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A

H I S T O R Y

OF

THE VIII U. S. A. A. F.

F I G H T E R C O M M A N D

BY

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INTELLIGENCE OFFICER
(A-2)

66TH FIGHTER WING

WITH A

F O R E W O R D

BY

MAJOR-GENERAL WILLIAM E. KEPNER,

COMMANDING GENERAL

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FOREWORD TO THE VIII FIGHTER COMMAND HISTORY

The author of this publication has been considerate enough to request that I write a foreword for it. I am very proud to write my thoughts upon a subject, that through the Great War was so dear to my heart for the period that I was personally involved as Commander of the VIII Fighter Command. My own situation is also that of a participant, and I know of the events having occurred. As I read, the writer brings to my mind a vivid picture of events as they have transpired at a most critical time in our national history, and indeed the history of many other nations. It may well be the turning-point of rather a critical situation in the history of the entire world. That an organization which I was privileged to command took so important a part is indeed the greatest privilege a man can have. It is my hope and prayer that I have discharged my responsibilities to those brave lads who carried the hot lead to the Germans, in a manner that justified the supreme courage they showed on every occasion. At the time that I relieved General Hunter, it was the beginning of that critical period when lessons gained from the experience in air fighting was to be put to a supreme test. The writer has pictured clearly the situation of the three active American Fighter Groups at that time, with one additional unit just beginning operations. The VIII Fighter Command was beginning even then to prove itself in the realm of air battles. At the same time, it was being developed, trained and polished in those important months that followed until, I am sure, it became in actual fact the toughest and smoothest operating command in the hardest air-fighting Theater in the world. A true picture of the operations of this command, once history clarifies the situation, will show that this command was but representative of young American manhood at its best, confronted by the most difficult type of fighting against the stiffest opposition in the world.

All worthwhile histories of the past have been facts as reconstructed afterward. It was from such history, and the lessons learned therefrom, that everybody attempted to plan operations based upon ever-changing situations in this war. It may seem to the reader that this publication is too early to contain all the facts and, in this assumption, he may be right. However, it must be realized that for once all the participants, together with the writer, have intimate knowledge of the facts; and I consider it fortunate that Colonel Heinrich has been able to set down those facts as he knew them or as he has been able to get them from reliable sources, namely those individuals who are still participating. Hence, the value of on-the-spot impressions as the writer has recorded, will be significant for future analysts and readers who desire to study the word of those who saw events at first-hand. The writer has undertaken to analyze Doohet's theories, and he may leave the

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reader under the impression that all were familiar with the theories of this great student of air power, yet to the initiated and those who have had experience it must be evident from the history itself that Doohet's theory, while magnificent in its concept, was considerably modified as action transpired and operations were conducted under greatly different circumstances than those envisioned by Doohet. It has been an inspiration to me, and doubtless to the many others engaged in warfare, to read Grey's poetical forecast written as early as 1737:

> "The time will come when thou shalt lift thine eyes
> To long-drawn battles in the skies,
> While aged peasants too amazed for words,
> Stare at the flying fleets of wondrous birds."

The poet was a prophet who correctly visualized modern air warfare.

It must have been a greater inspiration to those young Americans who did the deeds and who correctly recognized the necessity for teamwork everywhere. They did much to win such a great game as freedom and a right to the pursuit of happiness; which permeates the very being of every individual who claims citizenship and protection under the Constitution of the United States. Whatever the incentive for super-human effort that is required to win in modern wars -- be it on the ground or in the air -- one thing to my mind stands out. It is to ceaselessly attack, which the reader may well observe was the motto of that great Marshal of France in World War I, Ferdinand Foch. In the game of air fighting, everything is accomplished by aggressive action and continual hammering that finally achieves air superiority. With air superiority, it is possible to achieve success, and without it in modern warfare it seems to be impossible; particularly when confronted by so ably planned staff work and control as the German Air Force had in the initial stages of this Great War. With the fast-moving speed of air vehicles, the mind of every commander must be flexible indeed, and willing to change without delay in order to upset whatever temporary advantage the enemy may have. The long-range escort, as well as short-range action by fighters, was the result of such flexibility in thinking and planning. It was, no doubt, with this and much more in mind that Field Marshal Montgomery of Britain in his "Hints to Commanders" gave such a constructive vision to the proper place and use of air power. The German, in his self-satisfied thinking, neglected to follow these points though he undoubtedly knew them well. His lack of success may well be attributed in

large measure to this failure.

In the same manner that Field Marshal Montgomery stressed absolute responsibility of commanders in their respective fields of operation, it holds equally true that junior commanders should be held in the same manner. He must have had in mind -- superior teamwork -- with constant planning and thinking by every individual in his respective shpere of action. It was this teamwork of the fighters and bombers that brought about the much-needed protection for the bombers when they were so seriously out-numbered by the German Air Force in the beginning. It was the flexibility of the minds of commanders concerned that permitted the definite type of teamwork later on. This allowed the fighters to spend a large portion of their time bringing about the drastic attrition of the German Air Force to where its impotency was a fact. It was teamwork in training that enabled the VIII Fighter Command at the time of the invasion to be so versatile as to move, even in the same day, from the job of escort to the additional job of direct attack on all sorts of targets; which include dive and horizontal bombing, ground strafing of every conceivable German force in the air or on the ground, or whether it was some ancillary organization of the German Army. It was this that prevented decisive counter-attacks at a time when they would have been most serious to the invasion force. It all accomplished the thorough "chewing-up" of the dwindling German Air Force. It became the doctrine of the VIII Fighter Command to do anything, to attack anything, always and unceasingly, no matter where or what, provided it would act to break down the German Air Force or the German Army in its attack, in its holding of ground, or in its retreat. From all this, with a fixed determination to win the war, evolved whatever strategy the future students of history will say was followed.

Any organization in the world is composed of individuals; it is the quality of those individuals collectively that make for the quality of an organization. America was fortunate in having individuals with which to organize her great Air Force. They embodied the highest intelligence, courage and resourcefullness throughout. While it took some time to weld these individuals into minor organizations and those minor organizations into major ones, until the whole had been completed; nevertheless, when the VIII Fighter Command was ready for its great test, it truly reflected the individuals that made it. As I have read the hundreds of narratives of individual and unit combats, it has often occurred to me what a wonderful

source for future writers to obtain authentic facts without the necessity of elaborate research. After reading these narratives it does not take any great imagination to visualize the man and the way he thought and acted in combat. It should be a source of great pride to fathers and mothers in America to know that their sons acquitted themselves so well. This applies not only to the combat pilots, but equally to every individual in the American Air Force. The work of individuals on the ground amounted to drudgery in the long hours they worked. It is an achievement that in itself is worth recording. It does not matter whether it was the boy who did the cooking, the guard at the gates of these stations, the messenger, clerk, or the operator who sent the messages; they all contributed equally to the very fine result that brought about victory.

It is a matter of common knowledge among students of history that the great General Staff, prior to World War I, was largely responsible for plans that enabled the armed forces to succeed. It has been equally true in the beginning of this war. At the end of this war, as we look back, we must pay tribute to every staff echelon for the equally great work they did in their own particular sphere of responsibilities. There is little in the way of tangible record that shows the loyalty on all occasions by everybody concerned, but it must be realized that these Staffs played a most important part and indeed any mistake that they might make would certainly bring about disaster. The proof is that they made but few, if any, mistakes and those were so insignificant that there were no disasters. Therefore, I hope that historians will devote some time to recording the work of these splendid individuals who contributed so much. In many cases at the beginning, they had little combat experience; nevertheless, they did the job well. It went much easier at the close of hostilities, because practically all Staffs were composed of men who had learned their lessons well through experience, either as successful Staff officers or as combat personnel that had succeeded in battle and knew first-hand the tools with which they were working. They knew how far to press those tools which, in almost every case, was just short of exhaustion. The result is, it has achieved the maximum success.

Strategy is, of necessity, dictated by circumstances. In the beginning, our bombers were a small force; our fighters were limited in range, and were very few in numbers as compared to the German Air Force. This dictated that the bombers had to be closely protected, and the strategy was one of air defense

of a moving force as far as the fighters could go within their range. The Germans had a preponderance of air power and our fighters were always out-numbered. The penalty was loss of time; and continued so until our forces, both bombers and fighters, could be built up. This situation changed about the first of January 1944. During the preceding period, the German Air Force had been able to continually build and it was evident that it had to be destroyed, even at something of a gamble. The fighters thenceforth were employed to hunt out the German Air Force and destroy them, whether they were attacking the bombers, or concentrating at distance preparatory to an attack, or on the ground. This action resulted in a rising crescendo of the supreme offensive at every possible point. We had to make the opportunities for destroying the Hun as he gradually, due to his own severe losses, tended to withdraw and make it more difficult. It became a matter of hunting him out from under every tree and camouflage that he could devise, until we finally accomplished satisfactory attrition of the German Air Force. The resultant of this was that we then had air superiority and, as the writer has so well expressed it, we were able the more clearly to prove Douhet's theory. We even expanded upon it, to the point where we were actually destroying him in every sanctuary that he could find or devise. It was quite natural that he became the inferior force and, at the same time, was faced with the necessity of sustaining some Air Force at all costs. At times, he appeared to refuse a fight. It then became a matter of forcing him to fight, or to destroy him even though he might not be actually fighting. At this period, the long hours of training (that may have appealed to the enthusiastic fighters as being something outside the best possible us of the Fighter Command) paid great dividends. It is to be hoped that the reader of history will bear these facts in mind as he attempts to analyze our thinking on the fields of battle; and that those future commanders of Air Forces will gain some inspiration, if not an actual lesson, in the preparation for any air warfare that may unfortunately ever occur again.

As we who participated look back and attempt to block out the phases of this most recent fighter air warfare, it appears to me that they can appropriately be listed in four different phases, as follows:

(1) That period when, due to our limited numbers, the greatest possible protection had to be given and we continually accompanied the bombers, attempting to form a

close protective shield about them. During this period the German Air Force, in its great superiority in numbers, apparently paid little attention to the escort except where they were directly in contact with them. It is notable that even at this time the proportion of our victories to losses was high, and promised much for the future. It is indeed strange that the German did not recognize this and decide then and there to completely destroy the pitifully small escort that was present on every mission; that he did not was our good fortune, because we were enabled at this time to develop a number of superior leaders, who were later to make the German pay so dearly for his neglect.

(2) The next period was when the German apparently recognized too late what was transpiring and concentrated on the escort. This he did by attempting to intercept the escort as it moved to its relay point. It is remarkable that, of the hundreds of Group missions flown, only about six were successfully intercepted. This speaks well for the initiative of the Group leaders, who moved in a fashion to avoid contact until by so doing they would at the same time be protecting the bombers. Of these six interceptions, only three paid the German any substantial dividends. On the other three occasions when de did sucessfully intercept, it became a fixed policy (and instructions issued from VIII Fighter Command were to the effect) that, if a Group should be intercepted it would immediately take on the German at that point and make him pay dearly. That they succeeded in this is evidenced by the fact that the German discarded this tactic and never again attempted it as a part of his main strategy. These three battles cost him considerable in the way of attrition and, although he intercepted a Group of 48 with as many as 80, the result of the battle was very much to his disadvantage in that 80 German fighters were so involved in air battles that they never were able to contact the bombers. Thus, indirectly, we were furnishing first-class protection to the bombers.

(3) Apparently, the German decided that the solution at this time was to make mass attacks on the bombers.

His general scheme was to mass successive echelons of 30 to 50 fighters and come down in a diving attack, passing through the large bomber stream while, at the same time, he fired the maximum amount of bullet barrage into the bombers. Many times it appeared that he was quite willing to collide. In some unfortunate instances, it has been reported that he did collide, either purposely or accidentally. This tactic was no great surprise because our fighters, in the years preceding the war, had practiced the same maneuver on a smaller scale and therefore knew the weak points of such an attack. It did force us to spread out fighters for the purpose of observing him as he started to concentrate, prior to the attack. In this, we were successful and frequently able to break up the attack before it even organized, and at some distance from where it could harm the bomber. It suited us well, because of the better opportunity for air fighting which we were, by this time, so capable of undertaking. His control of this tactic followed the true German tradition of great detail, consequently it was time-consuming and frequently gave away the whole maneuver in time for us to nullify it. Our tactics in opposition to this was to shoot an air barrage into the mass of German fighters; to unwind it pretty much the same as cow-boys unwind a stampeding herd to break it up. And, most of all, to attempt by every conceivable means to break it up early by a search before they could possibly attack. It did not take long for him to become discouraged in this method, and eventually he desisted entirely. Evidently it was too costly; furthermore, it must have been difficult to maintain morale in his own organizations. In addition, this maneuver required an exceptional amount of training before they were able to attempt it. Undoubtedly with the severe attrition that he suffered throughout, he found himself short of pilots qualified to engage in such tactics.

(4) His final solution was similar to that of any organization that recognizes the situation as being on the verge of defeat. He adopted guerrilla

Foreword to the VIII Fighter Command:

> warfare tactics to his own air operations, splitting up to small units and roaming the skies; hoping to prey upon satisfactorily small units of ours, or better still, to find those straggling bombers that had been damaged by flak and were struggling to return to England. In this, he was only moderately successful, because our tactics was to split up and roam at equal or greater distance in any area where the German might be found. However, it was evident that he had reached the peak of his ingenuity, for he continued this to the end; except for such spasmodic attempts as he was able to make in a modification of his original mass tactics. Even then, he seemed to be confronted with a desire to protect and maintain his Air Force, which was most costly to his efficiency.

The author has covered dive-bombing in a very comprehensive manner, and the reader will do well to pay considerable attention to this part; also, the methods used in low-level attack by fighters. This type of operation, more than anything else, proved the quality of the individuals who participated. As a matter of fact, casualties ran on the order of almost three times what they had been in the air; however, it seemed to have an attraction for the pilots, and they did it on every occasion that opportunity presented itself. As a matter of fact, many opportunities came without the advantage of advance planning; therefore, this method of attack was originally organized and accomplished by small units when they were returning from escort missions. Later, when it showed such success, plans for definite methods of attack were worked up and training conducted in order to be more efficient. Prior to D-Day, it was very valuable as a method to damage the German Air Force on the ground. It later came to be one of the most valuable contributions to the invasion, because it was on the ground that the counter-attacking forces were moving forward to help the harassed German front-lines. By this time, the VIII Fighter Command pilots knew full well how to interrupt this and, from the time of the invasion on, they were given specific areas to beat up; with the mission of destroying everything German that might be a part of the opposing forces. Naturally, the German early learned the necessity of having his forces covered by anti-aircraft fire. It was from this anti-aircraft fire that most of our casualties occurred. Individual records show many surprising

Foreword of the VIII Fighter Command History:

feats of courage. Whether Douhet ever visualized this type of attack or not is a matter of conjecture, but certainly it has become a part of the action in this war that is required to "chew up" both an Air Force and a ground force. It was a happy coincidence at the time of D-Day that this command, in its ground strafing prior to D-Day, had become a splendidly trained organization prepared for the very job that it was called upon time and again to do. The lessons learned by the experiences and training of the VIII Fighter Command was a distinct stepping-stone to the success of all air support, both in the VIII and IX Fighter Commands later on. While in the beginning we had the example of the RAF as an inspiration in air fighting, our ground strafing tactics may well be stated to be something that is distinctly our own, and was developed through the courage and fortitude of these young gentlemen who made up the pilot personnel of the VIII Fighter Command. It is to their very great credit that, in a period of about one year, they destroyed 4280 enemy aircraft; and it is equally to their credit and to the over-all achievement of the Fighter Command that they did so much destruction by their ground strafing. There were many days when three and four missions were run by various units, but never an indication of any complaint whatsoever. This was the distinct and conclusive proof that they really had the finest morale in the world. Many great commanders have stated that, with morale, you can expect victory. I personally am very proud to have commanded such a splendid organization that has demonstrated so well a very high morale that cannot fail to win.

W. E. KEPNER
Major General, USA

P R E F A C E

June 5, 1944 dawned rainy and misty over East Anglia. It was clearly a non-operational day for the groups of the VIII Fighter Command, so Squadron Leader John Harrisson, R.A.F. Liaison Officer of the 66th Fighter Wing, drove my assistant, 1st Lt. Cornelius D. Crowley, and me to the Headquarters of the United States Strategic Air Forces for an interview which proved to be the cause for this book.

The roads to London were packed with army convoys moving southwards. Airfields enroute were blocked off to civilian traffic and guarded by Military Police. Civilian railroad schedules had been greatly curtailed for military trains and all army leaves and passes had been cancelled. One felt in one's bones that "D-Day" was in the immediate offing. There was little to evidence this fact in the office of the Historian of USSTAF, Dr. Bruce Hopper of Harvard University, who I had arranged to see on that historic morning. We had lunch with Brigadier General Edward P. Curtis, Chief of Staff to Lieutenant General Carl H. Spaatz, Commanding the U.S. Strategical Air Force. Curtis was formerly one of the crack pilots of the 95th Squadron, the 1st Pursuit Group, A.E.F. There was nothing in his demeanor to indicate that June 5 was anything but just another day. However, he refused to allow me to attend General Spaatz's daily "briefing", because I was not completely "bigoted" * as to the

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hour set for the invasion. Curtis said he could have gotten me in "at any other time". That statement appeared to me significant coming as it did from a comrade of the old 95th Squadron and a friend of many years!

After lunch Dr. Hopper showed me his tremendous organization for collecting the history and records of the American Air Forces in the European Theater of Operations. To our party it appeared like the Archives Building in Washington, containing, as it did, enormous stocks of records of every unit of the United States Army Air Forces in Europe. It was a war time Ivory Tower, however.

Dr. Hopper, who I had known as a pilot of the 96th Bombardment Squadron of the A.E.F., showed me the minutes of a conference he had called of VIII Air Force Historical Officers at Camp Griffis, on the 22nd of January 1944. I was struck by a paragraph in Dr. Hopper's report which reads as follows:

> "It was reported to me that at Teheran, Mr. Churchill, while casting about for a phrase of sufficient magnitude to suit the occasion, said: 'This is a great historic moment: too bad we haven't got our historians here with us to capture this moment for posterity.' or something to that effect. We are attempting to capture

(* A "bigot" was one of the limited number of officers who had been informed of the invasion plans insofar as they concerned his own unit)

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history on the wing, and to a certain extent, too, history by ear, while it is in motion, and to do it under the flag of sound scholarship. That has never been done before. Certainly a new type of history is dictated by the speed of air power. It is not certain that we shall succeed, but whether we succeed or fail we shall at least have amassed (sic) fundamental documents".

This statement expressed my own views, for I explained to him that I felt, as Intelligence Officer of the 66th Fighter Wing of the VIII Fighter Command, that I was in a grandstand position to watch the course and would soon view the finish of the most gigantic and savage air war in history. Suddenly the strategic bombing had been switched from industrial targets and aircraft-factories to that part of the German communications system extending from the Cherbourg Peninsula to the Dutch Islands and the areas away back to the Rhine. The day bombing portion of the "softening-up process", in my opinion, had been made possible only by the long range excort, provided for the American heavies by the forty-five (45) squadrons of the VIII Fighter Command. If now the pending invasion should prove to be a success, it should, in a very large measure, be credited to the work done by our fighter pilots, who saw their American "big friends" through to their targets and brought them safely

back to their East Anglian Air Bases, despite the vicious attacks of the Luftwaffe. With this opinion, Dr. Hopper found himself in full agreement and enthusiastic for a record of the story. I explained to the Professor that for months past we had been briefing the pilots in the groups of our Wing on the course and progress of the war on the many scattered fronts around the world. Naturally their major interest had been in the air offensive against Germany and the very evident decline in the strength of the Luftwaffe. These "briefings" had forced us for months to study the record of their work. The perspective of these operations, provided at the isolated airfields occupied by our groups, was too limited to catch the overall picture of Fighter Command operations, and I found that the task of recording it was not being done elsewhere.

Dr. Hopper then introduced me to Wing Commander Nigel Tangye, R.A.F. Liaison Officer at USSTAF, an operational Spitfire pilot who had watched the Luftwaffe's try-out when in Spain in 1936 as a British Technical Observer. Tangye had just published an article in the "Spectator" of May 19, 1944 which ran so parallel to our own thinking and so greatly influenced the author to pursue the subject, that it deserves to be reproduced in full. It is found in Appendix "A". So, with their enthusiastic encouragement, I determined, with the help of my colleagues, to attempt to write the story of the long range Fighter Escorts of the VIII

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Fighter Command.

On the way back to our Headquarters, we saw at Duxford the 78th Fighter Group and at Fowlmere the 339th Fighter Group already busy repainting their planes with the new secret battle colors which were to appear on the morrow on Allied aircraft covering the convoys and beachheads. The breaking of the seals on the envelopes containing the new patterns and colors was the last act of the elaborate preparations to maintain secrecy at all the fighter fields of the VIII Fighter Command before the Invasion was finally launched. Before darkness fell the convoys were loading and with the first streak of dawn our "Lightnings" (P-38's) were providing close cover to the 6,000 vessels, and the "Thunderbolts" (P-47's) and "Mustangs" (P-51's) were maintaining a tight fighter screen deep into France behind the beachhead from Le Havre to Cherbourg; a screen which the Luftwaffe was unable to penetrate.

I had heard of the tremendous work done on belly tanks by our technicians and in pursuit of the record on the following week I went to Bovingdon to the Technical Research Section of the VIII Air Force to interview Colonel Cass Hough and to secure from him the facts about the belly-tanks which made long range escort one of the marvels of the present war. This achievement is very largely to his credit and his amazing

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story is included in chapter VIII on technical developments. Permission to proceed had still to be obtained from the commander of the 66th Fighter Wing, who detailed personnel to assist in a task which could hardly be classed as strictly operational. Frm Major General William E. Kepner, of the VIII Fighter Command, was secured his hearty indorsement and his promise to provide every facility and assistance in the task, and Brigadier General Francis H. Griswold, then Chief of Staff and now successor to General Kepner, gave me a letter (see Appendix "B") which proved to be the "Open Sesame" to a vast store of additional factual matter and accurate statistics upon which to draw conclusions. I was soon to discover that the Statistical Control officers of the American Army Air Forces have one of the most astonishing fact-finding and reporting systems of any army in the world. The scale of the air war is so vast and the numbers involved so huge that figures assume a reliability undreamed of before, upon which to base conclusions. All these factors combined to provide an unexcelled opportunity for the study of the greatest air war in history, and to "catch that history on the wing." General Curtis and I had realized fully the difficulties when Col Harold Buckley wrote the history of our 94th Squadron, 10 years after the Armistice of 1918!

The ensuing weeks of work have proved a revelation, not only to the author, and to all who have seen the diagrammatic charts

which are to be found in the body of this work, but even to the intelligence officers who knew the facts, but had not seen them presented graphically. It was a matter of particular good fortune that Technical Sergeant John V. Abbate, head of the enlisted personnel of my section, was, prior to the war, a comercial artist of great ability; he had used his civilian skills to draft the maps and graphs which I planned from the statistical tables, to illustrate these facts in the visual form presented in the body of this work. Weeks of dogged research and study of the statistics based on an analysis of every Fighter Command Field Order which involved long range excort, had been conducted prior to the above interviews. The analysis was carried to completion and tabulated by 1st Lt. Cornelius D. Crowley assisted by both officers and men of my section. As the study progressed, many striking facts emerged which gave full substance to our belief that the VIII Air Force had been largely instrumental in bringing about the fall of the Luftwaffe, and so, had prepared the way for the successful invasion of France in the succeeding months, and that the VIII Fighter Command's protective escorts had been the key to that success.

To the Fighter and Bomber pilots of the 8th Air Force, the crew men on the lines, and all the ground officers involved in the greatest air war in history, the Allied nations owe a debt

of gratitude. Having these facts in hand makes me feel the obligation to record for the American people those deeds and accomplishments.

The air offensive on the Western Front is not yet finished; in early July the VIII Air Force had to resume its bombardments deep into Germany after the bridgehead had been firmly established. Even as I write these words, over 2100 Liberators and Fortresses, Bostons and Mitchells are thundering overhead to pound the roads ahead of the American forces in the Carentan Peninsula. But as Dr. Hopper has written, we must "attempt to capture history on the wing". It is indeed "a new type of history that is dictated by the speed of air power". One lacks, at this time, the necessary perspective for a history of the completed operations and the author is handicapped by the official responsibilities connected with the daily combat intelligence operations of the 15 fighter squadrons of this Wing. We cannot forget, with daily missions and "Doodle Bugs", that there is still a war going on. On the other hand, one cannot afford to make the mistakes of 1918 and lose the facts, while awaiting the passage of enough time to write a complete history. Several of the greatest fighter pilots of this command have gone down in battle, in the month that has elapsed since the conversations with Hopper and Tangye took place at "Widewing". The author is therefore under constraint to proceed with the work at top speed;

I am sure the reader will be indulgent of the short-comings of this effort in view of the "exigencies of the military situation". Two days ago the Wehrmacht attempted to assassinate Hitler. Yesterday two Luftwaffe pilots landed at Manston and surrendered their undamaged planes. Today the Russians are fighting in Lublin and Lwow, and far to the West of Brest Litovsk, with Warsaw only fifty miles away. Surely this seems to be the beginning of the end.

July 24, 1944
Sawston, Cambridgeshire,
East Anglia.

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ACKNOWLEDGEMENTS

This record of the VIII Fighter Command bears all the earmarks of a task completed under the utmost difficulty. It was begun in the odd moments of time at the Intelligence Section of the 66th Fighter Wing Headquarters at Sawston, Cambridgeshire. The work on the charts was an evolution from the "briefing maps" and charts which were used by my section in the lectures to the pilots and enlisted men of the Fighter Groups of our own Wing and some adjacent groups. It began as a paper on our long range escort work, and upon General Kepner's request was expanded to include first D-Day, then the month following D-Day and finally August as well. It seemed by that time that Fighter Command was about to be asorbed, and each of the three wings with its groups assigned to one of the three bomb divisions. General Griswold felt that, since history is never finished, it would be well to work to a terminal date and so September 1st, 1944, was selected. I was relieved from my regular duties on July 23rd to concentrate on the writing up of the material I had been collecting for many weeks. The job was completed on September 10th.

No one could be more conscious than the author of the shortcomings of such a work, lacking perspective, hastily assembled and pressed to conclusion by the fierce tempo of an air war which was going on all around and above us. At times the writing was done with literally hundreds of B-17's, B-24's, P-47's, P-51's and A-20's taking off or coming in just over the roofs and treetops of Sawston village. Three bombers crashed and exploded within a mile of the spot which my associates called "The Ivory Tower". But to wait, would lose much of that which we wished to "capture on the wing", and that is perhaps the one merit of this study--it is "hot" from the records of outfits still engaged in battle and it is authentic. For its shortcomings I beg the readers indulgence.

To General Kepner for his thoughtful Foreword, and for his most careful reading and criticisms of the text I am deeply indebted. Likewise to General Griswold, his successor who also scrutinized minutely and revised important parts of the copy. Lt. Colonel William H. Harkness, Assistant Chief-of-Staff (Intelligence) at Ajax, who has been with the VIII during most of the period covered by this narrative, has placed me under a great debt of gratitude for his many very useful suggestions and alter--ations. Captain Charles Bear and 1st Lieut. Cornelius Crowley of my own A-2 section, have spent many long hours of patient re-

search in studying the statistics on which my conclusions are based and then carefully scrutinized the text, as did Major John Gerli of the A-3 Section. I have acknowledged in the text, in their appropriate places, the direct contributions to the narrative contributed by my friends, Colonel Cass Hough, Chief Warrant Officer Richard A. Bates, Squadron Leader John L. Harrisson, Lieut. John Chaplin of the Royal Navy, Captain Carl M. Bremer, Wing Commander Nigel Tangye and Major Harry Bjorkman; many others too numerous to mention have similarly contributed portions. To all of them I am very greatly indebted, and express my warmest thanks.

To the many officers in Technical Sections, Statistical control officers at "Ajax", "Pinetree" and "Widewing", to Base Photo officers and group historians who have so patiently dealt with my many requests for data, I can pay the tribute of warm appreciation for work well and conscientiously done.

Finally to the chief of the enlisted men of my section, Technical Sergeant John Abbate, who has so superbly executed with skill unsurpassed by any draughtsman in the ETO, the graphs which I plotted, I owe very special thanks for it is his technique which made them the remarkable record that they are. To my three secretaries, Corporal Willie Honnol, Pvt. Francis X. Grant of the 66th Wing, and Miss Marjorie Gell at Ajax, who deciphered my execrable handwriting, I wish to say that I couldn't have gotten along without them.

And now as I leave the theatre to return for release from the Service, I must say that to have been a member of the VIII Fighter Command was a privilege which we can all look upon and say with pride, "I was a part of it".

CHAPTER I

BOGIES*

On the Carolina Capes, between Cape Hatteras and the Dismal Swamp of Virginia, there stand, within sight of each other, a few thousand yards apart, two structures which mark the span of life of modern aviation. The one to the south near Kitty Hawk, North Carolina, is the lovely memorial to the Wright Brothers, built to commemorate their first flight at that spot in a heavier-than-air machine some forty years ago. The northern structure is a radio location station, a tall tower of structural steel with an arm oscillating about a 270° arc, which constantly sweeps the sky to detect the presence of aircraft at long range. This vivid contrast represents the tremendous advancement in aeronautical science which have taken place since man first began to fly. The inspecting party, which visited the two monuments early in April of 1943, was soon to leave its native shores to become the nucleus of a Fighter Wing, which later was to engage in the aerial battle of Germany, one phase of which is the subject of this book. They would witness a development which began at Kitty Hawk and reached its peak of achievement in the skies above Berlin; it had all happened in four decades!

(* 1. Bogies is the Allied code word used by fighters, and their control squadrons in operations rooms, to indicate the presence of unidentified aircraft in their neighborhood. The message is conveyed by radio telephony.)

From those early experiments of the Wright Brothers, which demonstrated the feasibility of flight by man, the science of aviation advanced by leaps and bounds until, in 1914, great impetus was given to it by the necessities of war and the new possibilities of utilizing this weapon of air power in the most devastating form of warfare known to man. It was not until 1921 that General Giulio Douhet, of the Italian Army, first published his theories regarding aerial warfare in his book, "Command of the Air". Douhet had worked out the principles for the employment of an Independent Air Force, and advanced theories as early as 1909, which have made his later work the text-book for strategical air warfare, comparable to Clauzewitz's and Admiral Mahan's treaties on land and naval warfare. The remarkable predictions which he made twenty years in advance of actual large scale aerial warfare, have had many substantiations in the air combats of World War II. His early predictions about the proper employment of air power for the destruction of an enemy's power of resistance have created much discussion all over the world. Succeeding writers have amplified his theories, but few have been able to contradict them by factual experience. In the present study of long range fighter escort, the conflict is on a scale sufficiently large and the records fortunately are of sufficient accuracy to draw some valuable conclusions as to Douhet's strategical theories. Douhet, in his study of the conduct of air war, laid down the cardinal principles which follow;

[redacted]

he began with this definition:

"Command of the air means to be in a position to wield offensive power so great that it defies the imagination. It means to be able to cut the enemy's army and navy off from their bases of operation and nullify their chances of winning the war. It means to be in a position to prevent the enemy from flying while retaining the ability to fly one's self, by striking at him in the air, at his bases of operation, supply bases, and at his production centers. In short, wherever these means of flying are to be found. The air arm depends upon attack for its own best defense. When it resorts to defense it will eventually face defeat. Thus, to achieve command of the air means victory; to be beaten in the air means defeat and acceptance of whatever terms the enemy may be pleased to impose. The objective must be destroyed completely, in one attack, making further attack on the same target unnecessary. The Independent Air Force must inflict the greatest damage in the shortest possible time".

The following principles then, comprise Douhet's theories on the strategy of air wars of the future as originally written in 1921 and subsequently elaborated in 1927.

1. "As long as the aerial forces remain mere auxiliaries of

[redacted]

the army and navy, there will be no real aerial warfare in case of conflict.

2. "It will be necessary to increase the carrying capacity and radius of action of airplanes. The plane which is the more heavily armed and armored has the advantage.

3. "It will be necessary to increase their speed and get better performance on less fuel, for advantage lies with the plane which is faster and more manoeuverable.

4. "The command of the air will begin when the enemy's planes are reduced to a negligible number, incapable of producing any aerial action of real importance in the war as a whole.

5. "An Independent Air Force which achieves command of the air and does not keep up enough strength, and uses it to crush the resistance of the enemy, will nevertheless be able to carry out actions very effective in the achievement of victory; on the other hand, if such a force achieves command of the air and keeps up enough strength to crush the resistance of the enemy, it will be able to achieve victory regardless of what happens on the surface (i.e. to ground or naval forces* [2]). An Independent Air Force would consist of three specialties; daylight bombing which requires low speed and a wide radius of action;

(*2. Authors note)

night bombing, which requires low speed and a wide radius of action; and pursuit planes which require greater speed and a short radius of action.

6. "Therefore, there must be both combat planes and bomber planes in this Independent Air Force, combining combat power superior to the enemy's and a power of bombardment of maximum capacity for the offensive.

7. "The characteristics of combat planes are eminently offensive and completely unsuited for the defensive. Pursuit planes are primarily defensive and preclude aggressive operations inside enemy territory.

8. "Once an Independent Air Force has command of the air, it should keep up violent uninterrupted action against enemy surface objectives to such an extent that it may crush the moral resistance of the enemy, and break up the whole enemy structure, no matter what his army and navy may do.

9. "If a stronger Independent Air Force is bombing and poisoning our vital centers, we should not let out our weaker Air Force to defeat and destruction. Instead, we should use it to bomb and poison enemy vital centers, the more violently and intensely, the weaker we are.

10. "To bend the enemy's will, one must put him in intolerable circumstances; the best way to do that is to attack

directly the population of his cities and great industrial centers. It is as sure as fate that as long as such a thorough method of attack exists, it will be used. Therefore, all contenders must use all means, without hesitation, whether or not they are forbidden by treaties, which after all are nothing but scraps of paper, compared to the tragedy which would follow (defeat*)[3]. It is essential to have an Independent Air Force able to fight an aerial battle with the enemy, and to have this it is necessary to make use of all the available resources of the nation. It is therefore a fundamental principle of aerial warfare to resign one's self to enduring an enemy aerial offensive, in order to inflict the greatest possible losses on the enemy."

Douhet's theories were formulated on the basis of his observations and experiences in World War I. Except for the tiny Independent Air Force of the RAF, which operated as a strategic heavy bombing force on the Western Front, near Nancy, there was no semblance of a real strategical air force in that conflict, such as Douhet advocated. The air forces on both sides, as Douhet had pointed out, were simply units of the army and, on a

(*3. The language of the original book "Command of the Air" by Julio Douhet, as translated from the Italian by Dinc Ferrari, is used. The author has selected the above principles from a discussion which covers 316 pages and is his own analysis of Douhet's principles. It does not represent in any way the opinion of the VIII Fighter Command. - Author.)

much smaller scale, the navy, with no strategic purpose of their own.

The German Air Force, under the terms of the Versailles Treaty, was compelled to disarm, and to surrender 15,714 aircraft and 27,757 motors. Its pilots were scattered to neutral and former enemy countries, and Germany was forbidden to take to the air. Not until May, 1926, by the Paris Air Agreement was Germany released from the limitations on the size and numbers of even the civilian aircraft, which she could build. The ban on military aircraft remained until Hitler threw off the "shackles of Versailles" in 1936. There is every evidence to prove that secret construction was begun, however, soon after the termination of World War I, though at first she concentrated on commercial and civilian flying. Long before Hitler came to power, Germany increased her civil aviation resources by every possible means. After 1926, German commercial air lines were amalgamated into the heavily subsidised Deutsche Lufthansa and a considerable pool of pilots were trained in the D.V.S. Schools. *4.

This organization and its trained personnel formed the foundation upon which, when Hitler came to power as Chancellor in January, 1933, the Nazis undertook to rebuild an Air Force. Hitler appointed Goering as Air Minister and put him in charge

(*4. - Deutsche Luftverkehrschule (flying schools).)

of all aviation matters. Goering's first act was to centralize all the independent flying clubs under the Deutsche Luftsportverband (Aviation Sports Union), the members of which wore uniforms; full-time training was undertaken on a large scale with instruction in formation flying and exercises, which could hardly be considered necessary in a civilian organization. The Air Sports Union was the nucleus of the future Luftwaffe. By September, 1935, the German Air Force was able to conduct a number of air exercises, in the largest of which fully 24 squadrons took part. Thus the 1936 manoeuvres gave the army an opportunity to test out the value of the air arm and the new Wehrmacht (defensive power), under the control of the regular army officers, realizing the value of the air weapon as an adjunct of their new and mobile army, utilized it for transport, reconnaissance, dive-bombing, and the disruption of enemy communications in advance of the ground troops. This faulty conception was the fatal error of the Germans, for the Luftwaffe became nothing but an adjunct of the army and prevented the possibility of building an Independent Air Force, such as Douhet had advocated, though it was an instrument perfectly suited to execute the air policy of the German military authorities. There is no evidence that the German Army General Staff has appreciated or accepted Douhet's theories, whatever may have been the case with the German Air Force General

Staff. Hitler needed the Wehrmacht to carry out his Welt Politik (world politics) and the Wehrmacht, before giving him its support, insisted upon the acceptance of its own terms of incorporating the Luftwaffe (Air weapon) into the regular army organization.

The Spanish Civil War of 1936 provided the German Air Force with the opportunity to test out its new air weapons and the "Condor Legion", under Sperrle and later led by Richthofen, cousin of the famous German aces of World War I, *5 wore German uniforms and used air force equipment. The "Legion" was thus able to get actual battle practice in the "curtain raiser" for World War II, though nominally it was an organization of "volunteers". The tragedy of Guernica, the holy city of the Basque Catholics, provided a fine example of what a modern bombing force could do to defenseless civilians! At the time of the Austrian Anschluss (annexation) in February, 1938, the Luftwaffe, with 400 aircraft, was able to transport 2,000 fully equipped troops, by air, to Vienna and gave a perfect demonstration of its value as a weapon of political intimidation. In May of 1938, the Nazis extended their political pressure to Czechoslovakia, and their summer army manoeuvers on the Czechoslovakian frontier brought Europe to the brink of war. Czechoslovakia mobilized her entire armed forces. Russia was prepared to back her treaty obligations to the Czechs, on the condition that France and Britain would first come to the

(*5 - Lothar and Baron Manfred von Richthofen).

aid of their smaller ally. A British newspaper correspondent, Mr. M. Stevens, in Bucharest, was responsible for the statement to the author that 22 airfields in Czechoslovakia were ready, at that time, to accommodate the Allied Air Forces upon whose aid Czechoslovakia had to count to resist the Nazi threats. He stated that Russian planes had actually flown onto and landed at these fields. Germany backed down in May and not until September, 1938, as a result of the Munich conference, was Czechoslovakia militarily "liquidated" by the Nazis. The occupation of Sudetenland required 500 Nazi airplanes. On March 15, 1939, with the surrender of President Hacha, Czechoslovakia became incorporated into the Third Reich, and the Allies lost the 1500 planes of the Czech Air Force. There is some evidence to substantiate the theory that Britain's political weakness at this time, as evidenced by Chamberlin's acquiescence to Hitler's successive demands, was largely motivated by Britain's own air weakness, in comparison to the Luftwaffe, for radio location had not then been perfected, and upon this instrument the R.A.F. Fighter Command counted to defeat any possible German bomber onslaught upon its great industrial centers.

With the signing of the Soviet-Nazi Non-Aggression Pact in late August, 1939, the stage was set for World War II. Hitler could now be sure that he would not have to fight a war on two fronts; Russia was able to count on a little more time to get

ready for the German attack, which their mutually antagonistic political and social philosophies had made inevitable. Thus Stalin bought nearly two years of much needed time to prepare for the life and death struggle with Nazidom. He utilized this period to safe-guard his frontiers, not against the so-called "pluto-democracies", which could not possibly attack Russia, but against the Nazis whose Weltanschauung **6 was backed by the mightiest air power in the world. The short three months Soviet campaign against Finland in 1940, the absorption of the Baltic Republics, and the seizure of Bessarabia, can only be interpreted as good Russian strategy to provide a buffer area for their General Staff's scheme of defense in depth, which eventually halted the German army, at the point of its maximum penetration on the banks of the Volga. During the Finnish Campaign there was no evidence of the use of the Soviet Air Force in any way except as an adjunct of the army. The Russians did not then have a strategical air force; all its short range bombardments were tactical rather than strategical.

POLISH CAMPAIGN.

The German onslaught against Poland, which was concluded in about three weeks, fully demonstrated the function of the Luftwaffe in its designated role as a useful weapon of the Wehrmacht. Reconnaissance planes took the place of cavalry, civilian passen-

(**6 - Outlook on the world).

ger planes provided rapid troop transport, and the Stuka dive-bombers performed the function of long range artillery. The German Air Force as a whole failed to follow Douhet's precepts of demoralizing the enemy; its functional operation was not independent; it was clearly dictated by the necessities for air support of the land forces. However, the bombing of Warsaw was the first good demonstration, as Douhet had predicted, of the crushing effect of concentrated aerial bombardment on a great center of population. But the Germans bombed Warsaw when it was already invested by the German army. The Germans did not use, nor did they possess at that time, any heavy bombers for deep strategical bombing. The obsolete and weak Polish Air Force, with only 490 first line aircraft, could provide no real opposition for the mighty adversary, nor did Poland's allies on the Western Front utilize their more modern air forces to divert the G.A.F. from the Polish Front; no bombardment of German cities, industries or transportation centers took place. The war on the Western Front was very definitely a "Sitzkreig", and it was not in accordance with the wishes of Marshal of the Royal Air Force, Lord Trenchard; who on March 19,1940, in the House of Lords, said:

> "They have our ships to aim at, and all the neutrals and non-combatants at sea, and we have nothing at which we can hit back.....I have no wish to say anything that

would be of use to the enemy, but I do beg of your Lordships to remember that the Air Force is an offensive and not a defensive weapon."

A little later, on May 8, he said:

"We practically proclaim that Germany need not keep in her homeland home-defences, guns, fighters, searchlights, civil guards, or take air raid precautions. Those forces are immense, and she is now free to move them to overpower her weaker neighbours and to expel us when we rush -- if "rush" is the right word -- to their assistance. If it is wrong for me to say that I should like to see military objectives in Germany hit by air, it is a thousand times more wrong for the Government to help the Germans by saying that we shall never do it... ..No Englishman wants to kill civilians, but the Government are deluding themselves if they think that the civilian population of this country are going to shrink from facing, as their relations and comrades in the field have to face, whatever risk may be necessary to bring this war to a successful conclusion...Make no mistake about it: when the time comes, Germany will hit us by air, open towns and military objectives alike, mercilessly and thoroughly. Why should we await her convenience before striking at military targets in Germany?"

NORWEGIAN CAMPAIGN.

The early spring of 1940 gave Germany the opportunity to test out her air force against the Norwegians, who had virtually no air force. The G.A.F. achieved a marvel of quick transport by fixing floats to their land planes, and with 120 coastal aircraft, utilized the fjords of Norway as landing fields in lieu of inadequate or non-existant air fields. The Allied air opposition, hastily and inadequately sent to Norway, lacked all facilities, and was quickly overwhelmed by the German strength in the air. The great lesson for the Nazis, arising out of the Norwegian campaign, was the extreme mobility and adaptability of the G.A.F., but it provided no new lessons from a strategical point of view. The Luftwaffe carried much of the German army and equipment to Norway and did it quickly, but it was still merely an agency of the army. It was in Norway that the Germans first bombed undefended towns before any bombing of civilian areas took place in Western Europe. Carl J. Hambro and Mrs. Florence Harriman were the authorities who wrote, respectively: "Kristiansund, an open and absolutely defenceless town where there have never been any military establishments whatever, was bombed for three days; only one house remained...15,000 inhabitants were left without shelter. In the same way Molde was bombed, and Reknes, the great sanatorium for tuberculosis, was bombed and set

on fire." "Where Elverus had been but a few hours before, only the church and the Red Cross hospital were left standing... Hardly a house but had been razed to within four feet of the ground."

The strategic lessons for the Allies, arising from this and succeeding campaigns, are pointed out by Major Alexander Seversky, in his book, "Victory Through Air Power".[7] They are, unlike Douhet's theories, based on his study of the facts of the first two years of this war, and have largely influenced the thinking of the Allied nations, particularly that of the American public, through the film adaptation of the book. It is appropriate at this point to list the Seversky doctrine without further comment:

1. No land or sea operations are possible without first assuring control of the air above.
2. Navies have lost their function of strategic offensive.
3. The blockade of an enemy nation has become a function of air power.
4. Only air power can defeat air power.
5. Land-based aviation is always superior to ship-borne aviation.
6. The striking radius of air power must be equal to the maximum dimensions of the theatre of operations.

(7 - Major Alexander Seversky, "Victory Through Air Power" - Hutchinson and Company, Ltd. (Publishers), London, New York Melbourne. Page 80 - 95.

[redacted]

7. In aerial warfare the factor of quality is relatively more decisive than the factor of quantity.
8. Aircraft types must be specialized to fit, not only the general strategy, but the tactical problems of a specific campaign.
9. Destruction of enemy morale from the air can be accomplished only by precision bombing.
10. The principle of unity of command, long recognized on land and on sea, applies with no less force to the air.
11. Air power must have its own transport.

In the spring of 1940, the Germans turned their attention to the Lowlands. Rotterdam was to provide again a good demonstration, like Warsaw and Guernica, of what the Luftwaffe could do, without opposition, by way of destruction in a large center of population. (Thirty thousand civilians were killed). The scale of the G.A.F. effort is indicated by the estimate that the average number of daily sorties for all types of planes was less than 1,000 for a period of about 5 weeks. Again, as in Poland, Ju 87 Units preceded tank operations and there were occasional night bombing raids by her bomber force which numbered 1280 for this campaign. Compared with the two preceding campaigns, the Luftwaffe was able to provide the maximum of close support to the army by employing the bulk of its 3,000 aircraft on a narrow front of less than 200 miles. With the capitulation of

of France, whose air force had wasted the previous 9 months in idleness, Hitler turned on England. Up to June, 1940, the Luftwaffe had revealed no strategical air plans, if indeed they had any, and England was to provide it with its first real opposition. The stage was set for the greatest air clash in all history.

BATTLE OF BRITAIN.

How great a part the Battle of Britain played in the final outcome of the war must be left to a much longer perspective than may be obtained at a point in time only 4 years after it was fought and before the war has actually ended. The Luftwaffe had entered the year 1939 with a force of 1,000 long range bombers and some 1,200 other type of operational aircraft. On September 1, 1939, when it launched the offensive against Poland, the operational types numbered 3,500, with a stored reserve of 4,000 planes. It maintained the numbers of its various operational types of aircraft until August 8, 1940, and built up only its fighter force to a maximum of 1,360, which was 300 greater than the fighter strength for September 1, 1939.

This was accomplished, however, by drawing from its stored reserves about 1,200 aircraft to replace the losses it had sustained in the Polish, Norwegian, and Lowlands campaigns. The German objective was to obtain a quick decision over Britain in the air, invade, and end the war by the autumn or early winter months of 1940-1941. This they hoped would be executed by the

seizure and exploitation of the full mastery of the air. Goering was convinced that if he attacked London, the main R.A.F. fighter force would be rushed to the defense of the capital and could be quickly disposed of, probably in four or five days. The destruction of London he expected would easily follow, and then the downfall of the Government. The objective was in accord with Douhet's ideas, the means and the method were not.

After the fall of France a commission of four men hurriedly were sent to Great Britain from the United States, to determine whether or not to rush help to Great Britain. With the fall of France there was lost to the Germans whatever American equipment France had received from us. The great question was "will the same thing happen to Britain?" Fortunately included in the group was Lt. General Carl A. Spaatz, destined soon to head up the United States Strategical Air Forces which reached the peak of their power four years later in the summer of 1944. It was General Spaatz's firm conviction that the Germans would not be able to invade Britain, that the R.A.F. pilots were superior to the Germans, and that we should rush every possible aid to Britain. In the words of Ambassador John G. Winant, "It was a wise prophecy!" He gave the chief credit for this momentous decision to General Spaatz at a dinner in London on August 23, 1944, the happy day when Paris was once again free.

The Battle of Britain was fought in four phases. The first

phase extended from the 8th to the 18th August, 1940, and comprised 26 attacks, which were directed chiefly against shipping convoys and the southern channel ports. It was carried out by forces of bombers, mostly Junkers 87's (JU 87's), with some Heinkel 111's (HE 111's) Dornier 17's (DO 17's), and Junkers 88's (JU 88's). Their fighter escort was almost entirely single-engine Messerschmitt fighters, which were flown in large unwieldly formations at elevations five to ten thousand feet above the bombers. Apparently the unexpected and stiff resistance of the R.A.F. Fighter Command forced Goering to depart from the original plan and turn his attention to the operational airdromes from which the Spitfires and Hurricanes were taking such a toll of his bomber formations. On August 15, he lost 180 aircraft, one of the "great days" and for the 10-day pericd, a total of 697, an attrition rate which was much too heavy to endure. It is interesting to note the scale of these efforts, where R.A.F. Fighter Command averaged 156 sorties per day in 1940, as compared with the first week of the invasion June, 1944, when the Allied Air Forces mounted 8,000 sorties per day over the beachhead and in France.

The second phase actually extended from the 23rd day of August to the 5th of September after Goering was forced to give his pilots a 5-day rest. This phase was marked by increased escort for a smaller force of bombers; it was directed against the inland fighter airdromes. Thirty-five attacks were made, and 562 German

aircraft were destroyed for sure, for a loss of 219 R.A.F. machines, from which 132 pilots parachuted to safety. R.A.F. tactics were to meet the Bosche further out, attack with vigor and allow the few that penetrated this front screen to be dealt with by the rear echelons. Soon after this phase began, Hitler, by the simple calculation of setting G.A.F. victory claims against the R.A.F. Fighter Command strength, discovered that Fighter Command had been wiped out!! Before the second phase ended, he found that the losses of R.A.F. fighters exceeded their actual strength by some 1,400 aircraft, a phenomenon which Goering was unable to explain satisfactorily at a stormy interview with Hitler. Thereafter a net discount of 20% was set on all German claims. Even with these adjustments, the R.A.F. order of battle figures did not tally. German Intelligence was therefore blamed for underestimating British production!!

The third phase extended from the 6th of September to the 5th of October; Goering resorted to a change of tactics in desperation, unless perhaps he believed that the R.A.F. Fighter Command in fact had been knocked out! This period included the attacks on London, which attracted the attention of the whole world. On the 7th of September, three waves of 20 to 40 bombers came in at 15,000 feet, while a few diversionary raids were run against shipping. The brunt of this attack was taken by 11 Group (RAF), whose score alone, during that month, was 442

German planes, a ratio to losses, of 7½ to 1. The 15th of September proved to be the greatest day of the Battle of Britain, when 500 German aircraft flew in to attack London; 250 in the morning and an equal number in the afternoon; of these they lost 185. There were, in this period, 32 attacks in all, 15 of which were aimed at London, and the rest at inland fighter fields. Another great day was the 27th of September, when the Bosche lost 133 aircraft, making a total for the entire period of 883. The casualties were insufferable.

The fourth and final phase was characterized by despair and defeatism on the part of the Luftwaffe. No long range bombers were used. Fighters and fighter-bombers, mostly ME 109's with improvised bomb racks, were used and the battle took place in an air space about 180 miles long by 38 miles wide, extending 5 to 6 miles in the air.

"While this great battle was being fought day after day, the men and women of this country went about their business with very little idea of what was happening high above their heads in the fields of air. This battle was not shrouded in the majestic and terrible smoke of land bombardment with its roar of guns, its flash of shells, its fountains of erupting earth. There was no sound nor fury -- only a pattern of white vapour trails, leisurely changing form and shape, traced by a number of

tiny specks scintillating like diamonds in the splendid sunlight. From very far away there broke out from time to time a chatter against the duller sound of engines. Yet had that chatter not broken out, that remote sound would have changed first to a roar and then to a fierce shriek, punctuated by the crash of heavy bombs as bomber after bomber unloaded its cargo. In a few days the Southern towns of England, the capital of the Empire itself, would have suffered the fate of Warsaw or Rotterdam." *8

This period extended from the 6th to the 31st of October, and saw the Luftwaffe definitely in retreat. The greatest air assault in history, and the greatest air force of all time had been defeated. The G.A.F. had failed to profit by Douhet's fundamental theories. Well could Mr. Churchill, in his immortal speech before the House of Commons of the 20th of August, say:

"The gratitude of every home in our Island, in our Empire, and indeed throughout the world, except in the abodes of the guilty, goes out to the British airmen, who, undaunted by odds, unwearied in their constant challenge and mortal danger, are turning the tide of world war by their prowess and their devotion. Never in the field of human conflict was so much owed by so many to so few."

If "imitation is the highest form of flattery", perhaps an even greater tribute to the British people came from a most

(*8 - "Battle of Britain" - Air Ministry, page 4.)

unexpected source on August 25,1944, four years later, when the roles were reversed, for (of all people) the notorious Dr. Paul Goebbels said:

> "When German technical superiority in weapons and men wiped out France in a few weeks in 1940 and left Britain isolated, there appeared to be no hope left for Britain.
>
> "The little island stood alone against the Germany-Italy-Japan bloc, and Mr. Churchill told Britain he could not offer anything but blood, tears and sweat.
>
> "To-day, Germany, because of Allied superiority in men, weapons, tanks, and aircraft, stands alone, and the changing situation is completely reversed. If England could achieve all that, therefore Germany must do the same."

Both nations by the heroic endurance of their civil population have disproved Douhet's theories on "knocking out a civil population."

The Battle of Britain cost the G.A.F. 2,375 aircraft, and all their crews killed or captured, not including those lost in the sea at night or those which staggered back to their French bases. It was primarily short range bombing, very heavily escorted by inadequately gunned and insufficiently armed fighters. The G.A.F. had a plan, but it was definitely not on the lines of

of the strategical plans of Douhet. It failed, because of concentrated British fighter attacks, directed by Radio Location and a highly efficient method of controlled interception, an innovation which Douhet was unable to foresee. Radar, as much as any other factor, contributed to that climactic victory, but the loss of units of this secret apparatus in the retreat to Dunkirk, placed in the hands of the enemy by the French, was put to good use by the Germans before long, but not before the Battle of Britain had ended in defeat for the G.A.F. Sporadic night raids on English cities continued, in which planes and pilots of K.G. 100 were used as "pathfinders", using flares as markers, a technique perfected by R.A.F. Bomber Command. The loss of the secret of Radar to the enemy was not without its compensations for it forced British research specialists to redouble their efforts and kept them well ahead of the Germans. German radio beams were rendered useless so that pilots had to rely on their D/R. Some Bosche bombers thus unfortunately went to Ireland, and the bombing of Dublin resulted, instead of the English cities.

Mussolini chose the period when he believed that France was lost and that England would soon succumb, to enter the conflict with a "stab in the back". His plans for aggression in the Balkans and in the Mediterranean area seemed to have won the half-hearted approval of Hitler. The G.A.F., after its tremendous

losses was in no position to offer any aerial aid to its "Jackal" ally, but before Hitler could pull Mussolini out of the mud of Albania, he had had to commit over 900 aircraft to the Balkan campaign. His long-range bomber force was reduced by 30%. (See Plate I). With England unsubdued, it became imperative for the Germans to turn on Russia, a campaign for which a period of 6 months was allotted, after which, with further and more adequate preparations, they hoped to crush British resistance in 1942 and become masters of Europe, Asia and Africa. For the campaign in Russia, the G.A.F. had to draw upon its initial reserves to maintain the strength of its combat aircraft of all classes. The earlier commitments to Rommel's campaign in Africa, which was stopped short of its goal at El Alamein, near Alexandria, was accomplished by drawing upon the stored reserves which were cut to the danger level of 1,500, as compared with the 4,000 with which they started the war. The fall of 1941 saw the appearance of the new FW 190 fighter on the front, an aircraft which had much influence on the later progress of the air war.

RUSSIAN CAMPAIGN.

In the Russian campign the Germans were stopped at the gates of Moscow, after the most sensational territorial conquest in history. The German army had overrun 527,000 square miles of territory, but the most severe winter in 100 years kept the Luftwaffe grounded, and with a serviceability rate of no more than 30%, they became an easy prey for the Russian Air Force. The German long range bomber force was called upon to assist the short range

forces in direct support of the army, with low level attacks on a large scale, and operating almost exclusively by day. The Russians kept their air force flying by attaching skiis to the landing gear and by the use of special lubricants to prevent engines and oil from freezing. The direction of Russia's air forces was taken over by Chief Marshal of Aviation Alexander Novikov in 1942.

By February, the stored reserves had dwindled to 600 (See Plate I) and the entire productive capacity of the German aircraft industry was required to maintain their operational types of aircraft at former strength. Initial reserves had by now completely disappeared. While the German armies stood almost within sight of the spires of the Kremlin and the advance spearheads of the German armored forces had partially encircled the city, they were halted by the heroic citizens and soldiers of Mojaisk on December 6, 1941, even as the citizens of nearby Borodino had fought Napoleon's Grand Army a century before on the road to Moscow. The Japanese struck at Pearl Harbor the following day, December 7, 1941, and America with its unlimited industrial production, joined the Allies to challenge the German effort to obtain supremacy in the air. This made it certain that Germany would lose the war. England had stood absolutley alone, undaunted, unafraid. She had borne the brunt of the battle for the past 18 months. The Allied long-range strategical plan for the air offensive, which reached

so great a climax in 1944, could now be well and truly laid.

CONCLUSIONS.

The German strategical blunders in their air offensives of the campaigns reviewed thus far, would then appear to be as follows:

1. The G.A.F. itself was not an Independent Air Force with its own strategical program; it was a tactical force utilized by the Army General Staff to attain the objectives of the land forces. Only in the Battle of Britain did it approach the status of a real Independent Air Force. It was defeated because it had insufficient protection for its bombers. German pursuit planes, used in lieu of "combat" planes, were difinitely inferior to the R.A.F. fighters and as a consequence, the German bombers were unable to reach their objectives in sufficient strength to give them the knockout blow advocated by Douhet (see definition - p. 1).
2. It had no heavy, long range bomber force to strike at and paralyze the industrial heart of Germany's enemies. Germany's bombers were medium weight, augmented by dive-bombers and finally by fighters improvised as fighter-bombers.
3. It lacked fighter planes of sufficient range, which carried no armor until late in the Battle of Britain; their firepower was much lower than that of the Hurricane and

Spitfires. They were exceedingly vulnerable without self-sealing fuel tanks.

4. Their escort of their bombers was flown at altitudes too high above the bombers, and without any tactical plan, thus failing to prevent the R.A.F. assaults.

5. They had no consistent program of hitting at British aircraft industries, and their attacks on R.A.F. Fighter fields were more or less an after-thought, improvised only when they saw the tremendous damage inflicted by R.A.F. 11 and 12 Group fighters on the German bomber force.

6. It was an air force very hastily and tardily built up by such mass production methods as they could hastily assemble, with inadequate engineering facilities for maintenance and with insufficient replacement parts and spares. There were many bottlenecks of production. Engineering officers were looked down upon. Numbers, not quality, was the objective. The G.A.F. attitude was indicated by the following statement by Milch, production chief of the G.A.F.: "After all, engineers are only plumbers of a kind, in white shirts. Plumbing is useful and unavoidable. But all the same, no officer would dream of having special intercourse with a plumber, or would he?"

7. The Hoehre Luftwaffenschule (School for training Air Force Commanders) at Gatow, near Berlin, never functioned well, having no teaching tools text books, or curriculum, upon which to plan.

8. The reader may conclude from the foregoing that the G.A.F. was indeed knocked out, and might draw the conclusion that the Allies, after February, 1942, faced no real air opposition. Reference to Plate No. I will show that, on that date, the G.A.F. overall combat strength had declined, from the 4,800 at the time of the Battle of Britain, and 4,750 when they went after Russia, to the lowest point of the war, namely 3,020 first line aircraft, with 600 in stored reserves and no initial reserves. How it was built up to the formidable opponent which faced the R.A.F. and 8th USAAF in the critical year of 1944, is the subject of succeeding chapters.

[redacted]

CHAPTER II

"BANDITS" *1

1. The Air Organization and Administration of the G.A.F.

The German Air Force is organized for operational purposes on a territorial basis, with various commands, called Luftflotten (Air Fleets), subordinate only to the Air Ministry, allotted to areas in which they have both administrative and operational authority, with the commander holding the rank of Generalfeldmarschall (General Field-Marshal). As the theaters of operations expanded, new adjacent areas were progressively assigned to the commands, whose original areas of control covered the whole of the greater Reich. These five commands were as follows:

Luftflotte 1 - East Command, with headquarters at Berlin.
Luftflotte 2 - North Command, with headquarters at Brunswick.
Luftflotte 3 - West Command, with headquarters at Munich.
Luftflotte 4 - Southeast Command, with headquarters at Vienna.
Luftflotte 5 - Far North Command, with headquarters at Oslo.

The method of adding to the basic Luftflotte areas is clarified by a glance at any map of Europe.

(1) Expanded to Northern Poland from Berlin.
(2) Later included Holland, Belgium, and Northeastern France, but was detached to Russia and the Mediterranean.
(3) Spread out to Occupied France, Normandy, Brittany, and Bordeaux, and when the Russian Campaign began, absorbed the area of Luftflotte 2.
(4) Formed after the Austrian Anschluss; it controlled Austria, Czechoslovakia and Southern Russia.

(*1 - "Bandits" is the code word used by the Allied Air Forces to indicate the presence of enemy aircraft near our formations in the air.)

[redacted]

(5) Prusumably the only area for its further expansion now, would be sweden and Siberia, neither of which appear likely at the date of writing (31 July 1944)

The Luftflotten may consist of any number of Fliegerkorps (Flying Corps, according to Military requirements. The Fliegerkorps were expanded from peacetime Fliegerdivisionen (Flying Division), of which at least nine have been identified. There were seven or more parachute divisions, and a Korps for night fighter defense. Some Fighter Commands were formed for some Luftflotten, but as each Fliegerkorps carries out several types of operations, it consists of units with various types of aircraft, as required by the task to be performed. A fliegerkorps usually consists of several Geschwaderg each composed of bombers, dive-bombers, fighters, etc. A geschwader is composed of three Gruppen, which in turn, each contain three Staffeln (Squadrons), and each Staffel has three Ketten (Elements), usually of three planes each.

Ground Administration

As in the RAF, the ground administration is divided into Luftgaus (Air Districts), separate from, but subordinate to the Air Administration, and is responsible for airports, living and office quarters, supply, maintenance and repairs, communications, and in some cases, recruitment and training. A Luftflotte may contain several Luftgaus, according to its military assignments in pending operations.

The Luftgaus had, before the Battle of France, operational command of the German anti-aircraft defenses. By 1941, however, flak (Flieger Abwehr Kanonen - i.e. artillery to drive off aircraft) deployed for the static defense of the Reich, was taken over for direct operational control by the Luftflotte, through the flak divisions and brigades, instead of through the Luftgaus. It is important to notice that as fighter opposition to our bombers decreased, flak damage to our aircraft increased, for the Germans began to realize that our bombers were continuing to get through every German fighter defense to their targets. They were therefore forced to improve their range finding apparatus, to place more guns and searchlights around targets, and to enormously augment the flak personnel, which, in time, caused a drain upon their "manpower", to the extent of over 250,000 old men, boys and girls. The Luftgaus area for anti-aircraft defenses is divided into Flakgruppen (Flak Groups), Commanded by a regimental staff, and Flakuntergruppen (Sub-groups) commanded by Abteilung (Section) staffs. Untergruppen are allocated for the defense of ports, towns, factories, etc., according to their importance. Likewise in Allied armies, anti-aircraft artillery officers are attached to all Allied fighter and bomber wings and commands. With their special knowledge of flak dispositions, enroute to and around targets, they have a highly specialized contribution to make on Intelligence matters.

By 1943, all medium and heavy flak was directed by radio location by day as well as by night, in clear or in cloudy weather, by Allied as well as German forces. The increase in volume, range and accuracy of German flak is attested by not only the reports, but by battle damage and losses. Bomber and fighter routes to targets are laid out throughout the entire course over enemy territory, with a watchful eye on the flak disposition charts, which record the location of enemy guns; their range, patterns and volume of fire, and angles of best approach for the attack and for the bombing run. Barrage fire of almost every shape, box, cylindrical and layer, is resorted to against particularly heavy and concentrated attacks. Light flak and small arms fire were the Germans only protection (but often a very embarassing one), against Allied "strafing" attacks on their airdromes, a tactic adopted by the Allies in the days just before, during and after "D-Day" (June 6, 1944), as will be seer in succeeding chapters.

2. Fighter Control Methods of the G.A.F.

That Fighter Command of the RAF caught Goering's Luftwaffe off balance in the Battle of Britain is now common knowledge and has been discussed. Radar was the carefully safeguarded secret instrument which made accurate fighter interception by numerically inferior, but otherwise vastly superior, RAF fighters, the marvel of World War II. The catastrophe of Dunkirk was evident to the

world, but not generally known is the fact that the Germans captured Radar sets, sent them to their radio research center, and by early 1941 had begun to use them with increasing value, as they turned from the offensive to the defensive against the mounting Allied bombing offensive. Blame for this great treachery rests upon the collaborationist French military authorities who turned over to their victors all their military equipment, including the British invention. Fortunately, the "Master Race" did not succeed in producing a system of equipment, equal to that of the Allies, neither as to quality or degree of perfection.

The Germans had Jafu control areas for the detection of approaching aircraft, similar to the RAF group control areas, and both services subdivided these geographical areas into sections. The following report, prepared by A.D.I. (K) Air Ministry, based on the interrogation of a prisoner of war, captured on May 15, 1944, is of special interest, as the man was a pilot of long standing, connected with the home fighter defense of the Reich:

"Fuhlungshalter (Spotter) Aircraft: The shadowing aircraft, already a familiar feature of GAF anti-shipping tactics, may be said to be the most important link in the whole chain of daylight fighter interception; it is upon the reports supplied by that aircraft that the whole plotting control organization and consequently of the operation, depends.

According to the prisoner, twin-engine aircraft are always employed for this purpose, since not only may considerable endurance be required, but a crew including a "spotter" and radio operator is essential. He had not heard of Allied types of planes being used (in this capacity).

On receipt of early warning of approach of US bomber forces thought to be making for targets in Northern or Western

Germany, it is usual for the shadowing aircraft to be sent to meet such forces near the Dutch-German frontier. It always flies singly and without fighter protection.

Although the prisoner could not say what position this shadowing aircraft will keep in relation to an Allied formation he stated that one such aircraft will keep in touch with a single formation as long as the latter is over Reich territory. So as to be able to maintain contact with the formation which it is shadowing, this aircraft is kept specifically informed by the ground reporting system on the course being taken by the formation.

The shadowing aircraft has no direct contact with GAF fighter forces, but confines itself entirely to reporting the enemy's strength and movements by wireless to the central plotting station.

Central Operational Headquarters: The Central Operational Headquarters (Zentral Gefechtastand), which the prisoner had been told is housed underground in the Berlin area, is responsible for intercepting Allied bomber formations over Reich territory; it has three main operational functions, which may be summarized as follows:

(1) The collection of reports and plotting of movements and composition of Allied bomber formations and their fighter escort.

(2) The strategic disposition of fighter forces to meet those formations.

(3) Giving a running commentary on the composition and movements of the bombers and fighter interception forces in forming their combat tactics.

The Central Operational Headquarters receives and plots information from the shadowing aircraft and presumably also from Radar and other sources, and disposes the fighter defense accordingly.

Once the fighters are airborne they are simply kept informed of the enemy's movements by the Central Operational Headquarters, which passes this information in terms of fighter Grid squares by means of a high powered radio transmitter. The fighter formation leaders themselves have the final responsibility of devising combat tactics and of controlling the formations under their command.

The fighter commentary from the Central Organizational Control is known as Jager Rapportage (Fighter Reports) and is transmitted on a wavelength known as Reichs Jagerwelle (German Pursuit Frequency). It enables fighter leaders to take

immediate advantage of such conditions as changes in course or diminution of fighter cover.

Interception Procedure: When Central Control Headquarters finds that an Allied formation requires the attention of a particular Geschwader, orders are passed direct to that Geschwader's headquarters, detailing the number of fighters required and their point of rendezvous and attack. The Geschwader Headquarters will in turn instruct its subordinate units.

According to the prisoner, it has recently been the practice to put up only half the available aircraft of a Geschwader, so that a sufficient reserve is always at hand to counter any feinting move which might otherwise draw the bulk of the defensive forces elsewhere and leave the target unprotected.

At the opening of an operation the component units of each fighter Geschwader assemble and operate as one single unit. Normally the Gruppen of a Geschwader are based at different airfields, but when "scrambled", the aircraft of these Gruppen make rendezvous at a given assembly point, (Sammelraum) whence they go into combat under the command of a single formation leader. Assembly points are invaribly geographical, such as a town, or village, and radio aids are not employed at this point.

After the fighters have taken off, their Geschwader headquarters has no further responsibility in giving orders to these aircraft. The formation leader has the sole command of the situation under all circumstances, and bases his combat tactics on the fighter commentary put out by Central Control Headquarters.

Formation Leader: The formation leader (Fuhrer Flugzeug) of a fighter interception force in nominally the officer of highest rank; he may be a Geschwader Kommodore, Gruppenkommandeur or Staffelkapiten, but should there be no officer available to take command, then the most experienced enlisted pilot will act as formation leader.

It is usual for the formation leader to appoint at least one deputy so that, should he be shot down, or have to drop out of combat, the deputy can immediately assume command.

The formation leader's aircraft bears no particular distinguishing mark beyond those common to all GAF fighter units; at one time such aircraft did carry the first letter of the radio callsign, but this practice has recently been discontinued. Recognition of the leaders aircraft by other pilots of the formation presents no problem, however, since it has long been the custom for pilots of fighter units to know their own leaders by the aircraft which they fly; for example, a Staffelkapitan may be known to his men because he

always flies the "Yellow 7".

It frequently happens that fighters which have become detached from their own formations have to land on airfields near the scene of an operation; in such cases it is the rule that they should immediately reform under the leadership of the senior officer or senior pilot present and reenter combat as quickly as possible as a single formation.

Communications: Fighter aircraft on daylight defensive operations are equipped with the FuGe 16Z transmitter-receiver, which is provided with a single-knob control. This knob is provided with four frequency stops marked respectively with a dot, a ring, a triangle and a squar; these markings have the following significance:

Dot ** Two-way radio communication.
Ring ** Reichs Jagerwelle for reception of fighter commentary.
Triangle * Flugsicherung (DF safety device)
Square * Reception of radio beacons.

During an operation, the fighter pilots of an interception force work entirely on the two-way radio communication stop, the Reichs Jagerwelle stop being reserved solely for the use of the formation leader or his deputy.

During combat there is a strict ban on radio transmission by any aircraft but that of the appointed formation leader, so that when radio instructions are heard by the pilots the latter can be certain that those orders are coming from their leader and no further identification is necessary.

The prisoner had heard that some Geschwader Kommodore, to enforce this ruling, have gone so far as to have the on-off switch for the transmitting circuit removed from all aircraft under their control, with, of course, the exception of their own and those of their deputy leaders.

During combat, therefore, the only airborne radio traffic which will occur will be that from the formation leader's aircraft, consisting of combat instructions to other aircraft of the formation. The prisoner was uncertain as to how the formation leader divided his attention between the two frequency stops of the two-way radio and the Reichs Jagerwelle, but he thought that the formation leader used the Reichs Jagerwelle stop and only switched over to the other when giving instructions. He thought it possible that the leader might also be assisted by his deputy in reception of the fighter commentary.

All radio traffic during an operation is carefully monitored from the ground.

It is said that fighter aircraft are also equipped with a small portable receiver capable of picking up broadcast transmissions so that in the event of Reichs Jagerwelle being jammed, alternative channels of broadcasting stations, "Anna Marie" and others can be used for reception of the fighter commentary.

Central Control Headquarters has its own call sign, of which he gave an example, "Zwinger", and the fighter commentary is invariably spoken by a woman. The fighter units are similarly allotted code words of which prisoner of war gave the example "Panther".

It may happen that Central Control Headquarters will find it necessary to pass urgent instructions to an interception force, such as an order for its recall or diversion to another objective. It is said to be the practice for Control to issue these orders on the Reichs Jagerwelle, employing codewords of the type described above when calling the unit or units concerned.

German Fighter Tactics: The present prisoner, not having taken part in any operations, could not, of course, give any first-hand information on combat tactics; the following notes, which are based on his contacts with operational pilots and on material gathered from lectures, do, however, cover some points of importance.

There are said to be three priorities which fighter formations should observe in their attacks on bomber formations; these priorities in order of their importance are:

(1) To force the enemy aircraft to jettison their bombs before reaching a target.

(2) To prevent the enemy aircraft from making an accurate bombing run, or to divert them altogether from the target.

(3) Attempt to shoot the aircraft down.

A further point not mentioned in instructional lectures, but which the prisoner gathered from his contacts with operational pilots, was that one of the first objectives of the fighters was to destroy the so-called "Lukkreuzer" (flak cruisers) -- the specially-armed F-17's which the Germans thought accompany all formations -- after which the problems of subsequent attack would be considerably reduced.

Single-engine fighters are forbidden to attack bombers which have been winged, or have dropped out of formation for any other reason. This ruling was designed to prevent the fighter formations from breaking up and their fighting effectiveness being reduced by individual fighters leaving the formation and going after damaged aircraft.

[redacted] [illegible]

Bombers which have dropped out of formation are known as "Lahme Enten" (Lame Ducks), and are left to be finished off by the twin-engine fighters in their own good time.

He was told that individual attack is not to be carried out under any circumstances when the fighters are operating as a formation, and is valueless against the concentrated fire of a bomber formation." 2

Further very interesting data on a ground controlled interception (GCI) station is supplied by a prisoner, who had served in Jafu 5 at Bernay in Normandy from September, 1943, until the end of January, 1944:

The Operations Room: Includes a number of separate offices in addition to the main control room. In one of these, the start-und-sichtmeldungen, 15 blitzmadel (literally, "lightning girls"), each provided with a telephone, received all messages regarding friendly aircraft, and all those routed through Jafu 5's territory were plotted on a small map. In another (the funkmessaufnahme), all radar plots from 12 sites in the Jafu area and two others in Jafu 4, adjoining, were received over direct telephone lines (one of these was the site at Douvres, reported on below). DF plots on friendly aircraft were received in another office (the peilauwerting) from four stations in the area via loudspeaker, and were filtered before being passed on to the main plotting chart.

The Main Control Room: (Auswertung und fuhrungsraum) had three vertical maps, plotted by personnel who work from behind them. The controller's desk faces these, and on the left is a weather map, on his right a map showing the situation of friendly forces (how many planes at each base are at various stages of readiness), and in the center the main operational map.

The latter measures about 10 by 15 feet, and covers the area from London to Le Mans and from Lands End to the Belgian frontier. The back of the map contains a vast number of electric lamp sockets which were used for plotting both friendly and hostile aircraft, and some 20 operators were needed for this work.

(*2 - USSAF in England - Air Intelligence Summary No. 31 -- 11 June 1944. For further data on Daylight Fighter Defenses of Germany, see Appendix "C".)

[redacted] [illegible]

During operations, the controller, one Lt. Col. Gollop, presided at the desk, supported by Major Froze, his operations staff officer, and a sergeant who operated a FuG 16 radio on the JF 2 frequency, conveying the Jafu's instructions to airborne fighters. On the desk were direct telephones to the fighter fields and an internal PA (Public Address) system microphone through which Gollop could bawl out any offending plotter.

Other Arrangements: Behind the controller's desk and facing the maps four blitzmadel, each in a separate phone booth, passed on information direct to Jafu Brittany, Jafu 4, Jafu Paris, and Hohere Jafu, respectively. In a fifth booth the information was recorded on paper to be sent at the end of the day to some higher formation for statistical and tactical research.

Behind and above these booths was the "Y", or radio-intercept service office, also overlooking the operations board. This office was also on a very high plane in other respects; the staff of one officer and three NCO's spoke only to each other except when the passed information along to the control room over the PA system. The office was connected to the various radio interception stations by telephones, and was invaribly able to gove first warning of enemy activity. Sample of the type of informations it provided: "Plot so-in-so is about 100 four-engine aircraft, probably heading for central Germany."

Elsewhere in the building were located a stand-by radio communications center, for use in case land-lines were out; a weather office, sleeping quarters for duty personnel, and what ADI (K), Air Ministry, describes as the "Jafu's Palace." Here (according to ADI (K)), the good colonel would retire between operations, put his feet on the desk, and let his hair down.

Operations: The site consisted of two Wurzburg Ricse and two standard Freyas; one of these was of the mobile type, and was non-operational pending an exchange for one of the fixed type.

The plotting room was housed on the top floor of a two-story Bunker, a box-like building partly sunk in the ground and constructed of concrete about six feet thick. In addition to handling the normal Wurzburg and Freya searches, the plotting room was also to have been employed for night fighters, but since none were operating in this area, this function was never fulfilled, and a Soeburg Tiech had never been installed, although provision for it had already been made.

At the time of the invasion, plotting equipment consisted

of a ground-glass screen measuring some 8 by 12 feet, set into a wall, the glass bearing a map on which the plots were drawn. In addition, a small-scale map of Northern France overlaid with tracing paper was laid flat on a table, but the invasion forestalled the use of this.

In operation, plots from the Wurzburg and Freya were made in pencil, no distinction being made on the ground-glass screen between friendly and enemy plots. The plotters, who wore earphones, received their information direct from the operators of the Freya or Wurzburg, and transferred their plots to the groudn-glass screen, and telephoned it to Jafu 5. A supervisor, responsible for the accuracy of the plotted information, listened as it came in from the equipment, supervised the plotting and had a small telephone through which he could plug in to any line from the Wurzburg or Freya." [3]

The similarity of the fighter control system of Germany and the Allies is notable, especially in view of the fact that the Germans developed radar only after the debacle in France.

Ground Observer Organization.

To the millions of Americans, civilian and military personnel who manned aircraft warning posts, and to the members of the Royal Observer Corps, the following description of the enemy's ground observer organization will be of particular interest:

"Not only radar stations but ground observer posts as well are used by the Germans in plotting our aircraft over enemy territory. Last week, June 11, 1944, the Allied Advance into Normandy brought into our hands several prisoners from one of these posts, and they have provided a fairly comprehensive picture of the organization and operations of the Fluko (Flugwachtkommando = observer corps) system.

These prisoners were under Fluko Caen, which was considered a model of the newest type of reporting center, and whose

([3] - USSAF in England - Air Intelligence Summary No. 35 - Week ending 9 July 1944)

methods are said to have been adopted by many other such centers in France and Germany.

Fluko Organization: All information covering the movements of aircraft, whether friendly or enemy, are reported to and plotted by the Fluko reporting centers placed throughout Germany and France. The prisoners knew of such centers at Vesoul, Strasbourg, Brussels, Paris, Lille, Troyes, Rheims, Amiens, Rouen, Rennes, Angers, Gap (Savoy) and Bordeaux, as well as some in Germany at Stuttgart, Augsburg, Munich, Vienna, Prague, Pilsen and Brno.

The Fluko organization in the Caen area consisted of 64 observer posts, placed at intervals of from 6 to 15 km. along the coast, which were responsible for passing reports of aircraft sightings to the main Flugmelde Zentrale (plotting center) at Caen. Of these posts, some were manned throughout the 24 hours, others only by day.

Reports of aircraft spottings were passed to the plotting center on the civil telephone network and were collated with other reports from the radar stations in the area and passed on to the fighter, flak and Civil Defense organizations.

The two day posts in the section of the reporting chain given above were attached to the Wasserman radar station at Douvres, to which they made direct reports, as well as to the Flugmelde Zentrale at Caen.

Fluko Post: The posts which kept a 24-hour watch were manned by five or six men under the command of a corporal, and the day posts usually consisted of no more than four men under the command of a Pfc (Private First Class).

Post No. 60 at St. Aubin, of which the prisoners were members, was sited in a villa and observation was carried out from the roof; some of the other posts merely consisted of a shoulder-high trench.

Both day and night posts were equipped with the Zeiss Flak Fernrohr (telescope), a pair of field glasses and a telephone --and in the case of night post, also visual signalling equipment. Aircraft observations were telephoned to the plotting room in terms of sectors on a circular plate known as the Helderose, which was marked like a clock so that the direction of approach of aircraft could be uniformly reported and plotted.

The number of aircraft, their height and direction of flight were reported as "very low" when they were between 50 and 100 meters (328 feet); "low", between 150 and 1500 meters (5,000 feet); "medium", between 1500 and 3000 meters (10,000 feet); and "high", between 3000 and 5000 meters (16,500 feet).

During daylight the posts were only required to report to the Flugmelde Zentrale when identification of aircraft had been established; thereafter any changes in altitude or direction of flight would be reported. In cases of fighter activity in the immediate area, it was the practice for the posts to give a running account of proceedings.

At night, the only reports made were to the effect that the sound of aircraft could be heard from a given direction.

Plotting and Report Center: The duties of the main plotting center (Flugmelde Zentrale) consisted in collating reports on the movements of enemy aircraft from the long and short range radar stations, Fluko observation posts and other Fluko plotting centers, as well as reports from GAF airfields on intended operations by their own aircraft. It was also usual for the civil defense spotting service to report their sightings to this center.

After collating and plotting, the movements of enemy aircraft were passed on to the Flak, other Fluko centers and, as far as Fluko Caen was concerned, to Jafu 5, the fighter area control; additionally the civil and railway ARP (Air Raid Precaution) service had their representatives at the plotting-center who passed information to their own services and made decisions as to the sounding of civilian air raid warnings.

Another duty of the plotting center was to pass warnings of hostile aircraft to airfields in the area for which it was responsible.

Outgoing reports were made in the form of a running commentary on situations as they developed, the German fighter grid being employed as a pin-point reference.

Plotting Room: The Fluko plotting center, of which the one at Caen was a typical example, is divided into two parts, one of which, the Leitstell, is responsible for reception of information and the other, the Weitergabstelle, for its dissemination.

The plotting room provides space for telephonists to receive reports from other Fluko centers. It is equipped with a plotting table, a starter table, a map for plotting movements of German aircraft and another map on a transparent glass screen which can be seen by the operators in the distribution room.

The plotting table consists of a map, overprinted with the German fightergrid, of the area covered by the plotting center. Placed round the table is a series of red lights, each of which represents a Fluko post or radar station; when one of these posts telephones a plot, the corresponding point lights up so that the plotter can see at a glance the source of the report and can make the plots accordingly. There are normally about five plotters on duty, although in cases of heavy

activity this number may be increased.

Plots are marked on the table by means of colored pencils, conventional signs being used to indicate various types of aircraft and their course and height.

Reports from neighboring Fluko plotting centers are simultaneously received and these take the form of a running commentary of the situation rather than plots of positions.

At the starter table, advance reports of aircraft about to operate from neighboring airfields are collated and plotted on a separate map, so that the plotters at the main table can be assisted in identifying enemy from friendly tracks.

The Weitgabestelle (Distribution room) is separated from the plotting room by a transparent glass panel on which is a reproduction of the map on the plotting table. Any plots which are considered worthy of further dissemination are marked on this map with chinagraph pencils and can be read by the personnel of the distribution room.

The plotting room is in theory controlled by an officer, but in practice is usually under a sergeant, and only on his instructions may tracks which have been plotted on the table be transferred to the transparent glass wall map.

Distribution Room: The distribution room (Weitergabestelle) is normally under the control of a corporal, who is responsible for passing the plots appearing on the glass screen to the active and passive defenses. Representatives of the civil and railway ARP organization are present in the room and they decide as to whether or not an air raid warning shall be given. The prisoners were uncertain as to how the distribution room passed the information on to the various bodies concerned, but stated that radio channels were available and that telephone messages could be passed on the French telephone network through the exchange at Caen.

Projected Improvements: According to the prisoner, it had been intended to reduce the area for which the Fluko plotting center was responsible, since under the present system of operation there was a serious time lag in reporting from the large number of observer posts, radar stations and other sources. It had been planned to split up the Fluko headquarters at Caen into several small plotting centers located at radar sites in the area". *4

The vast expansion of their observer corps, after the Allied Air Forces bombing offensive became a stern reality, had a serious

(*4 - USSAF IN ENGLAND - Air Intelligence Summary No. 33 - week ending 25 June 1944.)

effect upon the Wehrmacht, as well as on German industry, as it diverted much manpower from essential war industries; it is an interesting example of the stresses and strains imposed upon a nation involved in total war, such as Douhet had advocated.

3. Luftwaffe Homing Service.

The German Air Force had a Direction Finding Service (D/F) which has a great deal of interest to all who understand our own, especially the personnel of the Fighter Control Squadrons.

"Description of the operation of a German DF safety-service station in Northern France has been secured from some of its personnel, who were made prisoners when the station itself, at Coulombs, was captured on 7 June 1944.

This station, known as Pieldorf, was one of several in Northern and Northwestern France, under control of Flugsicherung Zentrale Frankreich (Central Safety Service, France), near Paris. Its personnel, numbering between 50 and 60 were supplied by the 12th Company of the 3rd Luftnachrichten (Air Signals) Regiment, which had its headquarters at Marly, near Paris.

The Pieldorf consisted of seven separate small stations, five of which operated on long and medium wave, and two on short wave. Equipment of each station consisted of two EP 2a and EP 3a receivers. A telephone tie-line passing through the French telephone network connected the site with the Flugsicherungs Zentrale. The station worked on a 24-hour basis.

The Pieldorf had a station code name as well as operational call signs. When it heard a German plane asking for a fix, the Pieldorf noted the time and obtained a bearing, which was passed by telephone to the Central station. A small wireless transmitter was provided in case of breakdown on a land line, but it had never been used and was actually out of order.

The station was occasionally asked by Paris to pass bearings direct to the similar Central Station in Holland.

Its principal job was to obtain bearings on planes over the Channel and Bay of Biscay area, but occasionally fixes were obtained on aircraft over Sicily and Ireland.

The prisoners reported that the station had been jammed ever since last summer, but that this (jamming) consisted of a continuous note which gave no trouble to an experienced operator." *5

(*5 - USSAF in England - Air Intelligence Summary No. 33 - Week ending 25 June 1944.)

[redacted] UNCLASSIFIED

4. Jafu Control Areas.

Jafu boundaries in France, in 1943, were laid out according to German expectations of the routes to be followed on our bombing raids, and were readjusted as the strategic pattern of our bombardment gradually moved toward Germany, a result which was achieved by the increased range and weight of fighter escort for our bombers. How that range was increased, and its effect on the GAF order of battle, is told in a later chapter. The earliest escort missions of 1942 were for very shallow penetration and fighter sweeps barely penetrated beyond the coasts of France. But when the swift, short-range Spitfires gave way to the longer-ranging, heavily-gunned P-47's, the Germans were forced to deploy their fighters further inland. In July, 1943, our P-47's had a maximum range which would take them as far as Paris and back. German fighter airfields and control stations were distributed along the European coast from Denmark to the Brest Peninsula (See Plate No. 11). The heaviest concentrations were at coastal airdromes in Jafu Deutsche-Bucht (195 S.E., 110 T.E.), Jafu Holland-Ruhr (220 S.E., 92 T.E.), and Jafu 2 (120 S.E., 52 T.E.), while twin-engine (mostly night) fighters were stationed further inland beyond our single-engine fighters range. They were stationed at the edge of the range of German single-engine fighters, shown with a red and black scolloped line on the map. The RAF group and sector controls

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are analagous to Jafu areas and sectors.

As the German air defenses on the Western Front were steadily augmented to resist the mounting scale of Allied attack, Jafu boundaries were re-adjusted and became known as Jagddivisionen with rather indeterminate boundaries. They appeared later on to be like the radii of a circle whose circle is Cambridge. (These readjustments of areas are discussed in a later chapter.)

5. German Fighter Aircraft.

The GAF began the war with the swift, manoeuverable, fast climbing Messerschmitt 109 (ME 109) which, like the superior Spitfire, was a basic fighter type; both were constantly revised, improved and strengthened, *6 in the five years of warfare until the latest types bore little resemblance to their prototypes, save in silhouettes, and even that was changed by clipping the wings of later Spitfires. The GAF owes much to the work of Willie Messerschmitt, a staunch pro-Nazi, who began work in 1927. The ME 109E was far superior to anything it had met in the air until the Battle of Britain. The great Nazi miscalculation about the ME 109E was its weak firepower, compared with the Spitfire. It carried four rifle caliber (7.92mm.) machine guns, with 300 rounds each, or two 20mm. Oerliken cannon, each supplied with 55 rounds, and two rifle caliber guns. They lacked self-sealing

(*6 - "Souped up" is the RAF term for it.)

fuel tanks and had no armor. As is the case in all warfare, especially aerial warfare, where combat takes place over enemy lines, each new weapon is met with a counter weapon and every new improvement is quickly revealed to the enemy from captured planes, only to be adopted, and often improved upon by the captors. Luftwaffe strategists, like all Germans, are slow to admit the errors of their calculations. It is hard for the "Master Race" (Herrenvolk) to acknowledge inferiority in anything, and it is especially hard for the Germans to do so in matters related to war. They believed they could fight a purely offensive war and that they would win a quick decision. The Luftwaffe was planned for short campaigns with long rest periods between, but it was not the GAF which was to fix the time schedules after February, 1942, and furthermore, it was compelled to go over to the defensive. To re-design their aircraft for heavy armor protection and greater firepower demanded a psychological about-face and an admission of error which they were reluctant to make. It is said that the late Ernst Udet, *7 the greatest German ace to sur[illegible]ve World War I, and head of the Technical Departments of the Luf[illegible]affe, advocated much heavier firepower (lo guns) in single-engine fighters, but he was overruled by Goering and Milch. It is possible that production

(*7 - Hauptmann Hermann, "Rise and Fall of the Luftwaffe".)

plans and the timetable set for the campaigns of 1939-40 prevented such a conversion of the German fighters.

By the end of 1940, they started to put armor protection on the ME 109E, but not until the introduction of the ME 109F, late in 1941, were German pilots to have augmented firepower. Succeeding models showed great advances.

This was achieved in other fighter types by more guns, added number of rounds of ammunition carried per gun, a higher ration of fire, with greater penetration, and by heavier caliber guns. The Messerschmitt types were also fitted with self-sealing fuel tanks, and carried 95 pounds of armor. In the ME 109F, the sole addition to firepower was one 20mm. cannon, firing through the propeller hub; a change which appears relatively insignificant, but actually was a major step forward in German armament, for the new cannon was the MG 151/20, whose firepower was greatly superior to the old Oerlikon of the same caliber. The MG 151/20 fires 800 rounds per minute against the Oerlikon's 350, and carried 300 rounds, compared to the latter's 55. By the time the ME 109G became fully operational, in 1943, all resemblance to the armament of the early models had disappeared. The 7.92mm. guns were replaced by two MG 131's (13mm., about equal to .50 caliber), with 900 rounds each, and the MG 150/20 had displaced the old Oerlikons, while one to three MK 101-2-3's (30mm.) began to appear in the newest subtypes with 65 rounds per gun. As newer types became operational, the

obsolescent planes were converted into fighter-bombers, and by 1944, only bomber versions of the Messerschmitt E and F types appeared in combat. The conversion to fighter-bombers was accomplished by the addition of bombracks, cutting down the armament and increasing the armor. "Some crews reported enemy aircraft as apparantly slower and believed to have additional armor", says VIII Bomber Command's Narrative of Operations on July 4, 1943, when Le Mans, Nantes, and La Pallice were attacked. "A number of hits on these fighters were obtained without apparent results." In a very much later mission summary report, of July 28, 1944, it was stated that an enemy aircraft, which was encountered, appeared faster in climb and on the level than even the new American P-51 "Mustang", and was thought to have been the latest ME 109 or possibly an ME 209.*8 The Huns were not behind in their efforts to improve standard type fighters.

The Focke-Wulf single-seater fighter (FW 190) made its first appearance on the front late in 1941, and was a sensation at first, with its fine performance, showing a speed of 395 m.p.h at 17,000 feet. It could climb to 18,000 feet in 6.25 minutes, and had the unprecedented mean ceiling of 37,000 feet, a great advantage for a fighter aircraft. Its armament was two low velocity 20mm. cannon and two 7.9mm. guns. When used as a fighter-bomber, it could carry a 500 kg. (1,000 lb) bomb load and was

(*8 - Weekly Air Intelligence Digest - 8 USAAF - 10 July 1943)

equipped with two MG 151/20's, two rifle caliber machine guns, and 197 pounds of armor.

"In this connection it should be noted that one FW 190 version, examined in Tunisia, carried an interesting increase in armor protection; the whole bottom of the engine cowling being made of 6mm. armor plate, and the underside of the fuselage, aft of the cowling, being protected by 6mm. plates as far back as the trailing edge of the wing. This additional protection slows down the FW 190 by an estimated 20-25 m.p.h and the rate of climb, of course, suffers correspondingly. The Focke-Wulfs, thus armored, are intended for ground-attack use, but have a ceiling of 26,000 feet and accordingly can be used against B-17's if scrambled in time to gain the necessary altitude."

Some Focke-Wulf fighter-bombers carry as much as 792 pounds of armor. Bombers also were more heavily armed. The amount of armor and armament which an aircraft can carry will be limited only when engineers reach the ceiling on the amount of horsepower they can pack into an engine. It is also influenced by the amount of necessary extra gadgets the technicians insist upon loading onto a pilot or into the cockpit, as a result of the highly complicated machines flown today by fighter pilots. But that day seems remote, judging from the aeronautical ingenuity shown so far by both the Allies and the Germans. An end to the armament race is not yet in sight and may not be until men stop shooting at each other and all agree permanently to "beat their swords into plowshares."

"Developments in the Focke-Wulf 190.*10
There has been considerable discussion about a long nosed version of the FW 190, which started off when we obtained

(*10 - Extract from Major Bijur's (VIII Fighter Command Recognition Expert) Report.

a document dated 1942, giving details of the FW 190 equipped with a DB 603 engine instead of the BMW 801. To effect this change it was necessary to lengthen the nose by 3 feet. All through the past winter the story has been very confused. Pilots have reported encounters with long nose 190's, but unfortunately we have never been able to get a combat photograph that could be assessed as such. Undoubtedly there were a few in existence but up to the present they were probably experimental. There fortunately have not been very many. The first real photographic evidence came in a report just issued. A P.R.U. cover of the airfield at Graudenz shows two FW 190's with a long nose. The details have still not been accurately assessed. While only two are reported it is very likely that there are more in existence."

The statistical tables at the end of the chapter give the technical and performance data regarding each of the major German fighter planes (See also Plates III, IV, V).

6. The Revised Luftwaffe Strategy.

Several factors, then, forced the German Air Force to turn from the offensive to the defensive, and a complete change of strategy was involved. An Allied strategy of bombing Germany out of the war would be strictly according to Douhet. The scale of bombing was at first small, quite inadequate to achieve his purpose of "demoralizing the enemy", but one must remember that Britain had been the victim of pacifist agitatism for years preceding Munich. The R.A.F. had difficulty in securing appropriations for expansion. That the United States was inadequately prepared for war at the time of Pearl Harbor and would have to divide her forces between many theaters of operations, was known even to the enemy.

The division of our air strength may have arisen from the extremity of the military situation, but it could hardly be

called strategically sound. The long period of seeming inactivity of our American Air Forces, from February, 1942, to the summer of 1943, is dealt with in the chapters which follow. When eventually priority was given to the European Theater,*11 the Germans knew that they were in for a pounding and prepared to meet it in the only way possible for them, at that time, by building up their fighter strength. Douhet would not have approved of this,**12 but by that time Germany had not the time nor the facilities to build an Independent Air Force, even if, indeed, they believed in its capability to counteract the Allied offensive, after the licking they had taken in the Battle of Britain. They had facilities for building fighters, and could double, even quadruple them; with this weapon they hoped to achieve against the Allied bomber force what the RAF Fighter Command had done to them, i.e. to knock them out of the sky.

(*11- Mr. Churchill, in his review of the war before the House of Commons on August 2, 1944, said, "At Washington, in January, 1942, it was decided that Germany was the prime enemy and that only the minimum of forces necessary for safeguarding vital interests should be diverted to operations against Japan. Our joint resources, British and American, however, increased rapidly and it became possible to wage two wars simultaneously with offensive vigor." "Daily Telegraph", August 3, 1944.
(**12- See Chapter I, Page 5, Principle 9.)

It now became a race between the buildup of the Allied bombing offensive and the production of German fighters, with which to ward off the bombers. The Wehrmacht, behind an "impregnable" defensive wall on the West Front, they expected, would then knock Russia out of the war in the offensive planned for 1942, and force a successful cessation of hostilities. Speed was of the essence, and in all events, the bombers must be stopped. That was a sine qua non. The Milch plan was adopted to buildup German fighter aircrart strength until it would be quadrupled by April of 1944. They hoped to achieve a production of 4,000 aircraft per month, most of which were to be fighters. An extreme policy of conservation was adopted, stringent rules were enforced against "Buzzing", punishments were imposed for "unnecessary accidents", etc., which resulted, however, in a net gain of only 5% in their overall strength by December, 1943. Had they been successful in achieving their goals set by the Milch plan, they would have had a total of 7,085 new planes in their Order of Battle by March 1943. They actually did double their fighter production, between August 1942, and July 1943. But, by this time the VIII Bomber Command was on the rampage and hitting viciously at fighter aircraft factories. This had to be stopped or Germany's last defense would be down, and no city or factory would be immune to bombing. All through the summer of 1943, the German fighters attacked viciously, and with increasing skill as their experience grew. The bomber toll was heavy; almost prohibitive in some cases. If they could be stopped, Germany could win the

war. Frankly stated, however, by July, 1943, the GAF had its "back to the wall" and their fighter defense was their major hope to achieve, if not victory, at least a draw.

The RAF's Bomber Command attacks were increasing in weight, in number, and in depth. The conversion to the heavy Lancaster had taken place. Germany's industries had large cracks in their walls; some had begun to crumble. The Milch plan for German fighter aircraft production, based on more realistic and possibly attainable goals, according to the Air Ministry, was as follows:

1943-	August	1000	1944-	January	1700
	September	1140		February	1840
	October	1280		March	1985
	November	1420			
	December	1560			

Even if the original 4,000 per month figure could not be reached , German industry was called upon to attain nearly 2,000 by March, 1944. All available fighters were pulled back to the Western Front, at the cost of their fighter strength on the Russian Front. The result was heavy casualties to their transports and long range bombers in Russia. K.G. 100 *13 at Stalingrad and K.G. 40 in North Africa became transport pilots. K.G. 26 went to Italy and was quickly used up. Morale in the GAF was at a low ebb. 6,000 aircraft were lost, of which 3400 were lost in combat. Repair facilities were non-existant and there were no spare parts to be had. 900 aircraft were captured intact in Sicily, many of them because of the shortage of fuel. Loss rates and wastage became twice the production rate. The Luft-

waffe in Italy could mount no more than 100 sorties per day, and the average was only 50. The Wehrmacht was blinded by Allied air superiority, for the GAF had been bombed to the deep rear, and without eyes the army did not know where to expect the Allied landings, which took place at Nettuno and Anzio.

In June, 1944, they had the same experience in Normandy, as will appear in Chapter XI. As a double precaution, German industries were moved back from the vulnerable Ruhr, to Eastern Germany, to Czechoslovakia, to Poland, to Austria and were widely dispersed into many small manufacturing centers and a few assembly plants; here, they felt sure that they would be safe from the mighty terror of the RAF heavies at night, and surely, they thought, the "Fortresses" could be knocked down before they recrossed Germany's borders on their way home. It would be the Battle of Britain in reverse, or so the Nazis hoped. They felt they could count upon this with considerable assurance, because the American daylight raids would have no fighter cover beyond that radius of action. Even the British conceded that long-range fighter escort was a mere pipe dream, in fact, said it was impossible. So, with the newly increased armor and armament on their single-engined fighters, the Germans hoped to show what a good fighter attack could do to our "stable gun platforms", which we called "Flying Fortresses"! At Schweinfurt and Regensburg, on August 17, 1943, we found out, with the loss of 60

"heavies". It looked as though the German defensive system would work. Escort for our bombers all the way to the target was our only hope.

(*13 - Kampf Geschwader - Battle or Bombers Squadron)

[redacted]

MK. 210

ENGINES	SUPER CHARGER	PROPELLER	FUEL	ARMAMENT		T.O. DISTANCE	LAND SPD	T.O. WT
TWO D.B. 601 F1 12 CYL. LIQUID COOLED INVERTED V 1400 HP AT [illegible] FT.	NONE	3 BLADE VDM METAL VARIABLE PITCH	660 GALS.	LOCATION AND TYPE	NO. GUNS & CALIBER	NOT AVAILABLE	NOT AVAILABLE	2050 NORMAL LOAD
				FORWARD FUSELAGE FIXED	2-20mm 400 RPG 2-7.9mm 500 RPG			
				LATERAL FREE	2-13mm 325 RPG			

ALTITUDES AND SPEEDS			CLIMB	RANGE	
				NORMAL CRUISING	ECONOMICAL CRUIS.
25000	355	MAX. SPEED	16500 FT. 10.6 MINUTES	1300	1700
20000	365	MAX. SPEED			
SEA LEVEL	306	MAX. SPEED			
16500	323	CRUISING SPEED			
16500	227	ECONOMICAL SPEED			

ME 109G

ENGINE	SUPER CHARGER	PROPELLER	FUEL	ARMAMENT		TAKE OFF DISTANCE	LAND. SPD.	T.O. WT
DB 605 A/1 12 Cy. INV. V LIQUID COOLED MAX. HP 1350 AT 18700	GMI EQUIP. FOR SHORT EM. ACCEL. AT A LT. USED UNTIL RECENTLY WHEN TWIN TURBO SUPER CRS. REPLACED IT. GMI EQUIP. PRESUMABLY TOO HEAVY FOR USE ON FIGHTERS	VDM 3 BL. CONST. SP. 9'8"	NORMAL 106 GALS MAX. 186 GALS	LOCATION AND TYPE FORWARD FUSELAGE FIXED FORWARD ENGINE FIXED FORWARD WING FIXED	NO. GUNS & CALIBER 2-7.9 or 13mm 500 rnds per gun 1-20mm 200 RPG 2-20mm 200 RPG	1500	90	NORM LOAD 6670 MAX. LOAD 7230

ALTITUDES & SPEEDS		CLIMB		RANGE	
30000	430 M.P.H. MAX WITH SUPER CH.	18000	5.3 MIN. NORM. LOAD	NORM. CRUIS.	ECON. CRUIS.
30000	400 M.P.H. MAX. WITH NORMAL LOAD	18000	6.3 MIN. MAX. LAOD	415 MILES WITH NORMAL FUEL	755 MILES WITH NORMAL FUEL
22000	405 M.P.H. MAX. WITH SUPER CH.			590 MILES WITH MAX. FUEL	1020 MAX. FUEL
22000	395 M.P.H. MAX. WITH NORMAL LOAD				
22000	365 M.P.H. MAX. CRUISING SPEED				
18000	316 M.P.H. MAX. CRUISING SPEED				
18000	210 M.P.H. MOST ECONOMICAL				

REMARKS

SENSITIVITY OF FORE AND AFT CONTROLS MAKES LOW ALTITUDE MANOEUVERS DANGEROUS-EXTREMELY BAD HIGH SPEED STALL IN TURNS-SPINS VIOLENTLY STRAIGHT DOWN WITHOUT WARNING-REAR VISIBILITY VERY POOR-FORWARD AND SIDE VISIBILITY GOOD-COCKPIT TOO SMALL TO ACCOMODATE MAN OVER 5'11" - A DIFFICULT PLANE TO BAIL OUT OF-QUITE NOSE HEAVY MAKING DEAD STICK LANDINGS DANGEROUS AND HIGH SPEED DIVES NEAR THE GROUND DISASTROUS - ROUGHNESS OF ENGINE TRANSMITS VIBRATION TO COCKPIT MAKING IT IMPOSSIBLE TO FELL THE PLANE OUT - THE PLANE HAS RECENTLY UNDERGONE SOME MAJOR CHANGES - NO DIFFERENCE IN APPEARANCE - FIREPOWER IS SACRIFICED FOR PERFORMANCE - TWIN TURBO SUPERCHARGERS ADDED TO ENGINE GIVING INCREASED PERFORMANCE AT HIGHER ALTITUDES - WILL TURN INSIDE OF MOST PLANES THAT IT MEETS.

ENGINES	SUPER CHARGER	PROPELLER	FUEL	ARMAMENT		T.O. DISTANCE	LAND. SPEED.	T.O. WT
TWO B.M.W. 801 & 14 CYLINDER TWIN ROW AIR COOLED AND FAN ASSISTED RADIAL MTRS.	NONE	3 BLADE METAL VDM 11'10"	444 NORM 948 MAX.	LOCATION AND TYPE	NO. GUNS & CALIBER	2300	95	25000
				FORWARD FUSELAGE	3-7.9mm 1-15 or 20mm or 3-7.9 mm. & 1-15mm & 1-20mm			
				DORSAL FREE	2-7.9/13mm			
				POSSIBLE VENTRAL FREE	2-7.9mm			

ALTITUDES AND SPEEDS			CLIMB		RANGE	
22000	335	WITH IMPROVED ENGINE (RECENT)	16500	13.8 NORM.	NORMAL CRUISING	ECON. CRUISING
20000	281	MAX. SPEED	16500	19.2 MAX.	654 MILES NORMAL FUEL	762 MILES NORMAL FUEL
16500	278	CRUISING SPEED			1473 MILES MAX. FUEL	1538 MILES MAX. FUEL
16500	246	ECONOMICAL SPEED				
14000	295	MAX. SPEED				
2500	269	MAX. SPEED				
SEA LEVEL	263	MAX. SPEED				

F.W. 190

ENGINE	SUPER-CHARGER	PROPELLER	FUEL	ARMAMENT		T.O. DISTANCE	LAND. SPD.	T.O. WT
B.M.W. 801 D/1 AIR COOLED RAD. 1800 H.P AT 17000 FT.	TWO SPEED	3 BLADE MET. V.D.M. CONST SPEED 10'10"	138 GALS. NORMAL 216 GALS. MAX.	LOCATION & TYPE	NO. GUNS & CALIBER	1800	90	8600
				FORWARD FUSELAGE FIXED	2-7.9mm 1000 ROUNDS PER GUN			
				FORWARD WINGS	4-20mm 200 R.P.G.			
				OUTBOARD	60 R.P.G.			
				INBOARD				
				FIXED				

ALTITUDES AND SPEEDS		CLIMB		RANGE	
30000 FT.	365 MAX. SPEED	18000	6.25 MINUTES NORMAL	NORMAL CRUISING	ECONOMICAL CRUIS.
25000	366 MAX. SPEED	18000	6.75 MINUTES-MAX. LOAD	380 MILES WITH NORMAL FUEL	530 MILES WITH NORMAL FUEL
19000	385 MAX. SPEED			630 MILES WITH MAX. FUEL	820 MILES WITH MAX. FUEL
18000	384 MAX. SPEED				
18000	335 MAX. CRUSING				
18000	220 ECONOMICAL				
14000	360 MAX SPEED				
8500	326 MAX. SPEED				
5000	325 MAX. SPEED				
SEA LEVEL	320 MAX. SPEED				

REMARKS

THERE ARE NO PERFORMANCE RECORDS OF THE NEW F.W. 190. THERE IS A MARKED CHANGE IN DESIGN. WING SPAN 38 FEET WITH WINGS TAPERING TO ROUNDED TIPS. ENGINE NACELLE IS OVAL IN APPEARANCE WITH AIRSCOOP WELL FOREWARD UNDER NACELLE AS ON THE BRITISH TYPHOON. FUSELAGE AND TAIL UNIT SHOW LITTLE OR NO CHANGE OVER OLD MODEL. IT HAS A PROBABLE D.B. 630 ENGINE WITH INCREASED HORSEPOWER AT HIGHER ALTITUDES. AIRSCOOP INDICATES A TWO STAGE BLOWER SUPER CHARGER. A LARGE GUN IS BEING FIRED THROUGH SPINNER ACCORDING TO RETURNING PILOTS. THE 603 IS SO DESIGNED THAT A 30mm CANNON CAN BE INSTALLED BETWEEN THE CYLINDER BLOCKS TO FIRE THROUGH THE SPINNER. PROBABLE 20mm GUNS INSTALLED IN THE WINGS. IT HAS AN INCREASED RATE OF CLIMB AND A TIGHTER TURNING CIRCLE.

ENGINES	SUPER CHARGER	PROPELLER	FUEL	ARMAMENT		T.O. DISTANCE	LAND. SPD.	T.O. WT
TWO D.B. 601 N 12 CYLINDER LIQUID COOLED INVERTED V 1150 HP at 18000 FT	NONE USED	3 BLADE VDM METAL CONSTANT SPEED	NORMAL FUEL 337 GALS. MAX. FUEL 918 GALS.	LOCATION AND TYPE	NO. GUNS CALIBER	2200	110	16700 NORM 20900 MAX. LOAD
				FOREWARD FUSELAGE FIXED	4-7.9mm 2-20mm 1-30mm			
				DORSAL FREE	1-7.9/15			
				TAIL FREE	OCCASION REMOTE CONTROL GUNS			

ALTITUDES AND SPEEDS		CLIMB		RANGE	
20000	350 MAX. SPEED-AVERAGE LOAD	16500	8.5 NORMAL LOAD	NORMAL CRUISING	ECON. CRUISING
20000	290 MAX. SPEED-MAX. LOAD	16500	14.5 MAX. LOAD	740 MILES NORMAL FUEL	900 MILES NORMAL FUEL
SEA LEVEL	285 MAX. SPEED			1930 MILES MAX. FUEL	2190 MILES MAX. FUEL
SEA LEVEL	283 CRUISING SPEED				
16000	200 ECONOMICAL SPEED				

ENGINE	SUPER CHARGER	PROPELLER	FUEL	ARMAMENT		TAKE OFF DISTANCE	LAND. SPD.	T.O. WT
TWO D.B. 603 A-2 12 CYLIN INV. LIQUID COOLED DAIMLER-BENZ ENGINES	NONE	3 BLADE V.D.M. METAL	WINGS 506 FUSE. 200 EXTERN. 200 NORM. TOTAL 506 MAX. TOTAL 906	LOCATION AND TYPE	NO. GUNS & CALIBER	2800	95	2400 WITH 506 GALS. & 1100 LBS. OF BOMBS 2600 with 906 gals. & no bombs
				FOREWARD FUSELAGE FIXED	2-151/20mm 2-7.9mm			
				LATERAL FREE	2-13mm			

ALTITUDES AND SPEEDS			CLIMB	RANGE	
25000	380 MAX. SPEED	19000	11.5 NORMAL LOAD	NORMAL CRUISING	ECONOMICAL CRUISING
22000	395 MAX. SPEED	19000	13.9 MAX. LOAD	1040 MILES	1190 MILES
10000	370 MAX. SPEED			NORMAL FUEL	NORMAL FUEL
SEA LEVEL	330 MAX. SPEED			1900 MILES	2130 MILES
19000	330 CRUISING SPEED			MAX. FUEL	MAX. FUEL
19000	235 ECON. SPEED				

CHAPTER III

"BIG FRIENDS" *1

Real Strategical Bombing.

In the first chapter, Douhet's theories about the use of his so-called Independent Air Force were enumerated and it was shown that the German Air Force never applied these principles in planning the use of the Luftwaffe. As J.M. Spaight, late principal Assistant Secretary of the Air Ministry, in his book "Bombing Vindicated", has clearly demonstrated, it is an immaterial question whether air power unaided can or cannot bring about a decision in the Allies' favor; "What can be claimed without fear of contradiction is that air power is an absolutely essential factor in the combination which gives us victory; and at the very heart of air power there stands the strategic offensive". The matter was placed in the proper perspective by Mr. Churchill in his great speech at Ottawa on 30 December 1941 when he said: "While an ever-increasing bombing offensive against Germany will remain one of the principal methods of ending this war, it is not the only one which growing strength enables us to take into account"*2.We are thoroughly committed to the large-scale bombing of Germany as part of our war-winning strategy", said

(*1 - Code word used by Allied Air Forces to identify Allied bombers; chiefly used by Fighter Control Squadrons and Fighter Group Commanders in R/T conversation, when on long range escort, in reference to B17's and B24's. *2 - Spaight, J.M. "Bombing Vindicated")

the Daily Mail on 18 September 1942, "and there can be no question that so far the policy is paying good dividends, by weakening the enemy's productive power and dislocating his daily life. It is doubtful whether the use of the air weapon by itself could win the war, but it is certain that we could not win without it." "Can the war be won by bombing?" wrote the Daily Telegraph on September 19, 1942. "No one of knowledge and judgement ever thought of speculating on such a possibility. The reason why the United Command must bomb Germany with all the power that can be provided, is that without such a sustained and cumulative air offensive, the war cannot be won at all."

Air warfare, up to mid-1944, has indicated that there are three lines along which a nation can build its air strength. It can follow the German example and have a force used with, and designed for, cooperation with the army, which is usually considered a tactical force. Or it may prefer to have one intended solely for independent action, outside of and beyond the immediate battle zone (such as Douhet advocated), in other words, a strategical force. Or it may build one which is a combination of both the other types, and adapted according to the plans for its intended use. None but major powers, with vast industrial resources, can afford the last of the three types, as it requires enormous quantities of both men and material.

R.A.F. Bomber Command.

The Royal Air Force was required to face the challenge which Hitler threw down in 1933, when he became Reichskanzler (Chancellor of the Third Reich), and under Goering's direction started to build-up the Luftwaffe, as a military-political threat to world peace. The R.A.F. was a small "token" force at that time, a skeleton organization, inadequate for a major war, but capable of fairly rapid expansion. 1934 and 1935 appropriations were made for its growth, and in 1936 it was reorganized, in the year that Hitler started to apply blackmail to international politics. By July, the old A.D.G.B.*** 3 Command gave way to three new ones; Bomber, Fighter and Coastal, and a training command was also set up. This reorganization set the pattern for a future air war, as far as Great Britain was concerned.

The work of Fighter Command has been recounted, not only in its defensive role in Battle of Britain days, but also as an element of offensive value when it wrought havoc with the Luftwaffe, while the latter was being used as the tactical force to pave the way for invasion. But it was upon Bomber Command that the R.A.F. authorities laid the principle emphasis, in 1936, an evidence of a farsighted policy, which eventually paid handsome dividends, for at that time no one could foresee the

(*** 3 - A.D.G.B. - Air Defense of Great Britain).

tragedy of 1940, which befell France, Belgium, and Holland, and left Great Britain alone and defenseless, save in the air, where she was left holding the only weapon with which she could strike back at Germany for three long years.

Sir Hugh Trenchard (now Lord Trenchard) and the British Air Strategists, who collaborated with, and those who succeeded him, stoutly maintained the basis validity of Douhet's ideas of a force co-equal with the other two senior services, independant of them, and in the future, possible the predominant factor in war. Such ideas to the German General Staff would naturally be alien, abhorrent, and indeed, preposterous. The vested interest of the Junker class would thereby have been imperiled!

To show that Hitler viewed this strategic bomber force with growing apprehension and eventually with mortal fear, there is plenty of evidence in his hysterical speeches after 1939. On November 9, 1940, at Munich, Hitler stated that the G.A.F. had made no night attacks on Poland, Norway, Holland, Belgium, or France. "Then, suddenly Mr. Churchill had bombs dropped on German civil population. I waited in patience thinking; the man is mad; for such action could only lead to Britain's destruction; and I made my plan for peace. Now I am determined to fight it out to the last". Hitler called it "the greatest military folly of all time, to attempt to fight with the weakest of all his

weapons". The fact is, it was Britain's only weapon.

This is a strange appraisal of the facts (or did he know the facts?) of the Battle of Britain. But that he felt safe against Britain's bombers, when he wrote "Mein Kampf" (My battle) in 1926, may be seen from the following passage: "Let us imagine the bloddy battles of the world war not as having taken place on the Somme, in Flanders, in Artois, in front of Warsaw, Nishni-Novgorod, Kowno and Riga, but in Germany, in the Ruhr, on the Elbe, in front of Hanover, Leipzig, Nuremberg, etc. If such happened, then we must admit that the destruction of Germany might have been accomplished...If this titanic conflict between the nations developed outside the frontiers of our fatherland, not only is all the merit due to the immortal service rendered by our army, but it was also very fortunate for the future of Germany. I am convinced that if things had taken a different course, there would no longer be a German Reich today, but only German States."

As Bomber Command became a realty, naturally he tried to secure international agreement to prevent the bombing of cities! But his repentance came too late and it came only after his strategists had perceived their blunder in adhereing to obsolete theories of air strategy, when Goering's proud boast at Essen, in August, 1934, that not a single bomb would ever drop on

German cities, *4 had been proven false, and perhaps catastrophically so. Even after the German bombings in the Battle of Britain, there was no such whining words from Britain's spokesman. In his speech at the County Hall, London, on July 14, 1941 Churchill said, "We ask no favor of the enemy. We seek from them no compensation. On the contrary, if tonight the people of London were asked to cast their votes whether a convention should be entered into, to stop the bombing of all cities, the overwhelming majority would cry, 'NO! We shall mete out to the Germans the measure, and more than the measure, that they have meted out to us." The words were greeted with cheers.

In fighters and bombers, the two major categories essential for victory, the British, since 1936, have consistently had superiority, with their 8-gun Spitfires which went into service in 1939 and in their heavy 4-engine bombers which began their work in 1941. Germany's ascendancy in the less critical categories, ancillary to her ground forces, was not decisive, and even in these she yielded the supremacy to later Allied developments, for today our troop carriers, transports, dive-bombers, and photo-reconnaissance planes easily surpassed the best the Germans could produce.

(*4 - "Das Ruhrgebiet Werden wir auch nicht einer einzigen bombe feindlicher flieger ausliefern".)

R.A.F. "Heavies"

The Royal Air Force became a separate service on April 1, 1918. May 11, 1940 marked the opening of the strategic air offensives against the Reich. "The idea behind 'Specification B. 12/36' was that, when the next war came, Britain would eventually need a long-range weight-carrying bomber which could go farther and load a bigger cargo of high explosive in its own bomb-racks than a whole squadron could at that time. This advance was becoming possible as a result of the development of new techniques of construction. Various improvements were being made in the designs and structures of air frames and engines. Much higher wing-loadings were being tried; all-metal stressed skin (or, alternatively, geodetic) construction of fuselages were becoming practicable; more powerful engines, including those of sleeve-valve design, were coming into use. The Stirling, built by Short Brothers to Mr. Arthur Gouge's design, was the answer to the specification; it marked an epoch in the history of heavy bombers. It was followed by the Handley Page Halifax and the Avro Lancaster". *5 Plans were first made in 1935 for the present four-engine bombers, carrying about 12,000 lbs of bombs for a distance of 1,200 to 1,800 miles, at a ceiling of 20,000 feet and at a speed of 240 miles per hour.

(*5 - Spaight, J.M. "Bombing Vindicated", page 38).

When the war began, Bomber Command had but 30 squadrons of 16 aircraft each; half were light and half were what would now be called medium bombers. By 1943, the building program had raised this to 60 squadrons of which 36 had 16 aircraft each and 24 squadrons had 24 aircraft each; a total of 1,152, all of which were classed as "heavies". Today, 10 Lancasters, Halifaxes and Stirlings carry as much bomb load as 120 of the old Blenheims or "Battles". In May, 1942, it required 1,100 aircraft to drop 1,150 tons of bombs on Cologne. Twoyears later, 2,000 tons could be dropped by less than half that many planes, and frequently Bomber Command dropped 4,500 tons in a night; ten times the maximum amount dropped on London in any night of 1940. During D-Day they unloaded 6,000 tons on the beach-head.

So it was with the 8th Air Force. Its first raids in early 1942 were with 12 "Forts". Today, 1,500 "Forts and Libs" often go out from Britain, and 750 from Italy, and meet up over the same city.

That the French General Staff had a conception of air warfare, similar to the German's, is estraneous to our subject, but that they prevented the R.A.F. from carrying out its major objective is not so well known. In an official publication, *6

(*6 - "Bomber Command" - 1941 - page [illegible])

it is shown how it was intended to use the British Bomber Command. "On April 14, 1940, the Command was informed that, subject to a minimum diversion to Norway, Denmark, and Northern Germany, it was intended, should the Germans attack, to use our full offensive strength in the area of the enemy's advance and in the districts each of the Rhine, through which his lines of communications and supply would have to run. On the next day, the Comite' de Guerre ruled that, because casualties might be caused to the civilian population, bombing attacks on enemy concentrations in Germany were not to be made, unless the Germans (first) launched them upon the Allies".

The R.A.F.'s so-called "leaflet raids" of 1940 should be thought of in relation to the above facts. They were not without their humorous highlights, and they gave pilots and navigators exceptionally good night navigational experience. One air crew was said to have been reprimanded for not untying the bundles of leaflets before they were dropped; "you might have hit someone on the head with them"! Another was queried as to why he returned later than the other planes sent on the same mission. "Oh, I just stopped to slip the folders under the doors", was the reply. Any qualms about the legality of such bombardment may be allayed by Lord Birkenhead's statement that the doctrine of the distinction between armed forces and civilian population was rapidly deteriorating. "A [illegible] of

violence which it would be vain to consider illegal, and which cannot but result, especially when conducted at night, in injury to the civil population".*7

The strategic bombing goal of the Allied Forces was clearly put by the British Prime Minister in his speech of May 19, 1943, before the United States Congress: "It is the settled policy of our two staffs and war-making authorities", he said, "to make it impossible for Germany to carry on any form of war industry on a large or concentrated scale, either in Germany, Italy, or in the enemy-occupied Countries. Wherever these centers exist or are developed, they will be destroyed, and the munitions population will be dispersed". It may be well, in concluding the statement of British air strategy, to quote a person who helped to do the job. Air Chief Marshal Sir Arthur Tedder, now Deputy Supreme Commander-inChief of Allied Forces in Europe, stated in a review of the North African Campaign, on 15th May, 1943: "Today, Britain alone, of the embattled nations, can look to a striking force in the air, unshackled and untrammeled by parochialism and preconceived ideas, free from glib phrases like "air support" and "fighter assistance"

(*7-Lord Birkenhead - "International Law", 6th Edition edited by R. Moelwyn-Hughes, 1927, page 205. (M. Spaight - "Bombing Vindicated" - page 117).

-- an Air Force which commands the air". Two months later he was to witness the start of the escorts, by the VIII Fighter Command, of the 8th Air Force's daylight heavy bombers, a beginning which might have caused him to reverse his ideas about "Britain alone", being the "only one of the embattled nations which had a striking force".

U.S. Strategical Air Force.

Proponents of Douhet's theories were not lacking in the United States. The late Brigadier General William "Billy" Mitchel, who headed American Air Forces in France in World War I is a case in point. He maintained that bombers could sink any battleship afloat, and that the navy was therefore obsolete! Silent witnesses to the truth of the statement now litter the bottoms of the Seven Seas. Great names are among them "Bismark" "Repulse", "Prince of Wales", "Lexington", "Hornet", all went down due to air attacks, and all because they were without adequate air cover. Battleships have however, played a most important role in the bombardment of shore batteries and military installations prior to the seizure of a bridgehead. Of course they could only do so under complete fighter cover. Alexander Seversky, in his book, "Victory Through Air Power", is a more recent and equally vocal exponent of the Strategical Air Force, and stressed the need for very long range fighters.

Lt. General Carl A. Spaatz, present Commanding General of

USSTAF (U.S. Strategical Air Force), was Chief of the Air Staff under General Henry H. Arnold, head of all American Air Forces; under him is General "Jimmy" Doolittle of the 8th Air Force who works in closest liaison with Air Chief Marshal Sir Arthur Harris, Chief of Bomber Command, R.A.F. Spaatz went to England to set up the 8th Air Force early in 1942, but was sent to Africa for the campaign against Italy, leaving the 8th in charge of Lt. General Ira C. Eaker, his collaborator over many years, who now heads the 12 and 15 U.S. Air Forces in the Mediterranean. The 15th and the 8th, together, are two powerful arms swinging at Germany from two widely separated bases, but both are part of a Strategical Air Force which is larger in size and delivered, since April, 1944, a heavier tonnage of bombs on the enemy than even Bomber Command of the R.A.F. (See Plates VI and VII).

Their conception of air warfare was not always the accepted theory of the top men in the armed forces of the United States. That the air force should be ancillary and subordinate to the army (and Navy) was the view strongly advocated by the Chief of the General Staff, when he gave evidence before the Dwight Morrow Committee in 1925, on the question of whether an autonomous air force should be established in the United States. He said, "there is no separate responsibility, separate

mission or separate theater of action that can be assigned to such a separate force". Major General C.P. Summerall, Commanding the Second Corps Area, also said, "As far as we are concerned, in war, the only objective is the enemy's army. If that falls, everything falls. A bombing expedition must therefore be made as something connected with the enemy's armed forces." He certainly implied that he disbelieved in the Douhet-Mitchell-Trenchard-Harris-Spaatz conception of air power. Fortunately, as Mr. Churchill has said, we have the resources for both, but it is the 8th (Strategical) Air Force and its work, so well supplementing R.A.F. Bomber Command's, as to have become decisive in this war, that is the basis for the subject of this study.

The Bombing Commands are Supplementary to Each Other.

Many Americans, even active pilots, have the mistaken conception that the two commands were rivals, or that the 8th, in having been assigned the daylight job, as one of them expressed it, was "given the dirty end of the stick". Neither impression is correct. From the start of their operations, summer and winter, clear or cloudy, the R.A.F. "heavies" have gone after their targets, long before we became an active and supplementary comrade. There were good reasons why the R.A.F. had to select the night job. Primarily, their targets were in Germany

and to hit at the heart of Germany was the major objective. They knew, all too well, from the experience of the Battle of Britain, what fighters could do to slower and very vulnerable bombers. It is an axiom of air warfare that no bomber could ever match a contemporary fighter in speed. If they were to carry armor for protection, or heavy armament, they would have to sacrifice bomb tonnage and range. The entire strategy hinged on the possibility of their reaching their targets and these had to be calculated at ranges deep inside Germany. At night, a plane is harder to see, therefore, harder to hit; so, long range night bombardment was the only answer. It is self-evident that the secret of radio location, (and thereby of radar-directed guns, searchlights, and aircraft), was going to be lost to the enemy at Dunkirk, could not have been foreseen when Bomber Command laid down its programme. Nor indeed could they foresee that long range fighter escort of bombers could be made a reality by the VIII Fighter Command in mid-1943. Furthermore, limited production facilities in the U.K. precluded diversion for fighters, and the carrying of less defensive armament allowed for a greater bomb load. These were the factors which determined R.A.F. heavy bomber design. Likelihood of such long range escort was considered fantastic by R.A.F. Bomber Command in July, 1936, and indeed was considered "impossible" as late as 1942. It became a reality by late 1943,

as slowly and steadily the range was increased and our fighters suddenly appeared over Berlin, and finally crossed all Germany to Russia, in July, 1944.

Even the VIII Bomber Command, later incorporated into 8th Air Force, did not foresee the possibility of such deep escort, nor indeed the need for it, much before mid-summer of 1942. For them, the fast, heavily armed "Flying Fortresses" were "stable gun platforms", which in the close formations that the pilots were taught to fly, were too formidable an enemy for fighters to attack with impunity; they would get through to the target and they would get back, was the belief. Only such bitter experiences as the first unescorted raids with their resultant heavy losses would teach them that such optimism was deadly; the Germans were only too glad to have our Air Force Commanders think that way, for they longed for a chance to reverse the role they had played in the fall of 1940.

The Air Staffs and Commanding Officers of the British-American Air Forces worked out a plan for the American daylight bomber operations, which involved fighter cooperation, as early as August 20, 1942. The following directive is therefore of great interest in that it shows the early planning, well in advance of the Casablanca Conference:

JOINT/AMERICAN/BRITISH DIRECTIVE ON DAY BOMBER OPERATIONS INVOLVING FIGHTER CO-OPERATION

[redacted]

AIM

The aim of the day bombardment by Allied Air Forces based in Great Britain is to achieve continuity in the bombing offensive against the Axis.

ALLOCATION OF RESPONSIBILITY

2. The primary instrument for night air bombardment is the British Bomber Command. Day bombardment will be the primary responsibility of the Eighth Air Force.

METHODS OF ACHIEVING THE AIM.

3. Night bombardment methods will remain as defined in present Air Ministry Directifs to the British Bomber Command. The method of achieving the aim of day bombardment is by the destruction and damage of precise targets vital to the Axis war effort.

DEVELOPMENT OF DAY OFFENSIVE.

4. The day bomber offensive is to be developed in the following three phases:

(a) Phase 1.

American day bomber forces under British fighter protection reinforced by American fighter forces are to attack suitable objectives within the radius of action of British fighter cover.

(b) Phase 2.

American day bomber forced under British and American fighter protection are to attack suitable objectives within the radius of action of British and American fighter types. In this phase, the direct protection of bomber forces is to be provided by American fighter forces, British fighter forces are to be used principally for diversionary sweeps and withdrawal cover. During this phase the range characteristics of the American type fighter aircraft is to be exploited to increase the depth of penetration of the bomber force and also to widen the front of attack. It will be the responsibility of the Eighth Air Force to develop the tactics of deep penetration of the enemy day fighter defence.

[redacted]

[redacted]

(c) Phase 3.

The Eighth Air Force will develop its full day bomber offensive receiving such support and co-operation as may be required from the British short-range fighter force.

OBJECTIVES

5. Objectives suitable for the day bomber offensive under Phase 1 will be determined periodically, within existing strategy, between the Commanding Generals, Eighth Air Force and A.C.A.S. (Assistant Chief Air Staff) (Ops.) as occasion demands.

ROLE OF BRITISH DAY BOMBER FORCE.

6. During the development of the day offensive, the British day bomber forces are to be used in the secondary role to add weight to British diversionary operations, and to maintain the attack during periods unsuitable for the operation of the American heavy day bombers.

MACHINERY FOR IMPLEMENTING THE PLAN.

7. During Phase 1, it will be the responsibility of the Commanding General of the American Bomber Command to initiate offensive operations, making preliminary arrangements for fighter co-operation with the Commanding General, the American Fighter Command. It will be the responsibility of the latter to ensure full consultation with the Air Officer Commanding-in-Chief, Fighter Command. When the general plan is settled, it will be the responsibility of the Air Officer Commanding-in-Chief, Fighter Command to nominate the British Fighter Group Commander, who is to draw up the detailed fighter plans, reinforcing the Fighter Group in respect of American pursuit reinforcements. Thereafter, detailed planning and the conduct of the fighter operation will be the responsibility of the Commanding General, American Bomber Command, and the British Fighter Group Commander concerned.

8. When Phase 3 is reached, it will be the responsibility of the Commanding Generals of the American Bomber and Fighter Commands together to make the general and detailed plans and and to conduct the operations under the responsibility of the Commanding General of the American Fighter Command to arrange with the Air Officer Commanding-in-Chief, Fighter Command for

such ground facilities and fighter cooperation as may be required from the British Fighter Command.

9. The Air Officers Commanding-in Chief, Bomber, Fighter and Coastal Commands and the Commanding Generals of the American Bomber and Fighter Commands will at all times keep each other informed of operational intentions and together make such adjustments to plans as may be necessary to ensure proper co-ordination.

10. At some moment during Phase 2 it will be necessary to change from the coordination machinery for Phase 1 to that agreed for Phase 3. The moment of change-over will be decided by the Commanding General, Eighth Air Force and the British Air Ministry (A.C.A.S. Ops)) jointly, having regard to the available strength of American pursuit forces available which are armed with American type fighters, and the degree of operational experience which they have acquired.

Casablanca Plans. 20.8.42

The two commands, then, were ideally suited to supplement each other for a twenty-four-hour-a-day program which was worked out on January 21, 1943, at the Casablanca Conference. The first clearcut directive for the 8 Air Force was issued there. It was mutually agreed by the Allies that our primary objectives for precision bombing, in order of priority should be:

1. Submarine construction yards.
2. The aircraft industry; factories, assembly plants, works for component parts.
3. Enemy transportation facilities.
4. The oil industry; fields, refineries, storage depots.
5. Other targets in the enemy's war industries.

These were the "priorities" in the order of their importance. We shall see how effectively the assignment was carried out and also, how near it came to failure, save for VIII Fighter Command. Other objectives were assigned: (1) The submarine bases on the

Biscay coast. (2) The city of Berlin; heart of the German political, transportation, manufacturing, finance, and propaganda world. (3) Northern Italy; the industril heart of the lesser ally. (4) The German fleet in harbor or at sea. That it was to be a joint program is indicated by the factors controlling the choice of these targets for the 8th. First importance was their unsuitability, for one reason or another, for night attack by the R.A.F. Second, was the need to sustain the pressure on German morale, day and night.*8 Third, was the need to impose losses on the G.A.F. fighter strength, for as Mr. Spaight says *9 "Bombers sometimes shoot down enemy fighters at night, but the numbers so destroyed are insignificant in comparison with those accounted for not infrequently in the daylight raids". So great indeed were the Fortresses' claims in the spring and summer of 1943 (See Plate VIII) that an R.A.F. Wing Commander at Tangmer, half incredulously and half seriously suggested to the author that they go out without bombs and destroy the entire Luftwaffe in half a dozen raids!

Combined Bomber Offensive.

On April 12, 1943, there was formulated the plan for the

(*8- Author - "Everybody seemed to have underestimated the influence of the Gestapo in maintaining that morale!"

*9 - Spaight, J.M. - "Bombing Vindicated" - page 100.)

"Combined Bomber Offensive", which supplemented the directive laid down for the VIII Bomber Command at Casablanca three months before. The plan gave a timetable and targets for the ensuing year, in which the first phase had already started, in November, 1942; it was to extend to July 1, 1943. During this phase, the operating radius was to be 350 miles, and the targets were 12 U-boat bases, 3 fighter aircraft factories, 5 ball-bearing factories, and 8 oil refineries. The selection of targets is interesting in the light of the Casablanca dictum. The second phase would occur from July 1 to October 1, 1943, within an operating range of 400 miles. Fighter radius at that time was not over 250 miles maximum! Forty-eight attacks were to be mounted; 11 against submarines, and the rest (37) against the aircraft industry.

Medium bombers of both air forces would run diversionary attacks against enemy airfields. The third phase was to be from October 1st to New Year's Day, 1944, and the range required to reach the targets, 450 miles. Sixty-six attacks were planned, as follows: Submarines - 4, Aircraft industry - 31, ball-bearing industry - 1, oil-industry - 10, synthetic rubber - 2, rubber tire industry - 8, and military transport - 10. Fighters were to be increasingly used to cover the bombers.

In the fourth phase from January 1, 1944 to April 1, 1944, the mounting size of the forces planned was indicated by the

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100 attacks which were assigned; against submarines - 6, aircraft industry - 46, ball-bearing factories - 3, oil industry - 4, synthetic rubber - 2, tire factories - 8, military transport - 11, and the coastal defenses - 20. Apparently the invasion date was already in mind!

Chiefs of Staff Directive.

By June 10, 1943, the Combined Chiefs of Staff had gotten together to implement the words used by Mr. Churchill before Congress, as quoted above (page 67). A year earlier (May 10, 1942), he had issued his warning to the German munitions workers, of coming events. Now they would be implemented. (See Appendix "L")

The primary objectives remained much the same; (1) Submarine yards (2) Remainder of aircraft industry, (3) Ball-bearing factories, and (4) oil refineries, which would be contingent upon the results of the Ploesti raid. Secondary targets would be (1) Synthetic rubber and tires (2) Military Motor transport vehicles. In order to achieve the above, the destruction of German airplane engine and component factories and the ball-bearing factories, upon which aero-engines largely depended, was enjoined. General destruction of industrial areas associated with these industries was to be accomplished, as well as the destruction of aircraft repair depots and storage parks. Finally, the destruction of enemy fighters in

the air and on the ground was indicated, not only to the bombers, but in a special directive to the fighters who were instructed to attack such aircraft in the air and on the ground, but to provide bomber support through the enemy defensive system, at minimum cost to the bombers. VIII Fighter Command now also had its field orders. How superbly they were carried out will be seen in succeeding chapters.

Choice of Targets.

It is a very long drawn out process, backed by intensive work and months and months of planning, before the fighters can finally shepherd their "Big Friends" over the target. Few people have any idea of the complexity of the problem.

Long, long before the bombers go over, special data on the industrial plant has been gathered from every possible source by the Allied Ministries of Economic Warfare. Target material in the minutest and most elaborate detail is prepared before the Air Ministry sends out its directives, endless discussions and conferences must be held with the Ministries of Economic Warfare, the Admiralty, and the War Office. Naturally, the Navy prefers U-boat bases and the Army, motor transport and gun factories, as targets. The War Cabinet is also consulted and the directive is issued to Bomber Command, which selects the targets within the scope of the directive, arranges for Photo-Reconnaissance Units to visit the spot, and obtain all possible information,

before the operation is planned.

Then comes the Commanders-in-Chief's meeting, with specialists from the Air Staffs to advise; Operations, Intelligence, Anti-Aircraft, Navigators, Signals, Meteorologists, Armament, and Ordnance experts. The Commander-in-Chief, having chosen the specific target, decides where the bombers are to go and the scale of the effort needed. In general, about one-third of the strength is used for half the month, and one half for the remainder, at least such is the case in the R.A.F. For night bombing, moonless nights are preferred, and the day bombers pray for cloudless days; flak defended areas are avoided as much as possible; orders are then issued to groups and from the groups to the stations.

In the 8 Air Force, the procedure is similar. From Strategical Air Force, known as "Widewing", located at Teddington, orders go to the 8th and 15th Air Forces, in case the operations are related, as they often are. Headquarters of the 8 Air Force is at "Pinetree" in High Wycombe, whence the three divisions are each notified of their task, and a Field Order is issued. This goes to Divisions who arrange for the necessary combat wings and groups. At the same time, Fighter Command receives its data and plans the fighter escort, as is described in the chapter entitled "Little Friends".

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Mission Accomplished.

How then did the strategical plan work out? The tables, in Appendix "E", indicate the assignments as set down for the 8 Air Force in the Combined Bomber offensive. In the first phase, the attacks were stepped up to 66, where only 28 were scheduled; assaults on submarine pens and yards, mostly along the Biscay Coast, were trebled. The U-boats were a serious menance to our great convoys of war supplies to Britain and embattled Russia. Airfields were attacked rather than the factories which produced the aircraft, for we did not have enough fighters to escort the bombers deep enough into Germany to reach the centers where the aircraft were being produced and assembled. The object of the offensive was to prevent the Germans from using the coastal and nearby airfields, and compel them to go farther back into occupied territory. The great problem facing the Germans, was, how to produce fighters fast enough to stop us before our offensive reached its peak. The Allied problem was, how to get at the aircraft industry, as yet beyond escort range, before the Germans were able to build an air force great enough to be able to stop our bombers.

The second phase showed a drop-off in the attacks on the submarine bases. Either the Navy, with its convoy escorts, was able by then to protect the ships adequately, or the air attacks

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had become too costly for our bombers, or possibly the attacks had been appraised as futile because of the enormous concrete walls under which the U-boats nested. Attention was now turned to oil refineries and to the vital ball-bearing works, without which most of Germany's mechanical war machines could not be produced; they are vital to the manufacture of all aero-engines. There was a very noticeable increase in attacks on airfields, where none had originally been planned for this phase; 45 attacks were made by our heavies, probably many hundreds more by the mediums and the R.A.F. bombers.

The third phase, however, from October 1 to January 1944, did not live up to expectations. The allocation of our 15 Air Force to Italy reduced the bomber force in Great Britain considerably, and they had to be replaced. This appears, in the wider perspective of 1944, to have been a wise decision, despite the handicap it placed on the 8 Air Force, for it served three major needs. It gave an added base of operations from which to hit at Southern Germany, Austria and the dispersed industries in Czechoslovakia. It would permit operations in a Mediterranean climate where the conditions were presumably superior to those in the British Isles and over the northern parts of enemy occupied territory. And third, the net result on the G.A.F. would be to force a still wider disposition of their limited fighter squadrons. Several fighter groups like-

wise had gone to the Mediterranean to build up the 12 Air Force, and without the long range P-38's, escort ranges averaged only 375 miles instead of the 450 miles which had been hoped for. It was at this time that every effort was being made to get the belly tanks installed for the P-47's, upon which much hopeful reliance was placed, to give the added range required.

But the fourth phase of the offensive far exceeded expectations. Our factories had begun to turn out bombers in quantity-production and priority was at last given to the European Theater, where the war's most critical phase would be fought. Fighter fields were assigned to our groups, nearer the English coast, to squeeze out additional range. Bombers occupied the relinquished fighter fields, and it was a standing joke that the American 8 Air Force had "occupied East Anglia". The distribution of fighter and bomber fields is shown on Plate No. IX with Cambridge as its center of gravity, from which mileage ranges have been more realistically calculated for this study, instead of from London or the coast, as in other range estimates.

There took place in the fourth phase, a concerted and widespread series of attacks on any and all airfields which the G.A.F. might have been using. Over 300 "strafings" were carried out, and the enormous toll of enemy aircraft destroyed may be

seen in Plate No. X, which records the victories by the month. Aircraft factories and plants manufacturing component parts became the target for 89 attacks, twice as many as called for in the directives. Attention was also turned to oil refineries, synthetic rubber and rubber tire plants, which are made from petroleum by-products, and are absolutely essential for the German mechanized army. Marshalling yards and railway junctions were bombed while the fighters beat up trains and locomotives. The "Chattanooga A" plan laid all of North Germany into squares each assigned to a fighter group to attack everything on wheels. Plan "B" had the same idea for all of South Germany. Transportation would be paralyzed. Not least was the attention given to the airfields in "Jackpot Plans", for the fighters, and on which no less than 80 attacks by "heavies" were made successfully. The objective was the "destruction of the G.A.F. in being". Eighteen other industrial targets were hit, including Berlin and Brunswick, on such a scale as to simulate the "area bombing" of which the R.A.F. "heavies" had been accused bitterly by Herr Goebbels. Range for these missions had increased to an average of 400 miles; a steady increase.

The huge 8 Air Force had grown to maturity, and launched 300 attacks instead of the 100 which had been directed; here was strategic bombing on a scale such as Air Strategists had dreamed, carried out by the sledge hammer blows of the 1,000 R.A.F. "heavies" at night and the 1,500 American "heavies" by day.

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Certainly it proved that if the Strategical Air Force had not been able to demonstrate the decisive nature of the work, (and there were many reasons for that), it at least proved that it was a necessary, in fact, the most absolutely essential factor in the preparation for the invasion, which came on June 6, 1944.

We have shown the grand strategy, the part assigned to the RAF Bomber Command, the other half of the picture planned for the VIII Bomber Command's "heavies"; our "Big Friends". This planned air offensive was the "raison d'etre" for the VIII Fighter Command.

The technical data for the B-17 and B-24, U.S. heavy bombers, is given in Appendix "F"

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