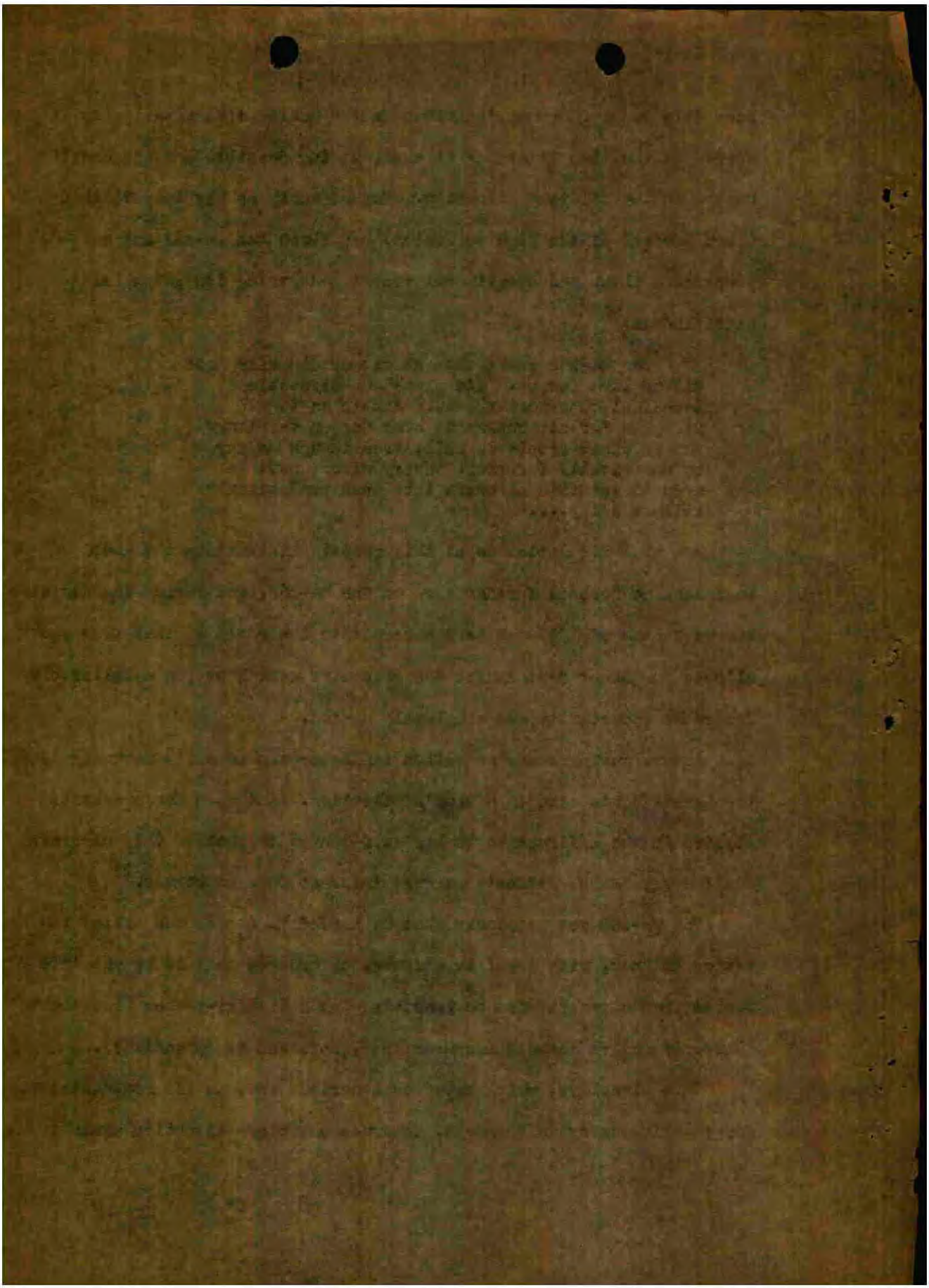
> The Me-262 represents an extraordinarily good bit of luck for us. Its almost unbelievable technical superiority should enable us to win the struggle for air supremacy over German territory and on other fronts as well, even though we may be numerically inferior. Every effort must be made to get this aircraft into mass production without delay....

But what did Hitler do at this point? Distrusting the whole business, he forbade further work on the Me-262, and during the decisive summer months of 1943 the best aircraft in the world at that time was allowed to gather dust in the Messerschmitt workshops; an unbelievably favorable opportunity was completely wasted.

Later, during a demonstration at Insterburg in early December 1943, the Me-262 again came to Hitler's attention. And when Messerschmitt replied in the affirmative to his question as to whether this aircraft could carry bombs, Hitler's renewed interest knew no bounds.[22]

The Me-262 was precisely what he needed to combat the Allied invasion and now, with great impatience, he ordered that it be put into series production as soon as possible - as a fighter-bomber (see the Führer Directive dated 6 December 1943, attached as Appendix 3).

This Directive, which embodies a serious and, in its consequences, far-reaching error in judgment, deserves our close attention since it



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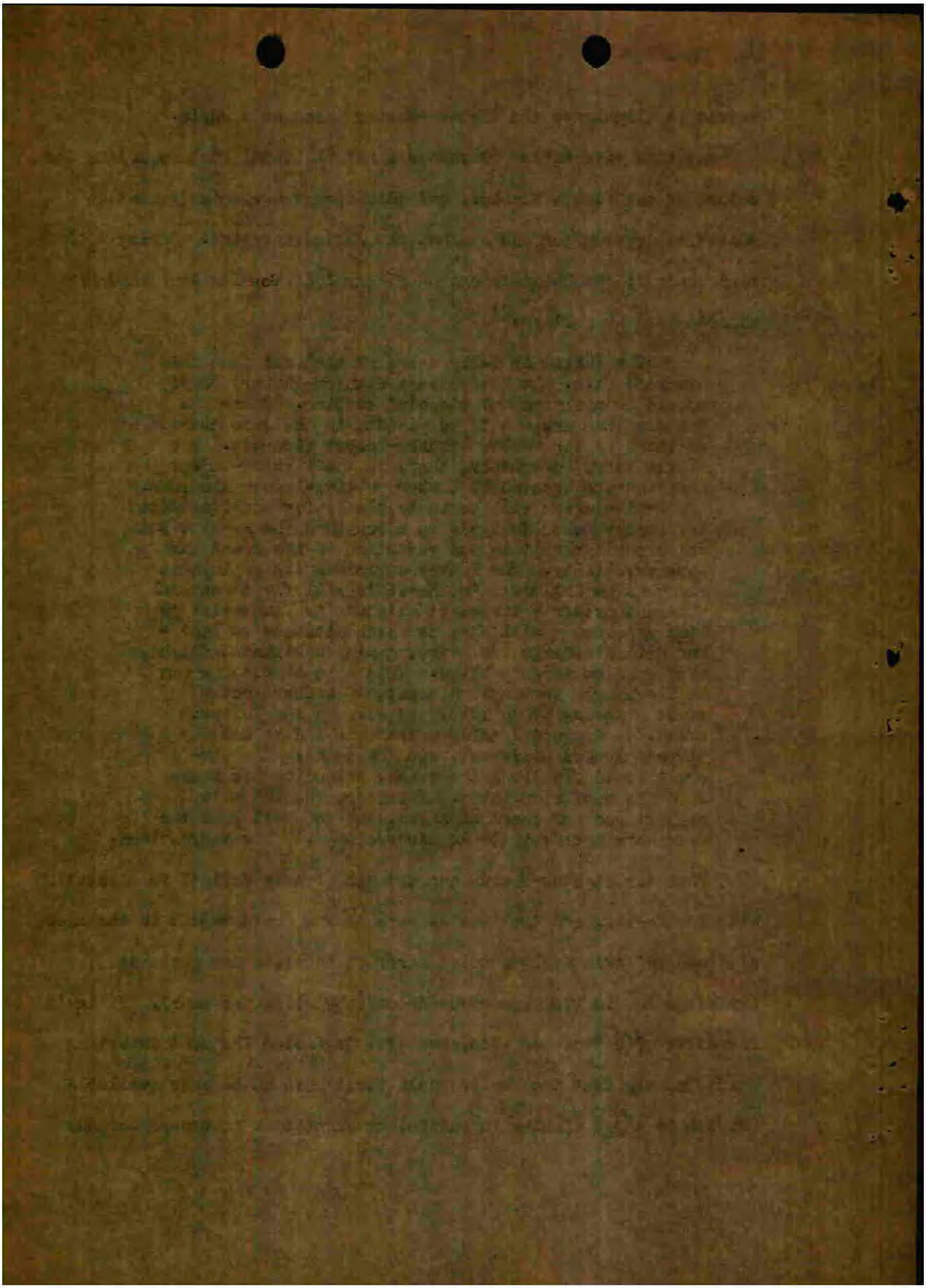
serves to illuminate the fighter-bomber theme as a whole.

At this time Hitler possessed a not illogical idea regarding the nature of the fighter-bomber, and this idea was precisely what he wanted to develop for use against the Allied invasion. During a conference at the Obersalzberg on 29 May 1944, Goering explained his chief's idea as follows:[23]

> The Führer is fully aware of the fact that this aircraft (i.e. the Me-262 as a fighter-bomber) is of no use in carrying out pinpoint bombing. Therefore its missions are not to be planned in the same manner as those of the bomber or dive-bomber aircraft. The Führer fears, correctly, that, if the fighter-bomber missions are equated to bomber or dive-bomber missions, front-line units will begin to clamor for modifications and improvements designed to strengthen the Me-262, but which would result in the reduction of its speed and maneuverability. The Führer envisions its employment somewhat as follows: the Me-262's will fly at several thousand meters - the exact altitude is immaterial to him; experience will show us which altitude is best - and will discharge its bombs, during horizontal flight, over surface targets below. This type of mission can be flown over the English coast, to bombard ocean craft standing by to load, and also on the European coast, to disrupt landing operations and to destroy already landed equipment, such as tanks. The aircraft would fly along the beach, unloading its bombs into the confusion below. These are the Führer's suggestions for these missions, and we shall make the necessary preparations in accordance with his suggestions.

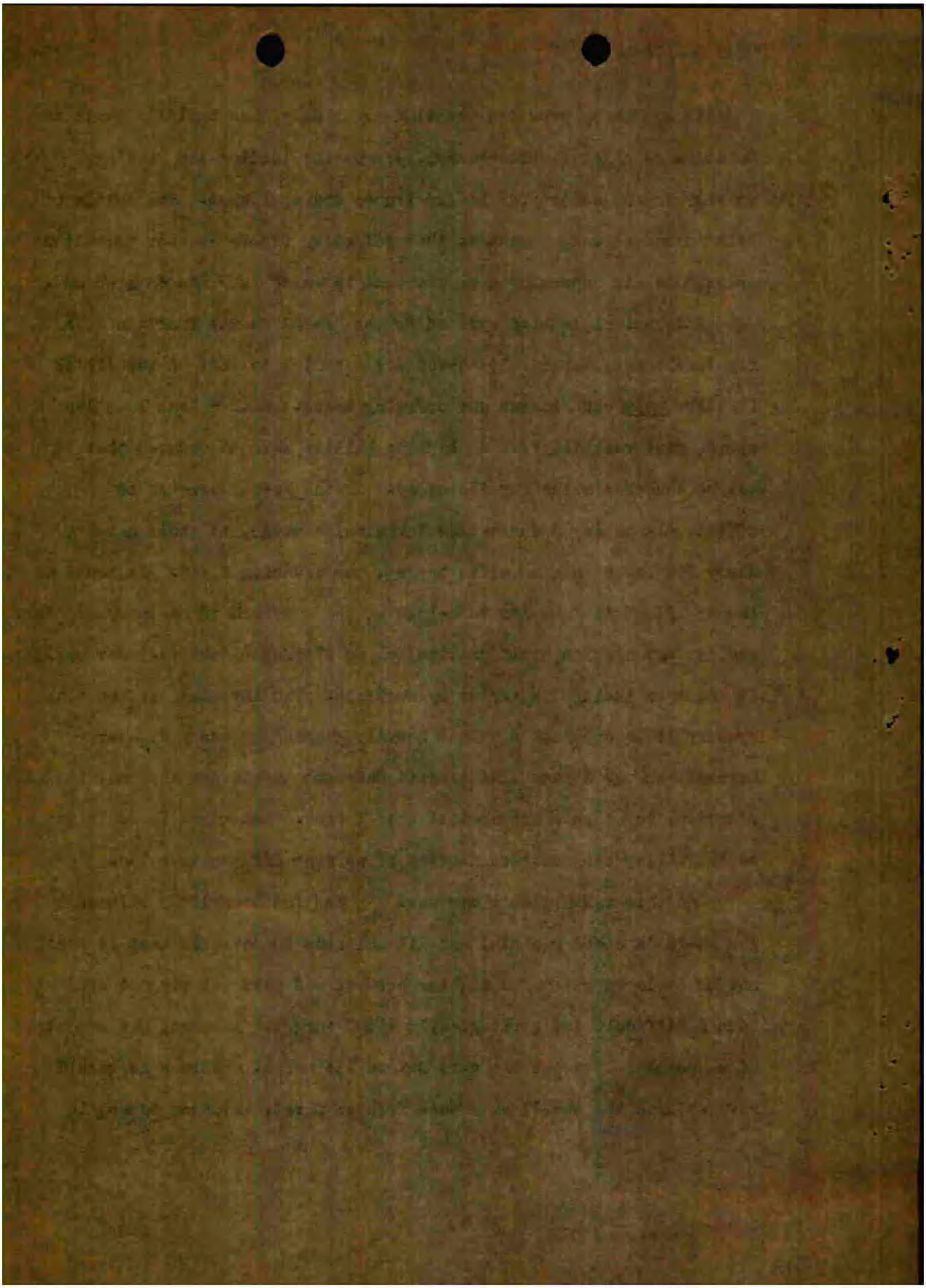
Thus the fighter-bomber concept was clearly defined in connection with the Me-262, and that was as much as one could expect in the case of a new and relatively untried aircraft model, whose greatest advantage lay in its tremendous speed (550 miles per hour). Hitler's Directive of 6 December 1943, however, neglected the most important point, namely that the Me-262 would first have to be made available for use as a jet fighter in sufficient quantities to assure Germany



the air supremacy over the invasion area; only then could it begin to function as a jet fighter-bomber, disrupting loading and landing operations and destroying landed troops and equipment. The Battle of Britain had already taught us that effective fighter-bomber operations presuppose air supremacy over the area in which they are carried out.

This principle also applied to the Me-262 in its function as a fighter-bomber, because its speed was superior to that of the Allied fighters only when it was not carrying bombs. With a bomb-load its speed, maneuverability, and climbing ability were so reduced that it was no longer a match for the enemy. If the Me-262 were to be effectively employed during the invasion, however, it would have to carry its bombs to a specific target, the invasion fleet. It could no longer afford to dump its bomb-load at the approach of an enemy fighter, and its new mission would provide for no alternate targets. Nor could it count on taking its target by surprise. The invasion mission would require it to approach a target heavily guarded by enemy fighter aircraft and by strong antiaircraft defenses on the ground, and, in addition, to score a hit against this target. Otherwise it would not be fulfilling its assigned mission of warding off the invasion.

And this was Hitler's mistake. He had let himself be blinded by the Me-262's speed records, and did not stop to consider that it could not be employed without a fighter escort, and particularly not against such a difficult and strategically vital target. Instead, his Directive of 6 December 1943 put the cart before the horse. Whereas he should have ordered the Me-262 as a pure fighter first, in order to regain



the air supremacy for Germany, he called for the Me-262 as a fighter-bomber only, without realising that it would never be capable of fulfilling its mission alone, i.e. without additional Me-262's to serve as a fighter escort.

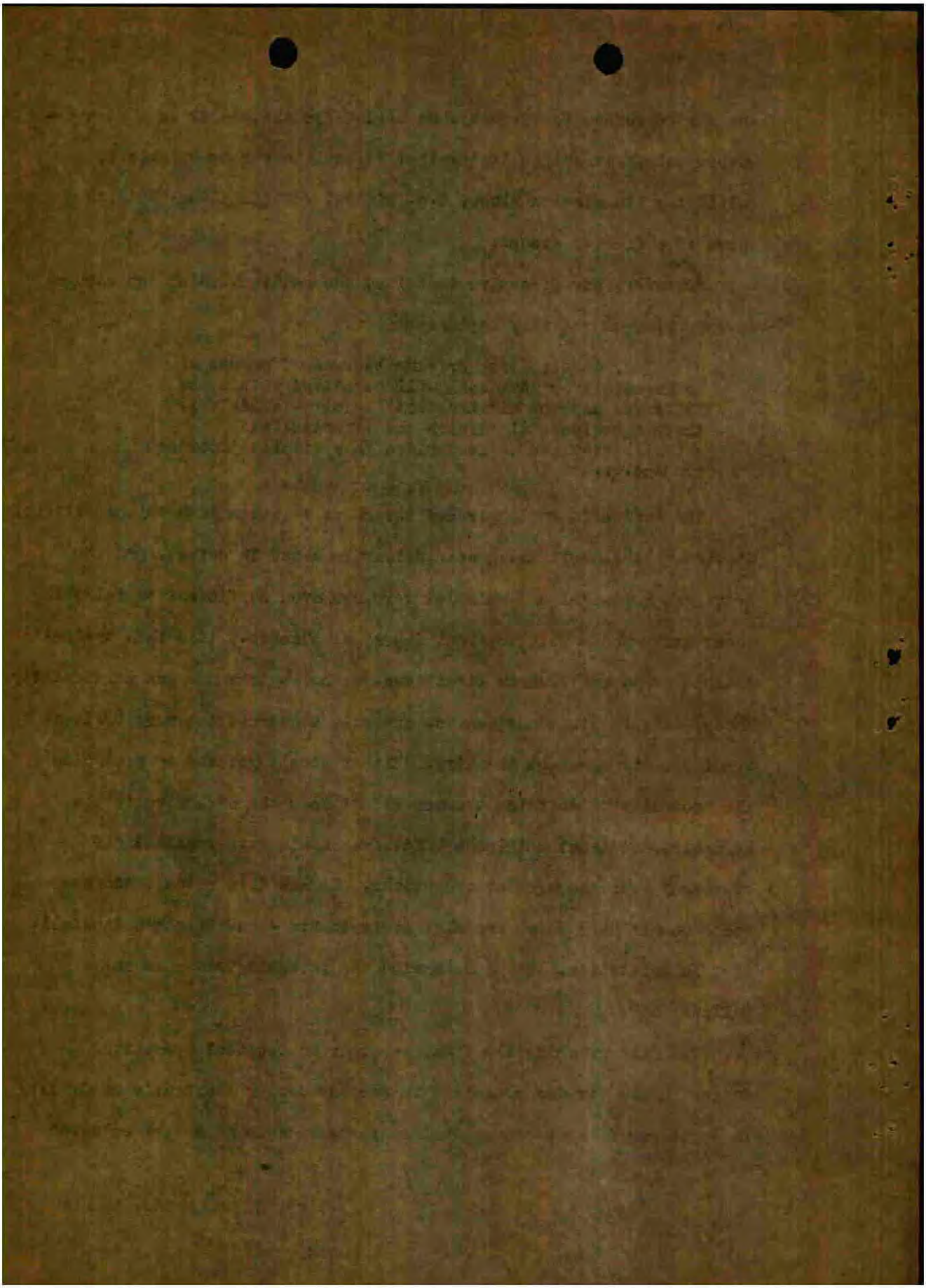
Moreover, his Directive contained one sentence which was enough to doom it from the very beginning:

> Any difficulties arising because of shortages in materials or personnel will be solved within the Luftwaffe and the air armament industry themselves; these agencies will furnish the personnel and material required to accomplish this vitally important project.... [24]

The Luftwaffe no longer had the means to accomplish this additional mission. Previously assigned missions remained in effect, and the available personnel and material were not even sufficient to fulfill these assignments with any real degree of success. This is a typical example of so many Führer Directives, although this one was particularly devastating in its consequences, since it concerned the very basis of Germany's air armament industry. Hitler simply refused to recognize the necessity of shifting the war effort from the offensive to the defensive, at least until the Luftwaffe should have regained air supremacy over the area of operations. It was this refusal to face facts on his part which led ultimately to his - and Germany's downfall.

In conclusion, let us summarize the foregoing comments as follows:

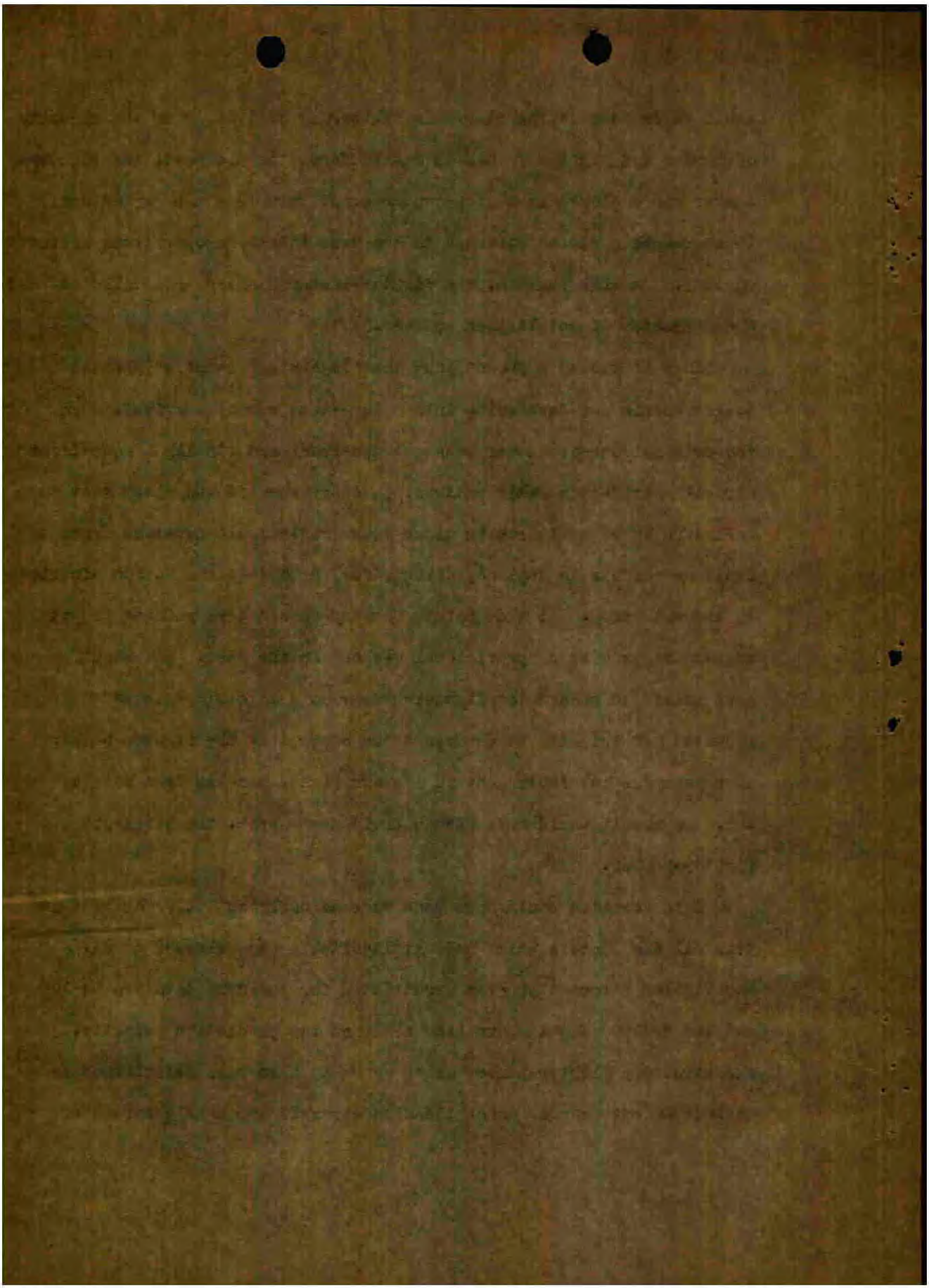
The idea of using the fighter-bomber in tactical operations during an air war was conceived in Germany during the Battle of Britain in World War II as a provisional measure, because no better solution



could be devised at the time. In the spring of 1941, when the majority of bomber and fighter forces were transferred to the East, the fighter-bomber was employed as a stop-gap measure, to bridge the period until these forces could be returned to the West to resume operations against England. As time went on, the fighter-bomber missions gradually assumed the character of retaliation actions.

When it became apparent that the "lightning" campaign against Soviet Russia was developing into a long-term war of survival, when the original one-front war became a two-front and finally a four-front war with world-wide ramifications, in short when it was clear that the Luftwaffe units scattered on these four fronts could never be freed to continue the war in England, Germany failed to take the action dictated by the situation. At that point, Germany should have refused to put up any longer with a "provisional weapon" in the West. She should have ceased to regard the fighter-bomber as a mere stop-gap and adjusted her thinking to encompass the concept of the fighter-bomber as a powerful new instrument in its own right. As has been pointed out, the result would have been a truly new weapon, the strategic fighter-bomber.

This decision could have been made as early as 1942, for by that time all the factors which made it inevitable were already known. The fighter aircraft program (restricted for the moment to the Me-109 and the FW-190) should have been assigned top production priority, and strategic fighter-bomber units ought to have been established as an independent weapon, using the same aircraft types as the fighter



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forces, but with their aircraft fitted from the very beginning with the supplementary equipment necessary to enable them to carry and release bombs and thus to carry on combat from the air. The fighter-bomber pilots should have been recruited from among the bomber pilots, who could have been given supplementary training in fighter techniques. The ease with which this training obstacle could have been surmounted is clearly evidenced by the success of the "wild pig" operation within the night fighter forces. Here, bomber pilots volunterring for duty in illuminated night combat were given training in the operation of single-engine fighter aircraft.

During the course of 1943, proper action on the part of Luftwaffe leaders would have permitted the development and mass production of the Me-262 as a jet fighter and later (with the necessary supplementary equipment) as a jet fighter-bomber.

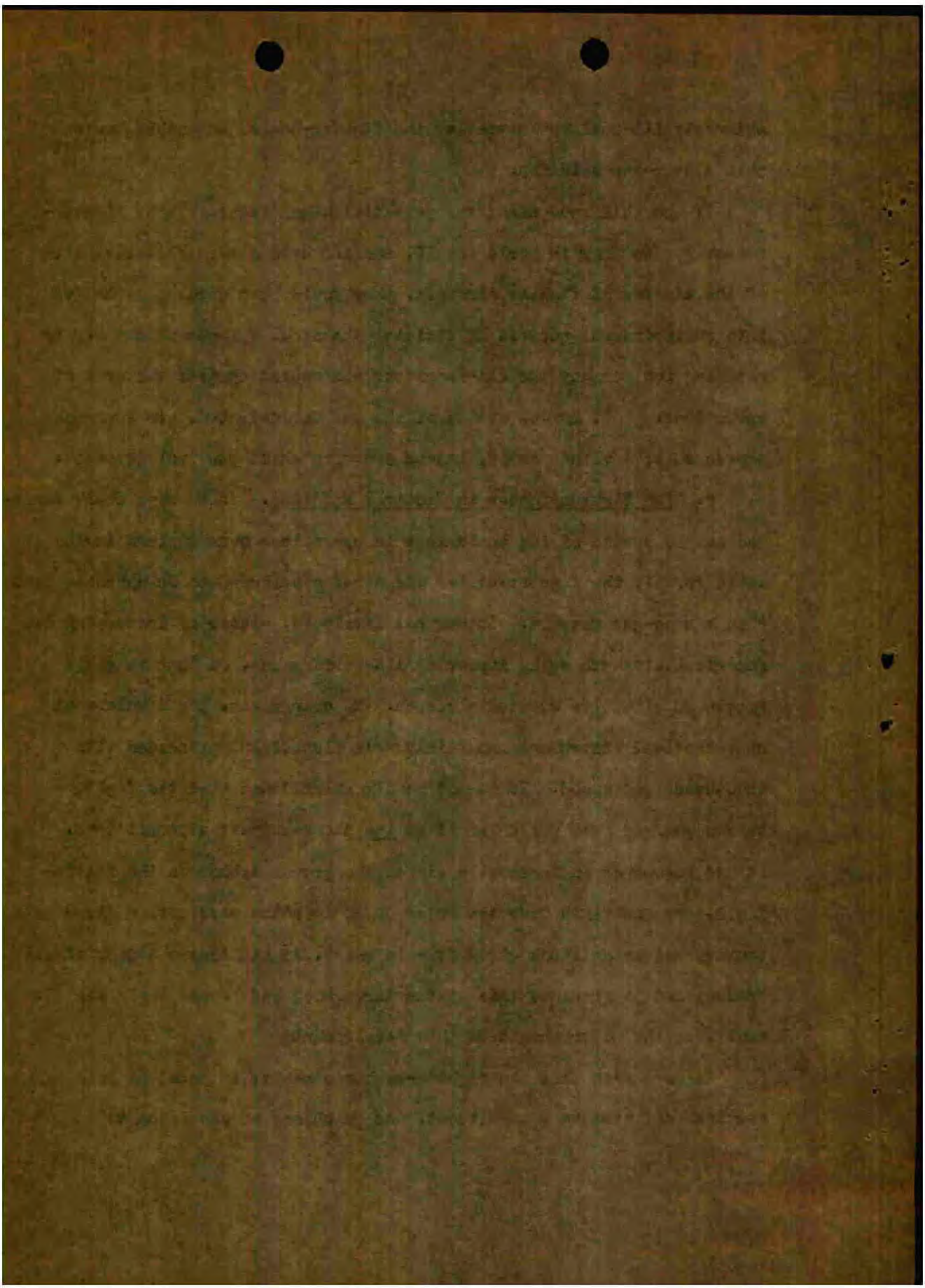
If the above measures (expansion of the fighter production program and development of the Me-262) had been ordered in time, Germany would have been assured quantitative and (after 1943) also qualitative superiority in the air. This, in turn, would not only have effectively stopped the Allied air offensive against Germany, but would also have permitted a continuation of offensive aerial action against England, and the latter, in turn, would have rendered the Allied invasion impossible. This fact should not be lightly dismissed, since it throws a good deal of light on the significance of the fighter-bomber concept. This matter will be discussed further in a later chapter.[25] Here we only wish to make it clear that Germany's leaders were

extremely ill-advised in viewing the fighter-bomber as nothing more than a stop-gap solution.

If they had recognized the potential significance of the fighter-bomber for Germany in World War II, and had held a more objective view of the mission of fighter aircraft, they could have developed the two into an instrument capable of deciding the final outcome of the war by securing for Germany the all-important air supremacy over the area of operations. And, as the events of the war demonstrated, air supremacy proved to be a vital factor, indeed one upon which survival depended.

2. The Fighter-Bomber in Tactical Missions. As we have seen, during the entire period of its employment in operations over England during World War II, the fighter-bomber was never considered to be anything more than a stop-gap measure. It was not developed, either by increasing its numerical strength or by improving its performance, so that it could become an effective strategic weapon. By comparison, its development as a tactical instrument was fairly well planned and proceeded with smoothness and speed. It is not merely coincidence that the fighter-bomber emerged from World War II as the close-support aircraft type. It had become an indispensable aid to the ground troops on the battle-field, and had taken over the roles of an infantry aircraft, a dive-bomber, and an antitank aircraft - in short, it had become a jack of all trades, and it retained this status throughout and beyond World War II. What were the major phases of this development?

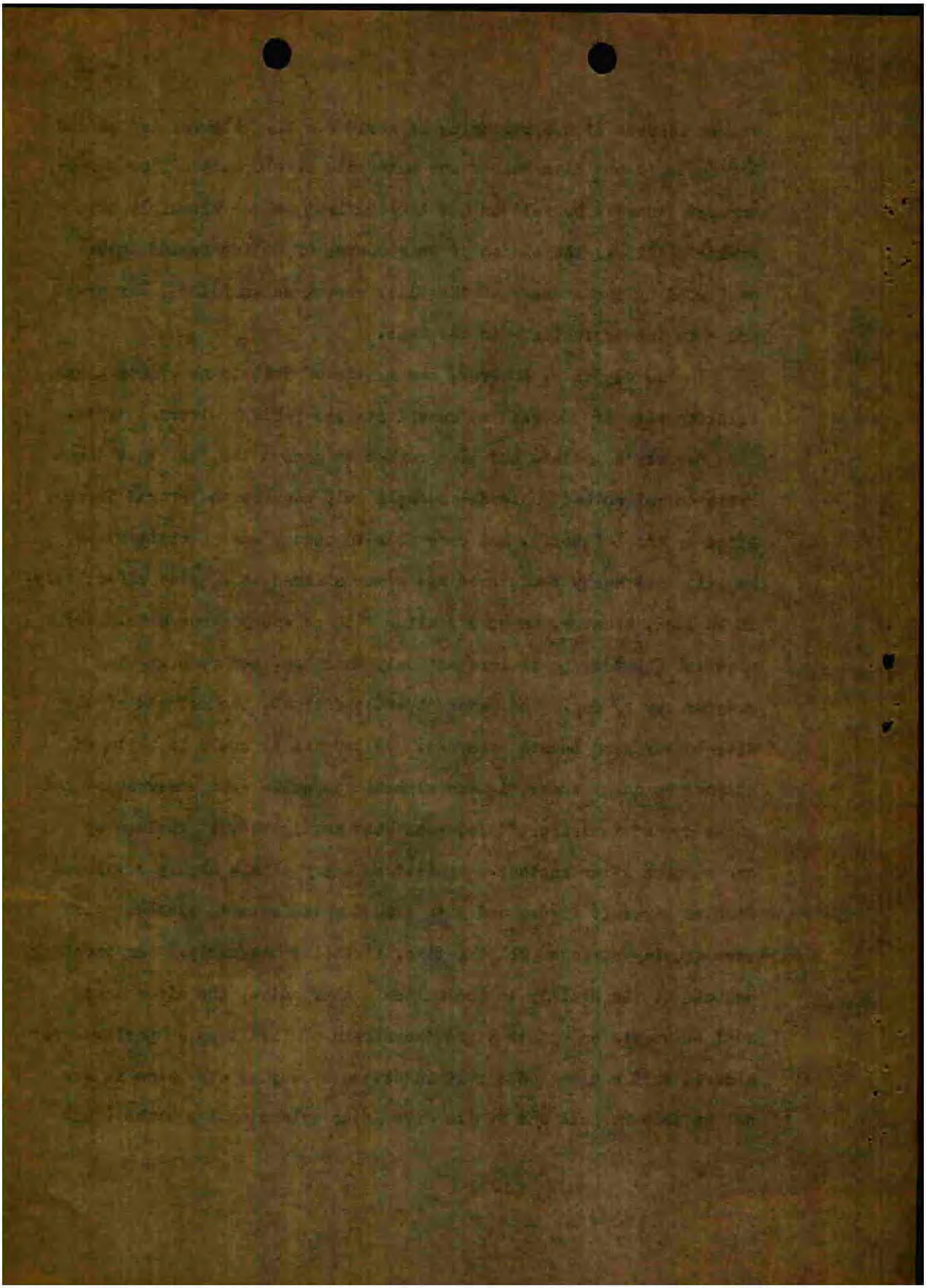
We have seen that the fighter-bomber concept, in point of both tactical and strategic commitment, was an object of suspicion to



German leaders at the beginning of World War II. Germany had placed her faith in the dive-bomber and based the development of her close-support aircraft as well as her bomber fleet on the principle of diving ability. The wisdom of this course of action seemed to be confirmed by the success of the blitz campaigns in Poland, Norway, and - in the beginning - in the West.

In the meantime, however, the Battle of Britain had taken place, bringing with it the need to reevaluate the various aircraft types.

Germany's leaders had been forced to accept the fact that these blitz campaigns had succeeded so well only because the ground forces, aided by the Luftwaffe, had been able to occupy enemy territory so rapidly that enemy resistance was never allowed to develop effectively. In England, however, we were dealing with an enemy whose morale and materiel fighting power were not only unbroken, but were growing greater day by day. And under these conditions, the defects of the dive-bomber soon became apparent. As long as it could be employed against an enemy whose fighter aircraft defenses were undeveloped and whose ground antiaircraft defenses were negligible, it chalked up one success after another. Against an enemy with highly developed fighter aircraft forces and with ground antiaircraft defenses which were growing stronger all the time, it failed miserably. For precisely because of its ability to accomplish a sharp dive, the dive-bomber must be stable enough to stand the strain of this type of performance; also it must not exceed a certain diving speed, or otherwise it may not be able to pull out of its dive after unloading its bombs (thus



the installation of a special diving brake). Considering these two factors, it is clear that the dive-bomber cannot be employed successfully against an enemy whose defenses are developed along modern lines.

And this soon proved to be the case in the Battle of Britain. In no time at all, the Ju-87 had to be withdrawn from operations over England because its losses had far exceeded reasonable expendability - and this despite the fairly heavy fighter escorts which accompanied each dive-bomber mission. The Ju-88 soon met the same fate and, although it was not withdrawn completely, it could only be used against areas with undeveloped antiaircraft defenses or during periods of bad weather which enabled it to exploit the factor of surprise.[26]

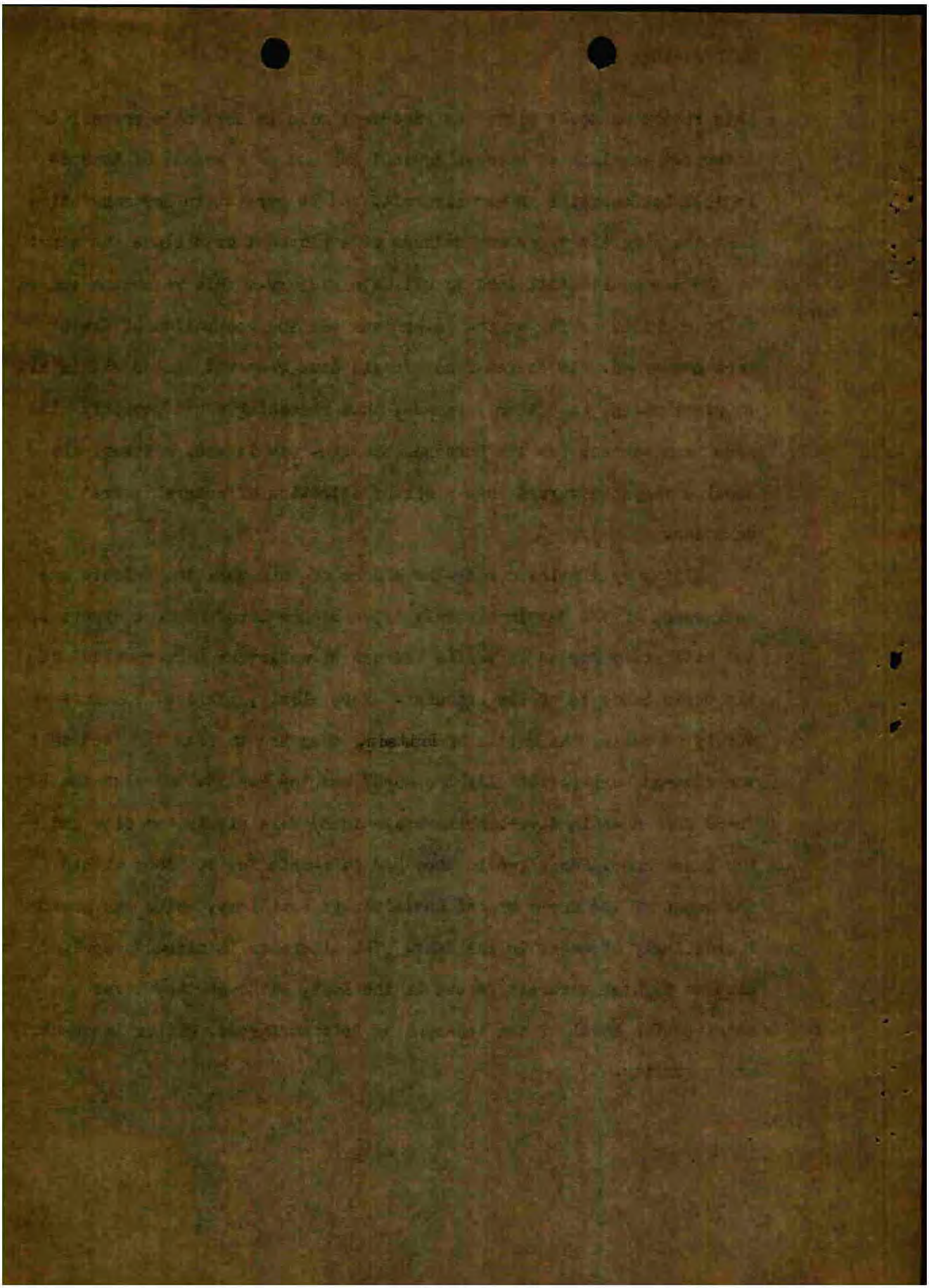
Even the Me-110, the Luftwaffe's standard twin-engine day fighter at the start of the war, which had been originally designed as a "heavy" fighter for escort duty with the bombers, proved to be so inferior to British fighters that it, too, had to be withdrawn. Its successor, the Me-210, was a technological fiasco right from the start. The Me-410 was a little better, but still was no match for the British fighter aircraft and could be used only at the risk of heavy losses.

Conditions in the other theaters of operation were different. In Poland, Norway, and the West, the Luftwaffe was so far superior to the air forces of the enemy that all the various aircraft models employed were able to exploit fully the potentiality for effective operation inherent in them. Moreover, the campaigns in these theaters were of such short duration that there was no time for any defects to show up.

In the spring of 1941, when the Balkan campaign was launched, the Luftwaffe was also confronted by an enemy undeniably far inferior to it.

This factor no doubt played an important role in Germany's refusal to interpret the lack of success against England as a result of technological inadequacies in her aircraft, and to persist in her conviction that the aircraft types and methods of employment used since the start of the war could still lead to ultimate victory. This reasoning proved to be correct, as far as the Balkan war and the occupation of Crete were concerned. If Soviet Russia could have been subjugated within six to eight weeks, as Hitler forecast, this reasoning would probably also have been correct for the Russian campaign. As it was, however, the Russian campaign turned into a war of attrition of several years' duration.

Little by little, during the course of this war, the defects and weaknesses of the German aircraft types became more and more apparent, and ultimately forced Luftwaffe leaders to undertake a reappraisal of the basic concepts of air armament. More slowly, perhaps, but just as surely as during the Battle of Britain, they had to face the fact that the dive-bombers (especially the Ju-87 and the Hs-129, but also the Ju-88 when used in dive-bombing operations) were simply too slow and too cumbersome. As a result they had to remain far too long within the range of the enemy ground antiaircraft artillery, which was growing increasingly stronger in the East. This increase in strength applied also to fighter aircraft forces in the East, although they never attained the level of the top-ranking British forces, either in quantity or in quality.



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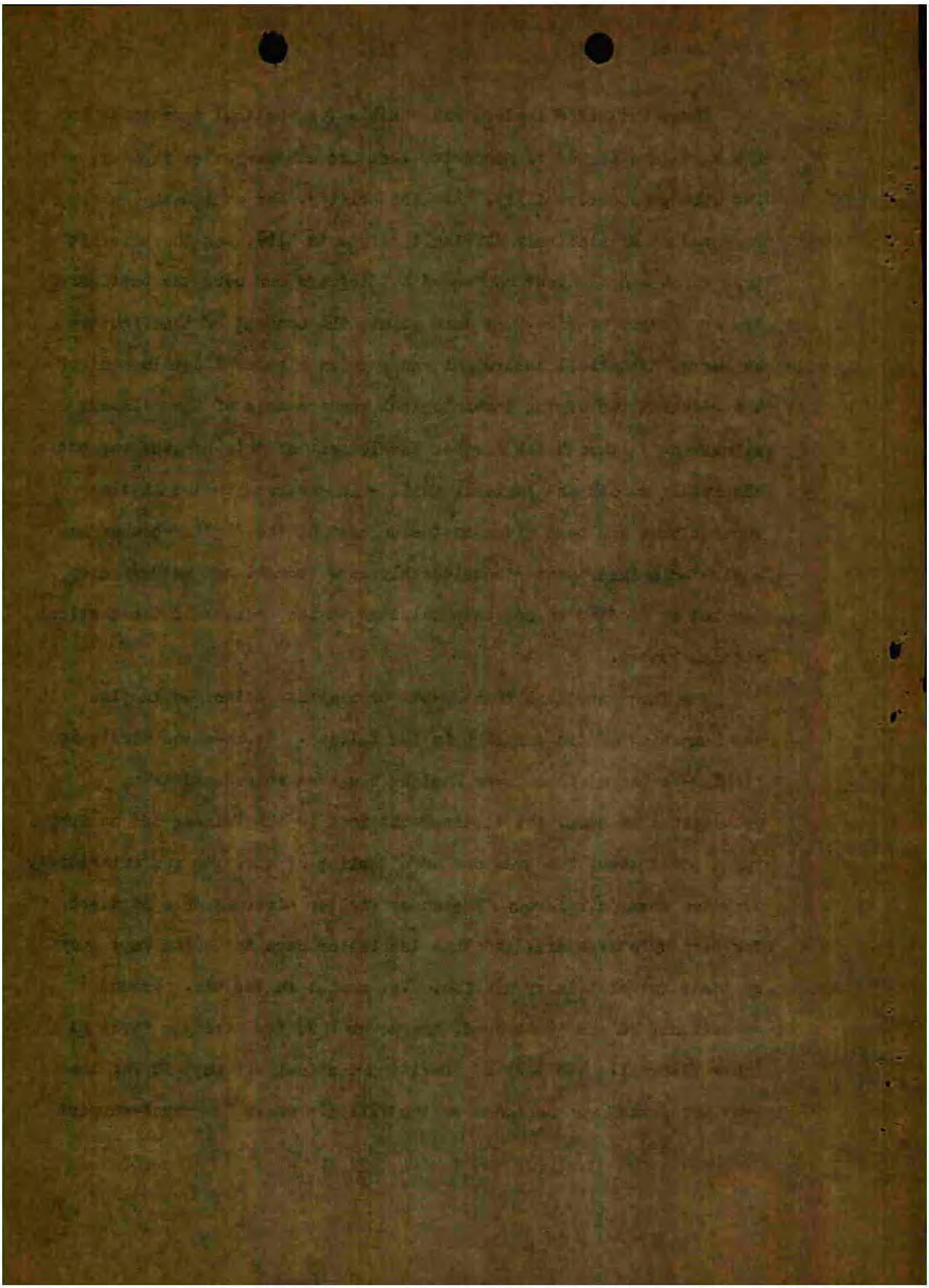
Thus, Luftwaffe leaders responsible for tactical operations in the East were forced to recognize that the single-seater fighter, with its speed, manouverability, climbing ability, and smallness (which rendered it a relatively difficult target to hit), was the aircraft type which had the best chance of holding its own over the battlefield for any length of time. At this point, the concept of the fighter-bomber as a tactical instrument was born as a natural development of the reevaluation of the technological requirements of the military situation. Although the further development of this concept was not absolutely smooth and logical, still - in contrast to the little thought that had been given to the concept of the fighter-bomber as a strategic instrument - considerably more thought and energy were devoted to finding an adequate solution to the problem of the tactical fighter-bomber.

The first tactical fighter-bomber missions coincided in time with the launching of the campaign in the Balkans. Whereas the strategic fighter-bomber missions over England had been introduced as a provisional measure, the tactical missions in the Balkans had no such taint about them, but grew out of a feeling of strength and superiority over the enemy air force. The enemy fighter aircraft were no match for Germany's fighters, and thus the latter were not being kept busy by their actual primary mission, i.e. combat in the air. Ground operations, on the other hand, can never have too strong a force at their disposal. The task of providing tactical air support for the Army Group List was assigned to the VIII Air Corps (a ground-support



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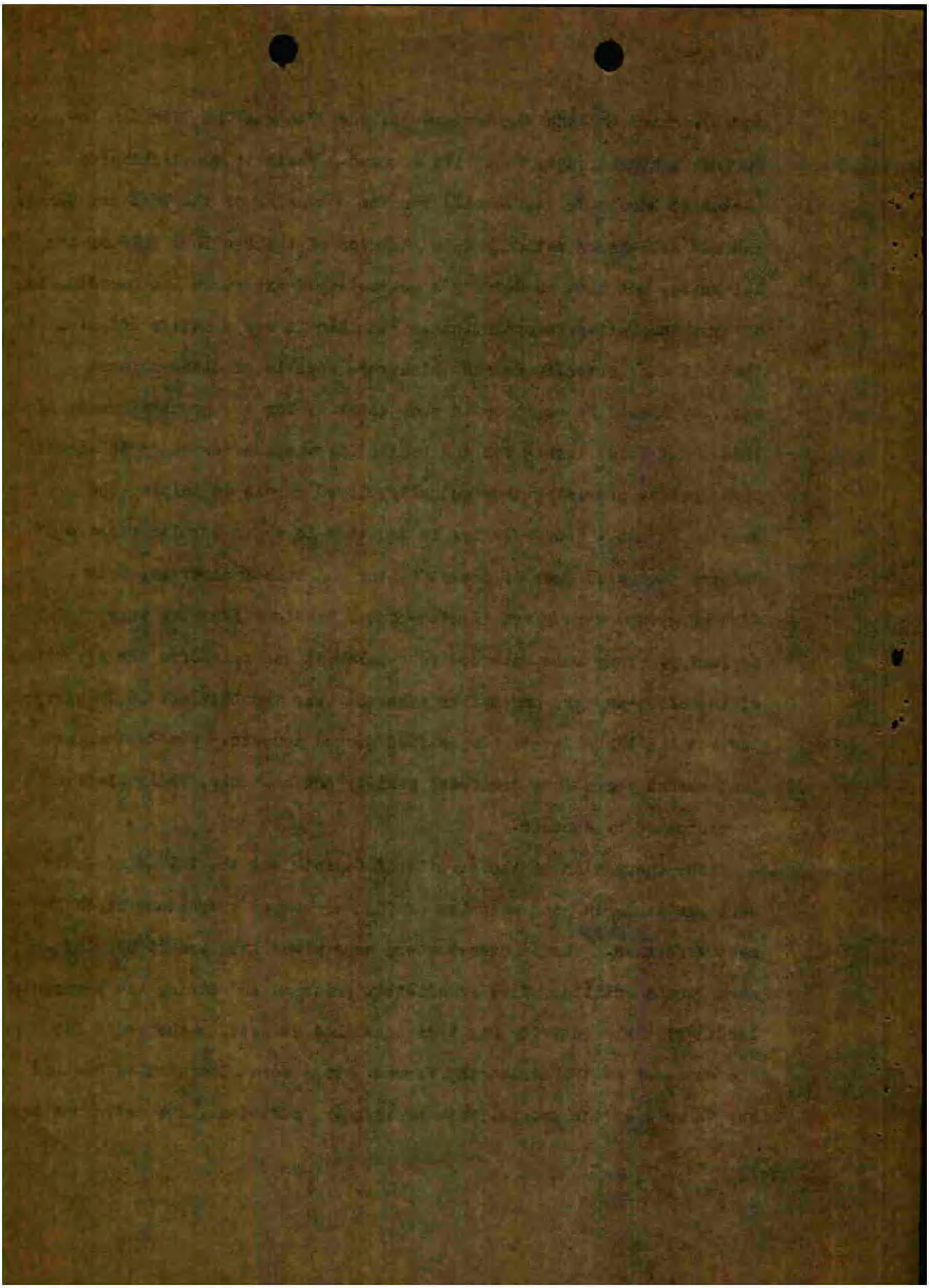
force), which had two fighter groups, the 27th and the 77th Single-Engine Fighter Groups, under its command. Freiherr von Richthofen (later to become Feldmarschall) was the commander of the VIII Air Corps, and was well-known not only as a champion of the tactical role of the Luftwaffe, but also as Germany's acknowledged expert on the coordination of Army and Luftwaffe operations. With him it was a matter of principle that all the Luftwaffe forces which were capable of close-support activity should be employed in such activity for the ground forces; if this meant heavy losses for the Luftwaffe, then he was ready to accept such losses, providing they actually played a role in helping the Army to advance. Accordingly, in addition to their regular mission of keeping the skies free of enemy fighter and bomber aircraft, both fighter groups were given fighter-bomber missions from the very beginning. They were assigned to supplement and reinforce the operations of the close-support and bomber aircraft over the battlefield by carrying out the bombardment of specified ground targets. Due to the fact that ground operations proceeded rapidly and smoothly, their missions were crowned by success.

The occupation of the Straits of Corinth and the island of Crete were particularly good examples of fighter-bomber operations at their most effective. The fighter-bombers were given the task of keeping down ground artillery fire immediately prior to and during the parachute landings; their activity might be described as setting the stage for the entrance of the airlanding forces. They were also used to bombard key targets on the ground, such as infantry positions, the entrances to



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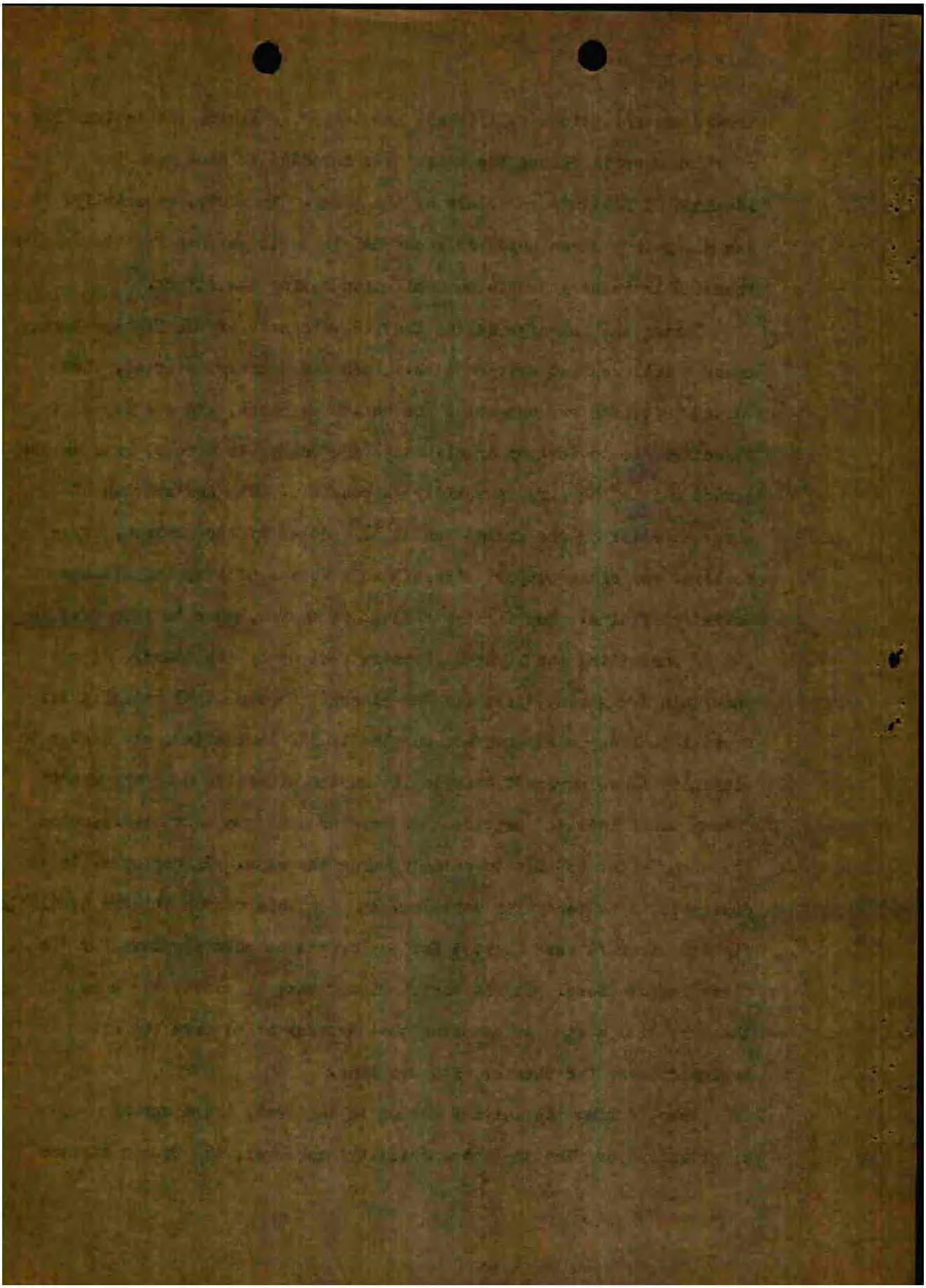
towns, communications facilities, and telephone lines, the destruction of which shortly before the attack was intended to slow down the issuance of preliminary orders by the enemy. In Crete, especially, it was clear that these measures succeeded in their purpose from the sudden frenzied increase in radio communication during the attack.[27]

During the campaign in the East, development of the fighter-bomber concept followed yet another path. When the campaign started, the German Luftwaffe was assembled for action en masse, and its foremost objective was to destroy or eliminate the enemy air forces, both on the ground and in the air, as rapidly as possible. The destruction of aircraft still on the ground was to be handled by the bombers, dive-bombers, and close-support aircraft in a series of surprise attacks on Soviet airfields. The fighter forces, of course, were to take over the job of combatting the fighter aircraft sent up by the enemy. It was uncertain how strong these fighter aircraft forces might actually be; a great deal depended upon how completely the Luftwaffe could manage to eliminate those aircraft standing by on the airfields near the front during their initial surprise attacks, and upon how many replacements the enemy might be able to bring up from the rear. In any case, it was desirable to be ready for anything, and for this reason all the available fighter aircraft were alerted for employment as pure fighters for the first few missions. It was their primary task to combat the enemy in the air, with a view to assuring that Germany might have the air supremacy over the theater of operations.

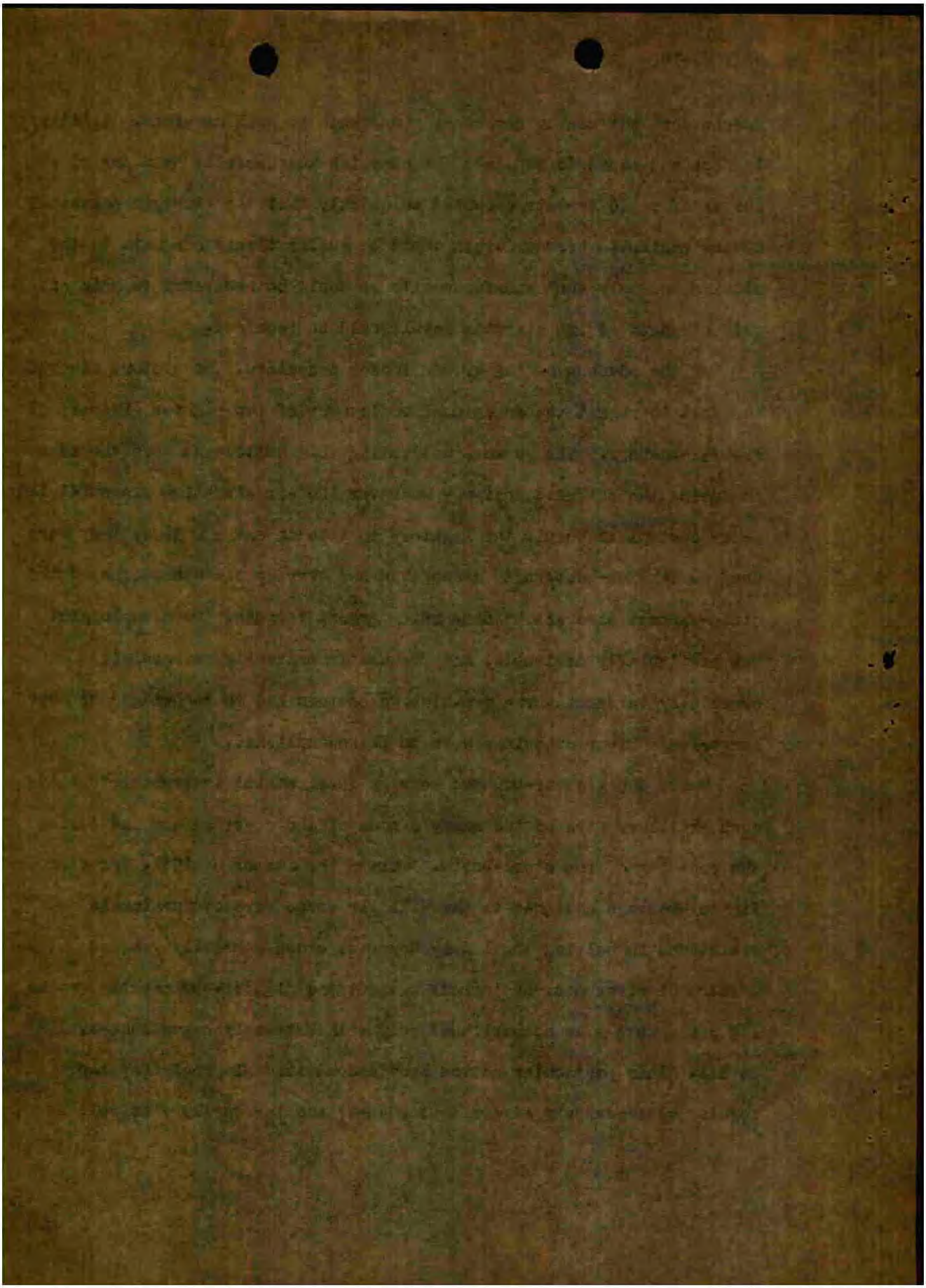
Thus, during the initial action in the East, there was no opportunity for fighter-bomber activity; moreover, the German fighter



forces were not really numerically adequate to such missions. Military leaders had hoped to conclude the campaign successfully by means of a series of rapid thrusts, executed so quickly that the strength potential of the available German forces would be qualitatively adequate to the mission and only such reinforcements as would be necessary to maintain this strength at its starting level would be required.

As the advance of the ground forces proceeded, the picture altered somewhat to permit the occasional employment of the fighter aircraft as fighter-bombers. The reasons motivating this employment were the same as during the Balkan campaign - wherever the air situation was sufficiently under control to permit the fighters to take on extra duties, they were used as fighter-bombers to strengthen and overlap the operations of the close-support aircraft by bombarding ground targets. Such employment was particularly desirable, and frequently extremely successful, especially in cases where troublesome sectors had to be bridged or where large-scale river crossings were to be accomplished.

There the fighter-bombers were an ideal combat instrument to hold down artillery fire on the enemy's side of the river before and during the crossing of the storm-boats. During the summer of 1941, for example, fighter-bombers assigned to the VIII Air Corps were of invaluable assistance in helping the I Army Corps to cross a heavily guarded stretch of river near Leningrad; without the fighter-bombers the crossing could have been accomplished only with extremely heavy losses, if at all. This particular action provided additional proof that the regular close-support aircraft (the Ju-87 and the Hs-129 , as well as

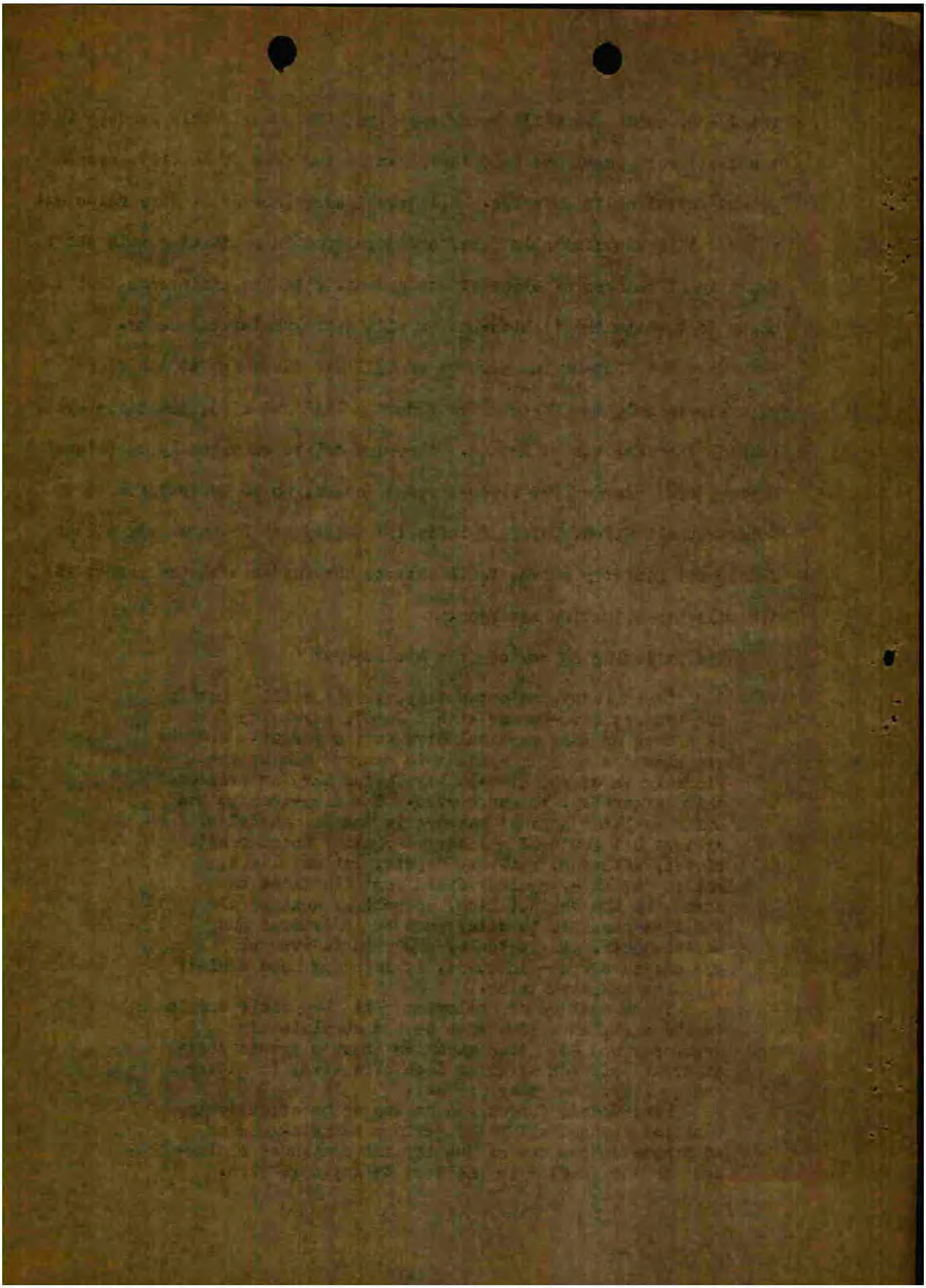


the Ju-88, which was still being employed with considerable success in the East) were unable to hold their own in the face of heavily massed ground antiaircraft defenses. Military leaders, however, were reluctant to face this uncomfortable fact, and persisted in continuing with their traditional methods of aircraft employment, with the difference that they began to turn to the fighter-bomber with ever greater frequency.[28]

Once the fast-moving advance of 1941 had given way to the slow struggle to hold the Eastern front during 1942 and 1943, the dive-bomber's role in the East was at an end. A report delivered verbally by Colonel Kupfer, Commander of the Close-Support Forces, on 10 September 1943 to Feldmarschall Milch, Chief of Luftwaffe Supply and Procurement, at the Reichs Air Ministry serves to illustrate how fundamental the change in the military situation had been.

The following is quoted from his report:[29]

> Even today, unfortunately, people still identify the concept dive-bomber with a Ju-87, screaming down in a more or less vertical dive on its target. Slogans are always dangerous - and this concept has become a slogan. We of the dive-bomber forces have experienced this personally, to our regret. The dive-bombers are being employed against convoys in the Thames delta, against all sorts of military targets - ocean craft, cities, villages, railroad depots, railway lines, rolling stock -, against field fortifications as strong as the Maginot Line, as well as against the smallest possible targets, such as individual gun emplacements, single tanks, and even individual grenade-throwers - in short, it is being used against anything and everything.
>
> These methods of employment all have their origin in the past, at a time when we had absolute air supremacy and at a time when the enemy's ground anti-aircraft defenses were far less effective, in number and quality, than they are now.
>
> Dive-bomber forces can no longer be effectively employed against all these various targets. Under no circumstances can we justify the continued employment of the Ju-87 - in the East or anywhere else.

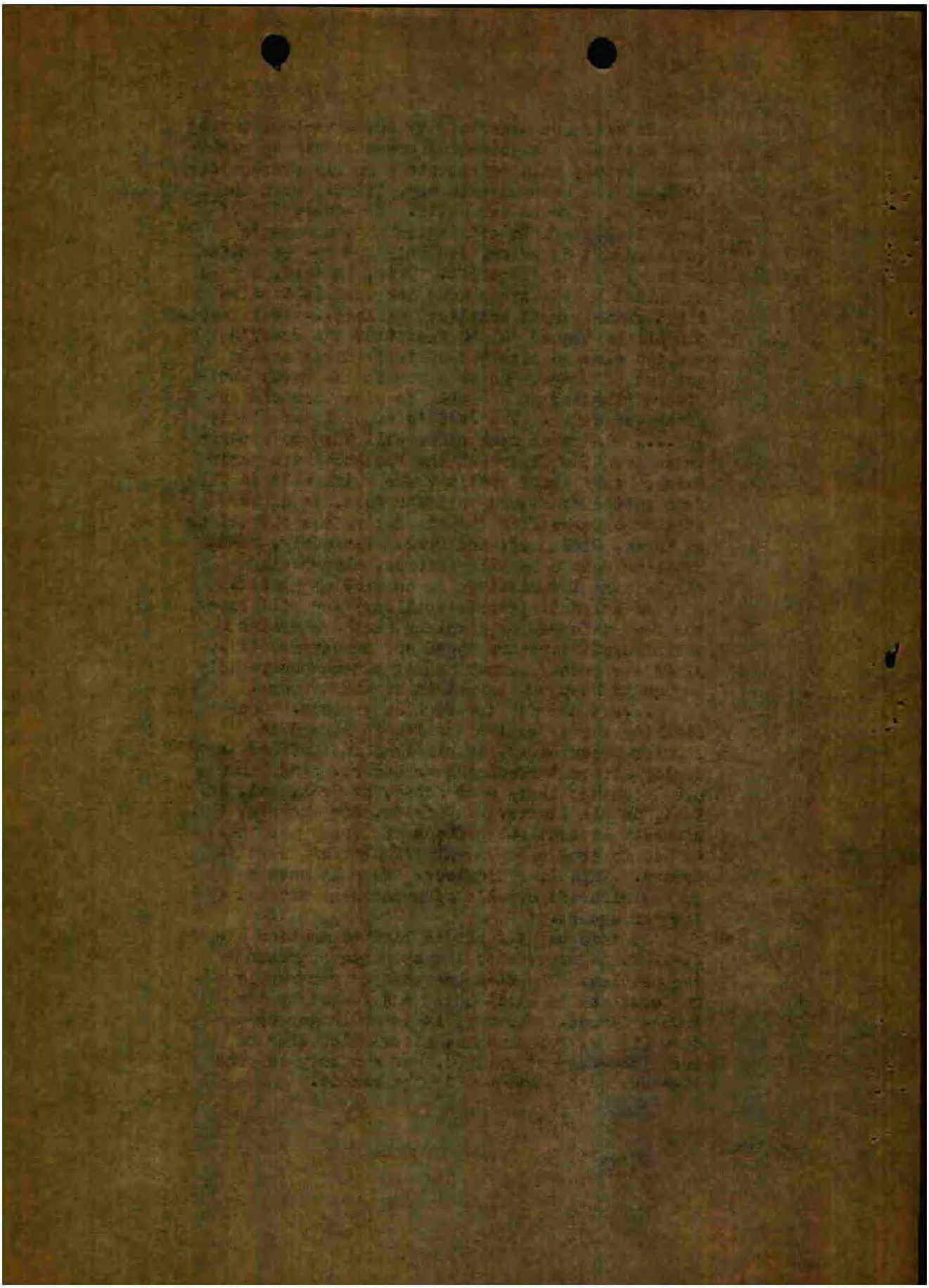


To cite one example: my own dive-bomber wing lost a total of eighty-nine crews within an eight-month period; this represents a yearly average of 100%. If we keep on this way, it will mean the end of the dive-bomber units. Moreover, 80% of these losses can be attributed to the enemy's antiaircraft defenses, and only 20% to the action of enemy fighter aircraft. This, in turn, can be explained by the tremendous increase in Russian light antiaircraft artillery of late... Our losses can all be traced to the fact that the Ju-87's are too slow to come out of their dives and to get out of range, and as a result the enemy anti-aircraft batteries are able to pick them off one after the other. The Ju-87's armor is of little use...a glance at tank armor will help to explain why: even the Tiger and the Panther, with their thick, heavy armor plating, are vulnerable to fire from antiaircraft and antitank guns, as we were able to observe from the air during the operations at Kursk, Bielgorod, and Orel. Obviously, then, shooting down a heavily-armored, slow-moving airplane at low altitude is no problem at all.

As any antiaircraft artillery man will agree, the best defenses an airplane can have against antiaircraft fire are speed and maneuverability, since the gunner cannot adjust his weapon rapidly enough to keep the target in constant range.

...and now for the fighter escorts. Considering our present situation in regard to fighter procurement, we simply cannot afford to employ aircraft requiring an escort. And escorts have been necessary - at Kuban, at Orel, and, in fact, on all fronts. In Africa, for example, whenever we sent out a force of twenty machines, we had to send along twenty fighter aircraft as escort. This is ridiculous. We must have a combat aircraft capable of commitment without a fighter escort.

At this point I should like to mention the JL-2, which represents the opposite approach to the problem. The JL-2 has enjoyed remarkable success, and is still hated and feared by the ground forces. However, it is no longer up-to-date (it is, for example, clearly inferior to our close-support FW-190), and can only be used together with a strong fighter escort.



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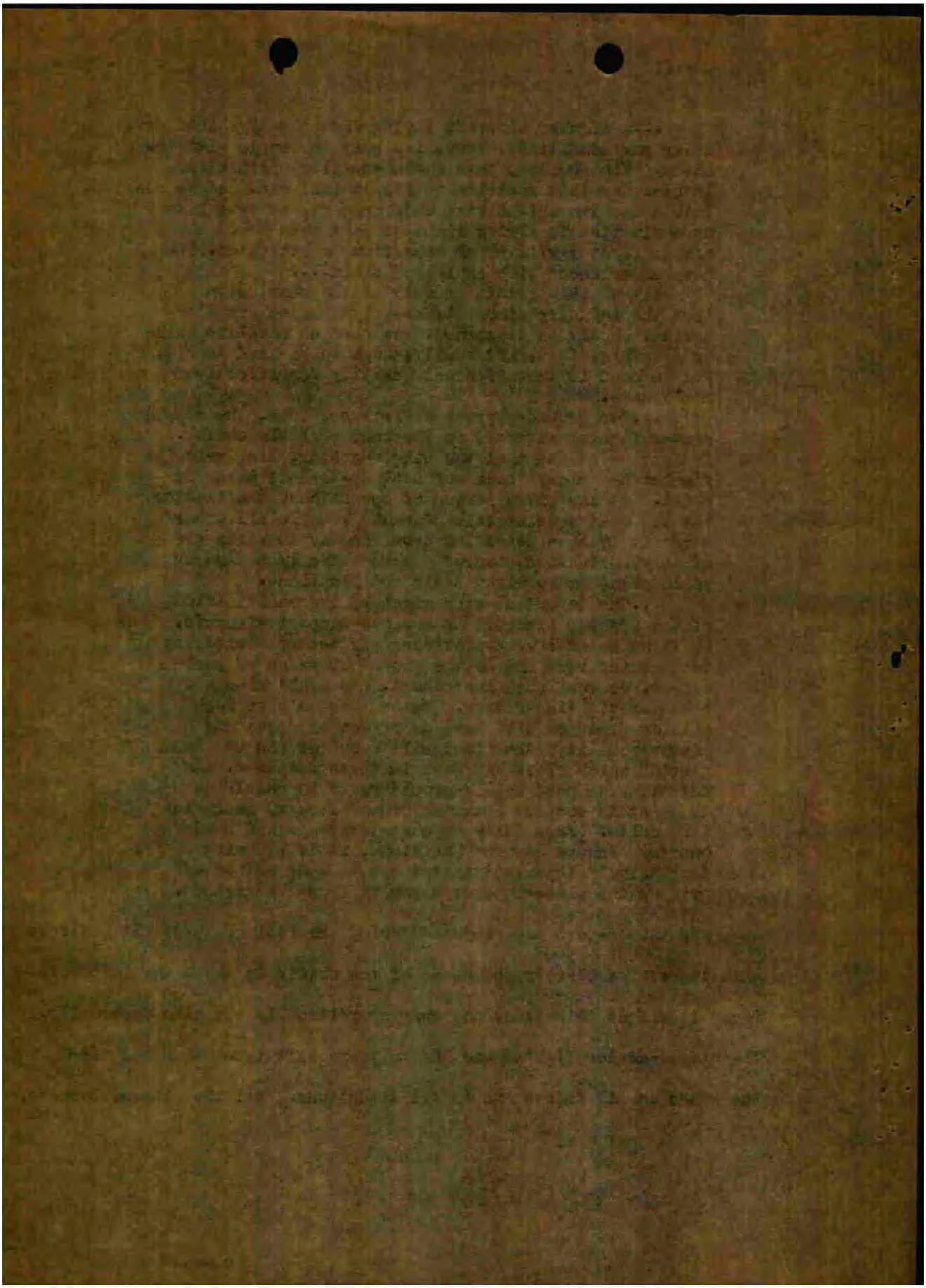
...A fighter aircraft flying escort duty should not, under any conditions, leave its post to tangle with the enemy. The Russians have shown exemplary persistance in carrying this doctrine to its logical end. If we run into a Russian unit flying under escort, we need have no hesitation in flying right on past them - not a single fighter will break formation to attack us. We have experienced this again and again....

All of this points clearly to the conclusion that the infantry aircraft, heavily-armored and slow-moving, should be discarded. We need an airplane which is flexible, fast, and small enough to be hard to hit, and we need it in sufficient quantity for effective employment.

...For ground-support operations, then, the single-seater fighter aircraft is the best possible choice. I might point out that the single-seater, single-engine fighter has always been our most up-to-date aircraft model. At any given period of operations, the fighter was the most consistently effective, while all other aircraft types - depending upon the way in which the military situation changed - were suddenly no longer employable, or required basic modifications.

...One important step might be the modification of the fighter aircraft as a close-support aircraft, or fighter-bomber, by providing for better visibility towards the rear and to the ground by means of periscopes, or some such instrument. We could also use a better sighting device. We can use only as much outside armor as will have no effect on speed and maneuverability; the pilot will soon get rid of any plating which slows him down in these respects. In addition, we need an air-ground radio to enable us to maintain contact with the ground forces, including tank units. Especially in cases where ground headquarters occupy advance positions, it is becoming increasingly important that there be some method of guiding the close-support aircraft from the ground .

And this report was prepared during the fall of 1945! It reflects with impressive clarity the scope of the crisis in which the Luftwaffe found itself at this time, not only operationally but also tactically. The single-seater fighter was the only aircraft type which had made the grade on all fronts and in all situations. All the others, bombers,



dive-bombers, twin-engine fighters, and close-support aircraft, were capable of commitment only under certain specific conditions, i.e. either with a heavy fighter escort, or in areas with undeveloped ground antiaircraft defenses. Since we no longer had the means to provide strong fighter escorts, and since there was no prospect of our regaining the air superiority,[30] it looked very much as if the German Luftwaffe had lost its striking power.

Under these circumstances, it was no wonder that everyone began calling for more fighter aircraft. At this point, then, the fighter-bomber came into its own, for it was really the only usable aircraft type capable of taking over nearly all the tasks involved in tactically coordinated action with the ground forces, and of becoming an efficient jack of all trades. For, even though the demand was for fighters, in reality it referred to fighter-bombers, despite the confusion prevailing in matters of terminology, organizational set-up, and training of fighter-bomber personnel.

That the confusion was great is illustrated by a remark made by Colonel Kupfer during the course of his report of 10 September 1943:

> The concepts fighter-bomber and fast bomber must no longer be used in my theater of command. There are close-support aircraft and close-support wings. The other terms merely lead to confusion... I shall request the Reichsmarschall to rechristen these units 'close-support wings'.[31]

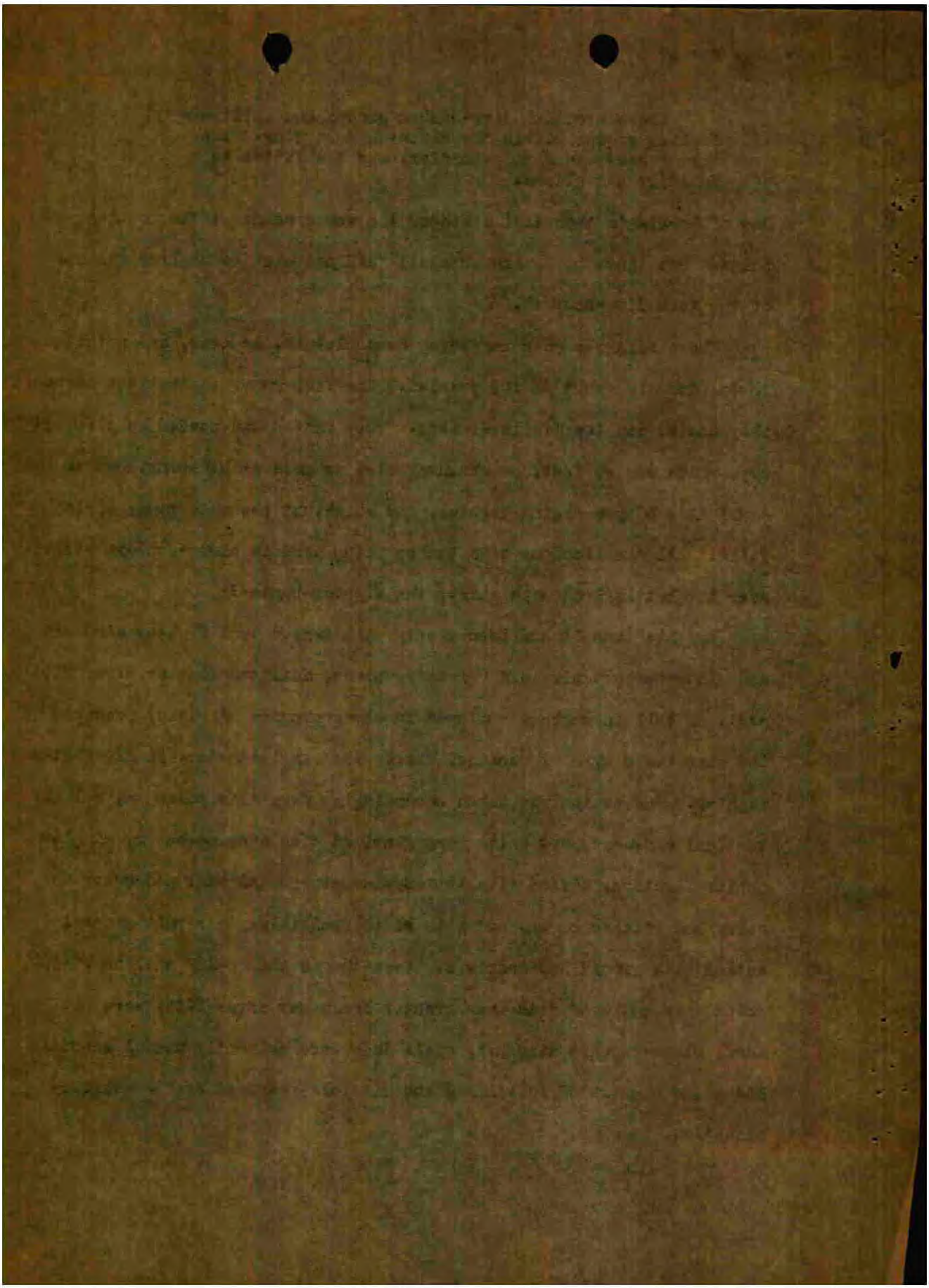
At the meeting at which Kupfer's report was delivered, there arose several differences of opinion in the definition of the concepts involved. Feldmarschall Milch, for example, was not at all pleased with the terms suggested by Kupfer, and made the following objection:

> There are both dive-bomber groups and antitank-fighter groups within the close-support wing. The former correspond to grenadier, and the latter to fusilier battalions.

One of Goering's technical officers who was present at the meeting, pointed out that the Reichsmarschall "did not wish to abolish the use of the term dive-bomber".[32]

These disagreements regarding nomenclature, however, had nothing to do with the heart of the problem. The fact remained that the aircraft they needed was the fighter-bomber. They wanted and needed an aircraft type which was as fast, as maneuverable, as good at climbing, and as small as a single-engine fighter, and which, at the same time, could fulfill all the missions of a bomber being used in close-support activity over the battlefield - in short, the fighter-bomber!

By this time it had been pretty well agreed that fighter aircraft and close-support aircraft (ground-support, antitank-fighter aircraft, etc., as well as bombers employed in close-support missions) required the same basic type of machine, namely the single-seater, single-engine fighter. And action was taken accordingly; from this point on, all the tactical close-support units were supplied with single-seater, single-engine fighters, fitted with the supplementary equipment necessary to carry and release bombs, and with radio facilities to permit communication with ground headquarters. Even though the Me-109 and the FW-190, which were employed with even greater frequency after 1943, were not ideal close-support aircraft, still they were eminently useful machines and quite capable of fulfilling the missions required by the military situation.



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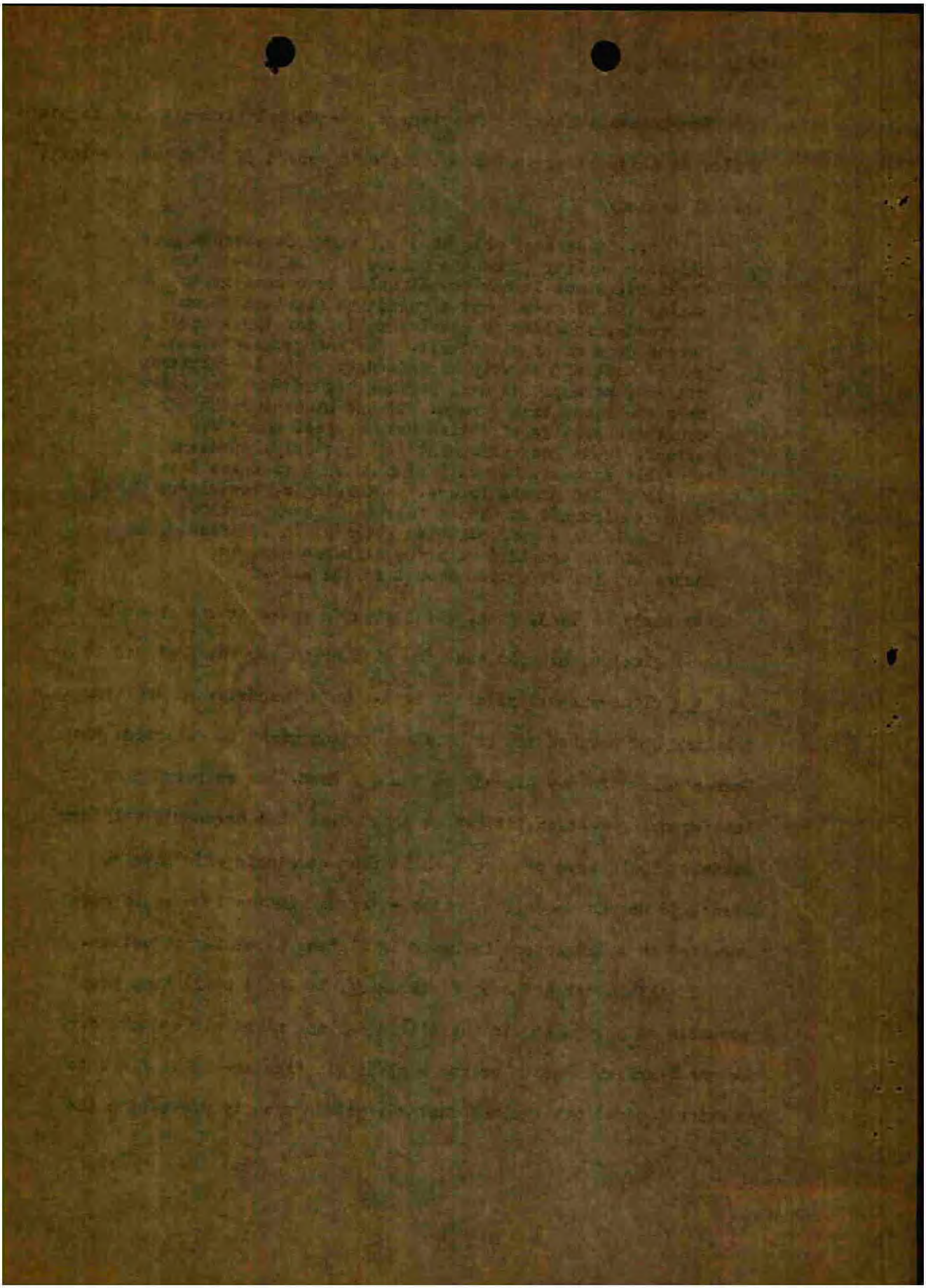
The identification of the term close-support aircraft with fighter-bomber is quite clear in Colonel Kupfer's report of 10 September 1943, when he states:

> ...It is desirable that the aircraft possess good climbing ability (thus the choice of a single-seater fighter), since it may occasionally be necessary to employ the close-support aircraft as fighters in an emergency, in order to provide relief for the ground forces from enemy air attack. For the ground forces can be most effectively harrassed by enemy low-altitude attacks, perhaps the most serious hazard for them apart from the enemy tank forces. If the close-support aircraft can provide effective help against enemy air attack, their accomplishment will not only represent tangible success, but will also do much to raise the morale of the ground forces. Accordingly, the close-support aircraft should be fast (a fighter aircraft) and should have good climbing ability; in addition, it should be provided with the airborne armament necessary for effective combat in the air."

As early as 1943, then, the Luftwaffe units at the front had come to the logical conclusion that the fighter-bomber was destined to become the close-support aircraft type. Unfortunately, by the time this thinking had reached the point where action might be expected, the German Luftwaffe was already on the way down. As we pointed out in the foregoing section, it was at this point that Germany's military leaders should have ordered a shift from strategic offensive to strategic defensive action, which - for the Luftwaffe - would have resulted in a tremendous increase in fighter aircraft production.

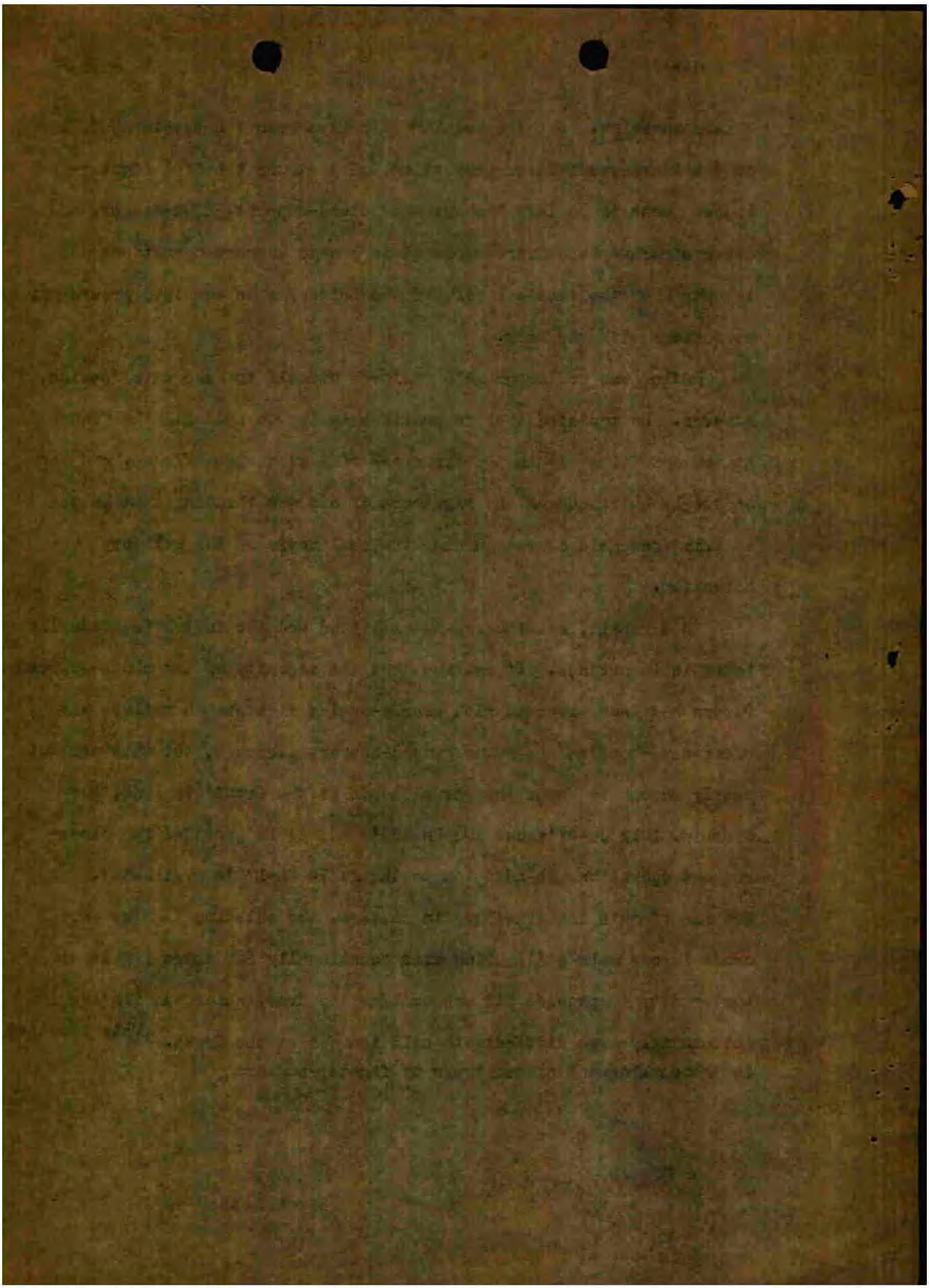
If this order had been forthcoming, it would still have been possible to put an end to the Allied day and night air attacks over German territory and to create a strategic fighter-bomber force to continue operations against England, with a view to preventing the



Allied invasion. A third result would have been the development, based on the increased fighter production, of a strong tactical fighter-bomber force to replace the outmoded close-support, dive-bomber, and other aircraft heretofore employed in ground support operations and to take over the tactical role of the Luftwaffe in combined ground-air operations with the Army.

Hitler was no longer able to force himself to make this decsion, however. He insisted that we continue to try to hold all the fronts at the same time within the framework of a strategic offense, and was so deeply convinced of the rightness of his own thinking that he was totally incapable of recognizing the real needs of the military situation.

As a result, nothing was accomplished and the Luftwaffe gradually faded in importance. It is true that the majority of the close-support forces had been provided with single-engine fighters to replace the older dive-bombers and other ground-support aircraft, but this was not nearly enough to cover the actual needs at the front (in 1944, for example, 1012 Ju-87's and 202 Hs-129's had to be provided for close-support operations in addition to the 4,279 FW-190's available). Because of this insufficiency in numbers, the existing fighter aircraft forces were still being used occasionally for extra fighter-bomber duty to provide air support for the Army, which was finding it increasingly more difficult to hold its own at the front. This resulted in the development of two types of fighter-bomber:



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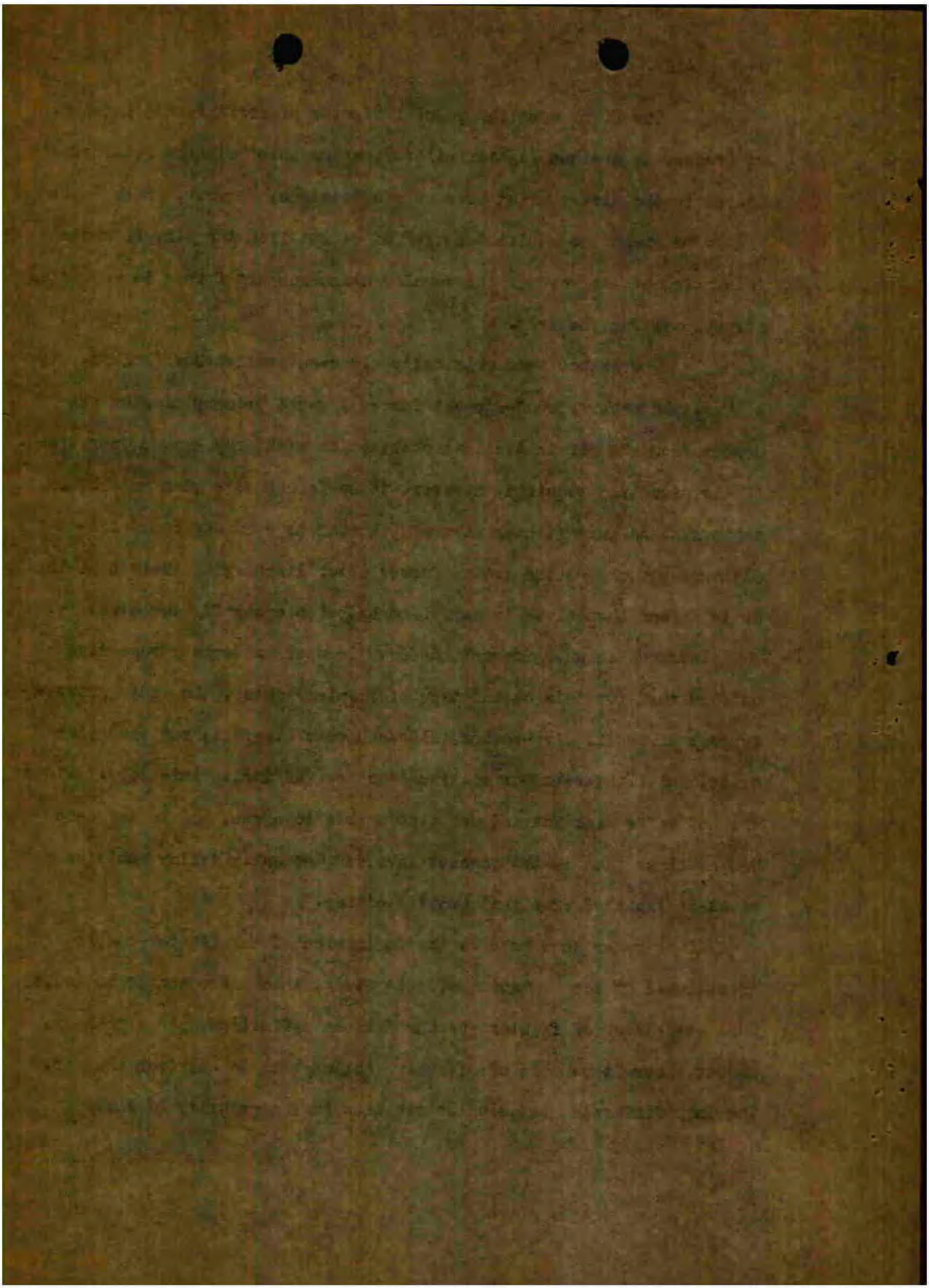
The first were the regular fighter aircraft forces (manned, of course, by trained fighter pilots), whose chief mission remained combat in the air. During emergency situations, however, these forces had to be given the additional task of combat from the air, in order to supplement the work of the regular close-support forces in providing air support for the Army.

The second were originally close-support forces (bomber, dive-bomber, and other ground-support forces), whose primary mission was combat from the air in tactical combination with Army ground operations. If the situation required, however, these forces were also capable of employment as pure fighter aircraft, either to ward off enemy low-altitude attacks on the ground forces after discharging their bomb-loads, or to defend themselves in aerial combat with enemy fighter aircraft.

Inasmuch as no agreement was ever reached in Germany regarding a uniform term for this second type of fighter-bomber, the names ground-support aircraft, dive-bomber, close-support aircraft, antitank aircraft, and fighter-bomber continued to be used indiscriminately. Since the Luftwaffe High Command was also unable to agree, and in any case had no clear idea of the concept involved, no enlightening decision could be expected from that quarter either.

If we refer once more to the definition of the fighter-bomber established at the beginning of this study, then there can be no doubt that both types of fighter -bomber fit the definition, since both are combat aircraft capable of offensive action both in and from the air. The only difference between the two lies in the priority of their



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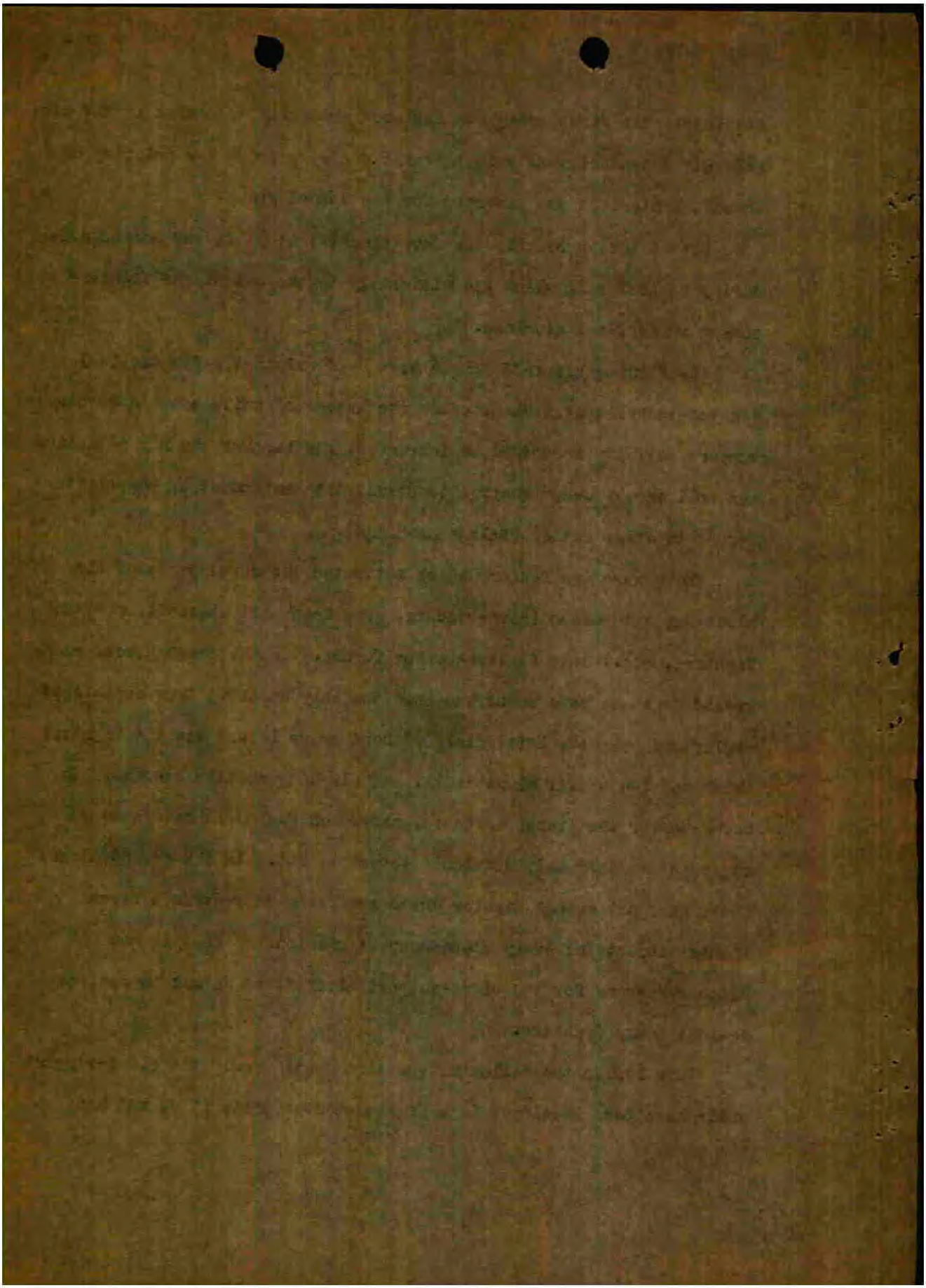
missions: the first group was assigned primarily to combat in the air, and only secondarily to combat from the air, whereas the priority of these two missions was reversed for the second group.

Let us review briefly the developmental steps on the German side during World War II which led ultimately to the use of the fighter-bomber in tactical missions.

The fighter aircraft forces were used originally for tactical fighter-bomber operations because the number of units capable of close-support activity needed to be increased, and because the air situation was well enough under control to permit the assignment of the fighter forces to other duties (Balkan campaign).

There were two factors which motivated the development of the close-support forces (dive-bombers, ground-support aircraft, antitank fighters, etc.) into fighter-bomber forces. In the first place, enemy ground defenses were so strong that the only aircraft type capable of employment over the battlefield without heavy losses was the fighter, which had the speed, flexibility, and climbing ability necessary to out-maneuver the ground defenses, and which was small enough to represent an extremely difficult target to hit. In the second place, there were not enough fighter units available to provide a strong fighter escort for every close-support mission, so that it was often necessary for the close-support aircraft to defend themselves against enemy fighters.

This leaves the following question open: would the close-support units have been developed into fighter-bomber units if we had had

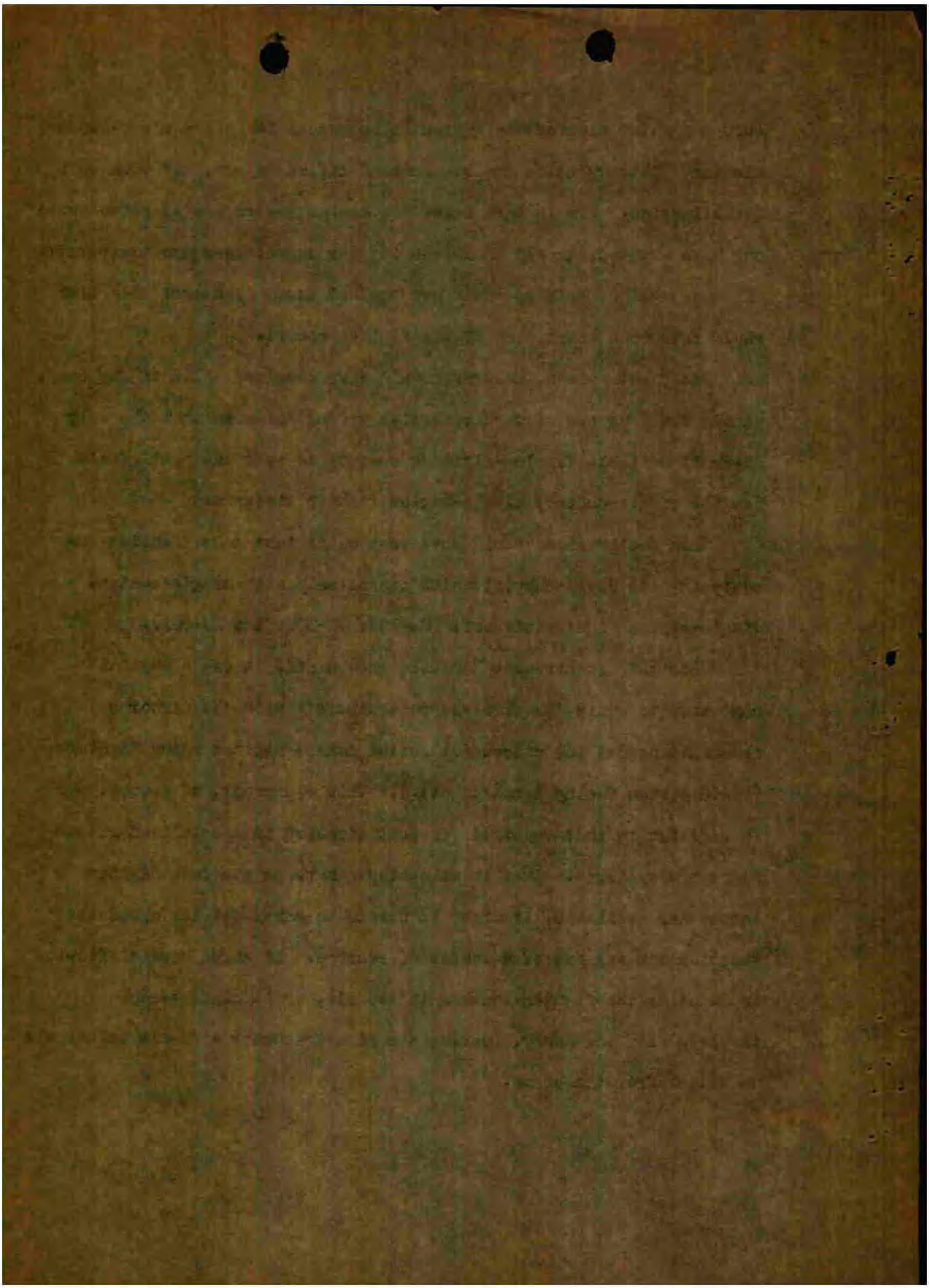


enough fighter aircraft to guarantee an escort for every close-support mission? This question can be answered affirmatively, but with some qualification. For in this case, the second reason listed above would not have existed, namely the necessity for the close-support aircraft to be capable of holding their own against enemy fighters; this task would have been taken over by the fighter escort.

The first reason, however, would have remained valid in any case, namely the presence of such effective ground defenses that the only aircraft suitable for low-altitude operations over the battlefield was the single-seater, single-engine fighter aircraft.

This factor alone would have been sufficient justification for equipping the close-support units exclusively with single-seater, single-engine fighter aircraft (Me-109, FW-190, and Me-262).

Once this requirement had been recognized, it was a logical next step to equip the close-support aircraft with the airborne armaments needed for successful aerial combat against enemy fighters (rigid cannon facing forward, etc.). This equipment, of course, was in addition to that required for participation in specialized ground-support operations. Even in situations where an adequate fighter escort was available, it might be unable to carry out its appointed function for any one of a number of reasons. It might have difficulty in locating the fighter-bombers in the air, or it might become involved with the enemy, leaving the fighter-bomber aircraft vulnerable to attack from the enemy.



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