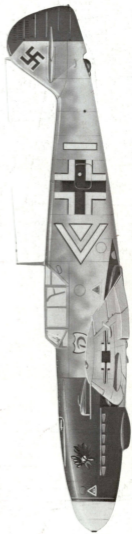
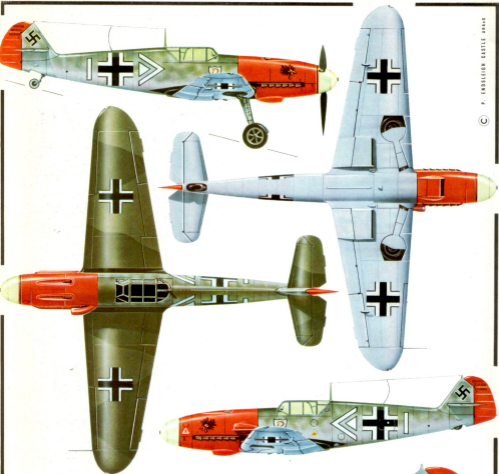


PROFILE PUBLICATIONS

The
Messerschmitt
Bf 109F

NUMBER 184





The insignia of III JG 2, carried on the cowling of Hahn's aircraft, is illustrated at the head of page 8 of this Profile.

JG 2 "Richthofen"



Detail of tail markings



MESSerschmitt Bf 109F-2, Werke Nr. 5749, flown by Hauptmann Hans "Assi" Hahn, Gruppenkommandeur of III Gruppe, Jagdgeschwader 2 "Richthofen"; St. Pol, Northern France, July 1941.



This fine study of a Bf 109F-4 (Tropical) with a drop-tank mounted on centre-section shackles also displays to advantage the insignia of II Gruppe, JG 27 on the cowling. The aircraft was photographed in the Western Desert; and it is with the exploits of JG 27 in the North African campaigns that the Bf 109F is mainly associated in the popular imagination. (Photo: R. C. Seeley Collection)

The Messerschmitt Bf 109F

On the 10th July 1940, elements of a newly-formed *Luftwaffe* combat force under the command of Oberst Johannes Fink made one of the first tentative bombing attacks on British shipping around the English south coast ports. The attacks had no great significance in themselves; the results would have no direct bearing on the ability of the British to wage war; yet their meaning was all too clear to the handful of men who were preparing to guide their island into the most perilous, and quite possibly the final chapter in a thousand years of national sovereignty. Those small formations of German raiders were the vanguard of the most formidable nation then under arms anywhere in the world; its forces had conquered five separate countries in twelve weeks, and now their fury was about to be turned on the last race willing to stand between them and the domination of a continent.

On the same day, more than five hundred miles to the south and east, the experimental prototype for a new German fighter aircraft was making its first flight. Re-engined with a 1,200 h.p. Daimler-Benz powerplant and with the chunky lines of its prede-

cessor streamlined and sleekened, the Messerschmitt Bf 109F was to be the most attractive of all the variants of that long series of fighters. As the experimental machine rose from the runway of Augsburg-Haunstetten it must have seemed likely that the new aircraft would never have the chance to join battle with the Royal Air Force; Britain was quite alone, and the reduction of those stubborn islands could only be a matter of weeks away. The sleek Bf 109F would arrive at the front as a bonus for squadrons flushed with victory.

Yet early in the following spring, when the first of the new fighters arrived on the airfield of Adolf Galland's *Jagdgeschwader 26 "Schlageter"*, Britain was still unconquered; the fighter squadrons of the *Luftwaffe* were exhausted and demoralised by a failure which all their courage and skill had been unable to prevent; and many of their finest leaders had disappeared into the hungry grey Channel. Soon many of the mauled units would be brought up to strength and transferred to the East, far from the scene of their failure, and with their new weapons would embark on another campaign which seemed to offer

Two views of W.Nr.5604, the Bf 109E airframe mated with the DB 601E-1 powerplant, which first flew at Augsburg-Haunstetten on 10th, July 1940. (Photos: via Hans Obert)



easy victory. This, too, would prove an empty dream.

FACE-LIFT FOR A FIGHTER

In the spring of 1940 an extensive programme of "cleaning up" the Bf 109E was initiated in order to take advantage of the potential of the new and more powerful Daimler-Benz engines then becoming available. A standard "Emil" airframe, *Werkze Nr. 5604*, was fitted with the DB 601E-1 engine, and a new symmetrical cowling sloped into a larger rounded spinner to give an attractively smooth contour in vivid contrast to the "Emil's" stepped nose. The supercharger air intake was redesigned and positioned to protrude further from the cowling side, to increase the ram effect; the airscrew diameter was reduced by about six inches; and shallower underwing radiators incorporating boundary layer bypasses were installed. The other major innovation was a cantilever tailplane, replacing the externally-braced unit of previous models. In this configuration, and coded VK+AB, the *Versuchs* machine made the maiden flight on 10th July 1940.

Two further machines, the V17 and V18, were employed to test a new wing. The square tips were replaced with rounded units, with a consequent increase in span; and Frise-type ailerons and plain flaps of reduced area replaced the "Emil's" slotted installations. Other modifications included a smaller rudder and a fully retractable tailwheel. All these features were built into the pre-production Bf 109F-0 machines which were evaluated by the *Luftwaffe* late in 1940. These were powered by the DB 601N engine, which by the use of flat-top pistons and 100 octane fuel gave 1,200 h.p. The armament of pre-production and initial production Bf 109F-1 aircraft was set at two 7.92 mm. MG 17 machine guns in the upper cowling and one MG FF cannon mounted between the cylinder banks and firing through the airscrew spinner. The first F-1 models reached *Luftwaffe* test establishments early in 1941.

A series of accidents was reported during this period involving machines of the initial production batch, three aircraft being lost after radio reports from the pilots of violent vibration. When the tail of an F-1 tore loose in flight, the engine remaining relatively intact in the resultant crash, the suspicion of the investigators was directed to the fuselage/tail joint. It was subsequently established that the omission of the Bf 109E bracing struts gave the new tail configuration an altered strength/rigidity factor and an oscillation frequency which at certain engine speeds set up sympathetic vibrations which tore out the tail spars. All Bf 109F's were recalled and modified to eradicate this danger.



A pre-production Bf 109F-0, powered by the DB 601N engine. (Photo: Imp. War Mus. HU2918)

The Bf 109F-2 followed the F-1 into service within a short period. It differed only in armament, the 20mm. MG FF cannon being replaced by a faster-firing 15 mm. MG 151 with a 950 rounds-per-minute rate of fire; an innovation was the use of electrically-powered equipment for the removal, checking and loading of this weapon. A tropicalised version of the F-2 was produced for service in Southern Russia and the North African theatre, where dust was a major problem. The filter incorporated in the supercharger air intake was not particularly efficient; the "elbow" shape of the intake was a basic obstacle to its effectiveness. Another sub-type designated F-2/Z incorporated the GM-1 nitrous oxide injection (known to pilots as "Ha-Ha") to increase power above the rated altitude of the engine.

Early in 1942 the third main variant appeared. The F-3 was powered by the DB 601E engine burning B2 fuel of 87 octane; armament was similar to the F-2. The maximum speed of the F-3 was 390 m.p.h. at 22,000 feet altitude, and the normal range was 440 miles. Maximum climb rate was 3,320 ft./min. at 5,000 feet, and service ceiling 37,000 feet.

Both the Bf 109F-1 and F-2 possessed a superior high-altitude performance to the Supermarine Spitfire V then entering service with the R.A.F. fighter squadrons (see *Profile No. 166*). Handling characteristics were, in general, excellent, and the new fighter was welcomed by the pilots of JG 26 on the Channel coast. The unit's Technical Officer has reported that although the Bf 109F was inferior to the Spitfire in a turn, its climbing performance was better and for the first time *Luftwaffe* pilots could outclimb Mitchell's sleek thoroughbred. An unsatisfactory feature of its behaviour was that when diving at speeds of 370 m.p.h. and more, the ailerons induced a turning effect which could only be countered by the use of both hands, and in some cases both knees as well, on the control column. Steep turns or recovery from

high speed dives often caused chord-wise corrugations on the wings, and heavy landings caused corrugations on top of the fuselage immediately behind the cockpit. Most service pilots were less clinical in their judgement, however; a leading ex-*Luftwaffe* fighter pilot recalls simply that "it could turn and climb like hell!"

There was, however, one serious point of controversy; the armament. The Bf 109E-4 which had formed

The initial production Bf 109F-1 reached *Luftwaffe* test establishments early in 1941. The unbraced cantilever tailplane caused unforeseen problems, and resulted in several fatal crashes early in the fighter's career.

(Photo: Imp. War. Mus. HU2742)





the main equipment of the *Luftwaffe* day fighter squadrons before the introduction of the F-model mounted two cowling machine guns and two wing cannon of 20 mm. calibre. The reduction in armament represented by the Bf 109F was received with mixed emotions by the *Jagdflieger*; Oberstleutnant Werner Mölders, *Kommodore* of *Jagdgeschwader 51*, welcomed the new nose-mounted battery. He considered that one centrally-mounted weapon was worth two in the wings, and General Udet agreed with him. Adolf Galland of JG 26 held that one cannon was entirely inadequate; as early as the turn of 1940/41 he had formed the opinion that rifle-calibre machine guns were outdated in air fighting, of questionable usefulness in fighter-versus-fighter combat and quite pointless in attacks on multi-engined bombers. Galland considered that as the war progressed training standards would inevitably decline, and that while one central cannon might be adequate for such legendary marksmen as Mölders (and, in his day, Udet), the raw pilots of 1942 and 1943 would need as many guns as they could get to increase their chances of success. Other veterans, like Oesau of JG 1, refused to fly the F-model for months.

The introduction of the Bf 109F-4 saw a change in armament; the 15 mm. MG 151 was re-barrelled to 20 mm. calibre, a step which reduced the rate of fire to 650 r.p.m. An alternative armament "kit" was provided for the Bf 109F-4/R1, consisting of two 20 mm. MG 151's in underwing gondolas. While this decision made the Bf 109F a realistic adversary for heavy bombers, it also marked the beginning of the decline of the 109 series as pure fighter aircraft. A machine thus defaced in line and drag became almost useless for fighter-versus-fighter combat, and for the first time the Bf 109F-equipped units on the Channel coast found themselves losing their high-altitude edge over the Spitfire. The 87 octane fuel of the F-4 sub-type did nothing to redress the situation. From this point onwards in the history of

One of the first units to operate the Bf 109F-1 and F-2 was the famous Jagdgeschwader 2 "Richthofen". The photographs on this page all show machines of JG 2 during their first few months of service on the Channel coast. The aircraft at the top of the page is that flown by a Gruppenkommandeur of III/JG 2; the markings invite immediate comparison with those of "Assi" Hahn's machine, but they are in fact two different aircraft. (Top and lower right photos: R. C. Seeley Collection. Lower left, Imp. War Mus. HU3032).





Pilots relax round a Bf 109F-2 of 8/JG 2 "Richthofen" on a Channel coast airfield. The arrival of the F-model gave the Jagdflieger the ability to outclimb the Spitfire for the first time. (Photo: via Zdenek Titz)

the Bf 109, the aircraft was increasingly to suffer from conflicting requirements of armament and performance. There can be no doubt that aerodynamically the early F-models represented the peak of development; their lines were clean and pure, unmarred by the "bumps" and "bath-tubs" of later years.

The Bf 109F-4/B variant was a fighter-bomber version with provision for one 500 kg. bomb under the centre-section, or a rack of four 100 kg. bombs. In the summer of 1942 the *Jabos* of JG 26 and JG 2 "Richthofen" ranged widely over the British south coast areas and caused disruption and strain of defence facilities out of all proportion to the number of aircraft involved or the physical effectiveness of their bombs. (See operational section below.)

The Bf 109F-5 was employed as a long-range reconnaissance machine, with armament reduced to two machine guns and provision for a 66-imp. gal. drop tank; and the F-6 sub-type was a further reconnaissance development with all armament removed and an RB 20/30, RB 50/30 or RB 75/30 camera in place of the radio equipment.

ONTO THE SQUADRONS

Although it was not built in such quantities as the later Bf 109G model (see *Profile No. 113*), and was in fact virtually phased out of front line service by the close of 1942 when only 90 aircraft remained on the strength of the first line fighter force, the Bf 109F was used by nearly every prominent German *Jagdgeschwader* on all three main combat fronts, and was flown by the majority of the better-known aces during the mid-war years.

At the beginning of 1941 the *Geschwader Stab* and III *Gruppe* of JG 26 re-equipped with Bf 109F-2's; and the C.O., Adolf Galland, immediately began to add to his long list of victories. On 1st April Galland, on a transfer flight from Düsseldorf to Brest with his



(Above, top to bottom) The first intact Bf 109F to be acquired by the R.A.F.—three views of the F-2 belly-landed near Dover on 10th July 1941 by Hptm. Rolf Pingel, Gruppenkommandeur of I/JG 26 "Schlageter".

(Photos: Imp. War Mus. E(MoS)337, 338, 339)



(Left) A sand-camouflaged Bf 109F (Trop.) stirs up the dust as it turns for take-off from a desert airstrip.

(Photo: R. C. Seeley Collection)

wingman Oberfeldwebel Robert Menge (killed 14th June 1941 with 18 victories confirmed) made a stop-over at Le Touquet and a sortie over southern England, during which mission each pilot claimed a Spitfire. They then continued to Brest to rejoin the *Geschwader*. On the 15th of the month Galland claimed three Spitfires during one sortie over Dover, on that occasion accompanied by Oberfeldwebel Hans-Jürgen Westphal.

On 22nd June 1941, at 03.15 hrs., the attack on the Soviet Union opened along a front of more than 2,000 miles, under the code-name "Operation Barbarossa." Four *Luftflotten* were assigned to cover the assault: *Luftflotte V* in Northern Norway was commanded by Generaloberst Hans-Jürgen Stumpff, the only fighter component being 13 *Staffel*, JG 77 with BF 109E's. *Luftflotte I* in Northern Russia was commanded by General Alfred Keller, and included Major Johannes Trautloft's JG 54 with three *Gruppen* of BF 109F's and a few BF 109E's. *Generalfeldmarschall* Albert Kesselring's *Luftflotte II* was assigned to Central Russia, with a large fighter force; JG 27 mustered two *Gruppen* of BF 109E's under Major Wolfgang Schellmann; JG 51 was commanded by Mölders and all four *Gruppen* were equipped with BF 109F's; and Major Günther von Maltzahn's JG 53 "Pik-As" comprised three *Gruppen* of BF 109F's. The South Russia-Crimea sector was the responsibility of General Löh'r's *Luftflotte IV*; the fighter component included Major Günther Lützow's JG 3 "Udet" with three *Gruppen* of BF 109F's. Other units on the South Russian front were two *Gruppen* of JG 52, commanded by Major Hans Trubenbach, and two *Gruppen* of JG 77 commanded, with I *Gruppe* LG 1, by Major Gotthardt Handrick. All these formations were equipped with "Emils".

During the first full day of operations no less than 1,811 Soviet aircraft were claimed as destroyed for the loss of 32 *Luftwaffe* aircraft; all but 322 of the Russian machines were destroyed on the ground. The German *Jagdgruppen* maintained this high rate, and claimed 114 victories on 30th June alone. Well to the fore was Mölders' JG 51; on that day Mölders himself claimed five aircraft, his 78th to 82nd kills. Hauptmann Hermann-Friedrich Joppien and Leutnant Heinz Bär also claimed five each, and JG 51 became the first *Geschwader* to register 1,000 victories since the beginning of the Second World War. On the same day the pilots of JG 54 "Grünherz" claimed the destruction of 65 Soviet bombers in the Düna-Brücken area, and on 1st August Oberleutnant Scholz shot down the *Geschwader*'s 1,000th victim;

A well-known photograph showing a crash-landed Bf 109F-4 (Trop.) of 7/JG 27, mainly worthy of note for the excellent example it provides of Luftwaffe desert finish and typical markings. The aircraft appears to be in mint condition. (Photo: Imp. War Mus.)



Key to colour illustrations

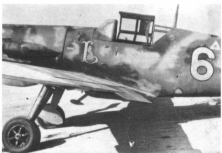
Page 8:

- A. Bf 109F flown by adjutant of III/JG 2 "Richtshofen"; Caen, France, 1941.
- B. Bf 109F of 9/JG 2 "Richtshofen"; Caen, France, summer 1941.
- C. Bf 109F flown by Technical Officer of III/JG 3 "Udet"; Russia, 1942.
- D. Bf 109F flown by *Geschwader* adjutant of JG 54 "Grünherz", in II *Gruppe* markings; Russia, 1941.
- E. Bf 109F of II/JG 54 "Grünherz"; Russia, 1942.
- F. Bf 109F flown by *Gruppe* adjutant of III/JG 54 "Grünherz"; Russia, 1942.
- G. Bf 109F of 9/JG 54 "Grünherz"; Russia, winter 1942/43.
- H. Bf 109F of 8/JG 54 "Grünherz"; Russia, 1942.
- I. Bf 109F flown by Oberst Werner Mölders, Kommandore of JG 51, on Central Russian Front in 1941; at the time of his death on 22nd Nov. 1941 Mölders' aircraft carried 115 victory bars on the rudder.

*It will be noted that in many cases the aircraft illustrated here do not conform to the theoretical marking schemes of *Gruppe* symbols, numeral colours, etc. As these subjects were chosen at random simply for their visual appeal, it may be concluded that these practices were ignored as often as they were followed.*

Insignia illustrations (top to bottom):

- III/JG 2 "Richtshofen"
- 9/JG 2 "Richtshofen"
- III/JG 3 "Udet"
- JG 3 "Udet"
- II/JG 54 "Grünherz"
- III/JG 54 "Grünherz"
- 9/JG 54 "Grünherz"; earlier in the war this was usually applied on a yellow shield.
- 8/JG 54 "Grünherz"



*The fighter element of the training wing Lehrgeschwader 2 retained its insignia when redesignated as I *Gruppe*, JG 77 and transferred to active duty, including operations in the Mediterranean theatre.* (Photo: David Rigby)





- J. Bf 109F of 3/JG 53 "Pik-As"; Mediterranean and Balkans, summer 1942.
 K. Bf 109F/Trop of 1/JG 27; Libya, 1942.
 L. Bf 109F/Trop of 7/JG 27; Libya, 1942.
 M. Bf 109F/Trop of 11/JG 27; Sicily, 1943. Again, note departure from normal Gruppe/Staffel marking scheme: Gruppe symbol and Gruppe insignia are contradictory.
 N. Bf 109F of 154 Squadriglia, 3 Gruppo Autonomo C.T., Regia Aeronautica; Comiso, Italy, July 1943.
 O. Bf 109F of 155 Squadriglia, 3 Gruppo Autonomo C.T.; Comiso, July 1943.
 P. Bf 109F of 363 Squadriglia, 150 Gruppo Autonomo C.T.; Sciocca, Italy, July 1943.
 Q. Bf 109F of 364 Squadriglia, 150 Gruppo Autonomo C.T.; Sciocca, July 1943.
 R. Bf 109F of 1/1 Fighter Squadron, Hungarian Air Force; Stalingrad area, Russia, winter 1942/43.

Insignia illustrations (top to bottom):

JG 51 "Mölders", prior to May 1944.

JG 53 "Pik-As"

I/JG 27

III/JG 27

II/JG 27

Fuselage fascas marking carried by all Regia Aeronautica aircraft.

150 Gruppo Autonomo C.T., Regia Aeronautica.

3 Gruppo Autonomo C.T., Regia Aeronautica.

of this total, 623 were Soviet aircraft. JG 53 "Pik-As" had claimed their 1,000th victory the previous day, and on 15th August three victories by Oberfeldwebel Hans Steckmann of III/JG 3 "Uder" took his *Geschwader* into the "Thousand Club." The *Jagdflieger* were riding a wave of victory that must have seemed limitless.

Meanwhile, on the Channel coast, only two *Jagdgeschwader* remained to face the R.A.F.; these were the élite JG 26 "Schlageter" and JG 2 "Richtshofen". JG 2 mustered three *Gruppen* of Bf 109F-1's and F-2's; I/JG 26 operated F-4's, and III/JG 26 a mixture of F-2's and F-4's. The first Focke-Wulf Fw 190A-1's had recently been issued to II/JG 26 (see *Profile* No. 3). At this time Oberleutnant Josef "Pips" Priller, *Staffelkapitän* of I/JG 26 and later to become the *Geschwader Kommodore*, was scoring very consistently; he claimed eight enemy aircraft in



A typical view of a Bf 109 during the Russian winter—in this case, an aircraft of *Jagdgeschwader* 51. Points of note are the temporary snow camouflage roughly applied over the basic green finish; the yellow wing-tips and belly band; and the removal of the oleo leg covers from the undercarriage.

(Photo: R. C. Seeley Collection)

A force as sophisticated as the Luftwaffe was at a disadvantage when obliged to operate under the dauntingly primitive conditions of the Eastern Front. As always, "General Winter" came to the aid of the Russians and severely hampered Luftwaffe activity.

(Photo: Imp. War Mus. RUS 1227)



June 1941 and twelve in July. One of these was a Spitfire V of No. 72 Squadron R.A.F., flown by Sgt. W. M. Lambertson; Priller scored effective hits in the engine and cockpit and Lambertson was forced to bale out. This was Priller's 40th victory and cost him 125 rounds from his machine guns and 76 rounds of cannon-fire. The action took place on the 14th July, and constituted the 54th victory of 1 *Staffel*, the 162nd of 1 *Gruppe*, and the 643rd of the *Geschwader*.

The first Bf 109F is believed to have been shot down over England on the evening of 11th May, 1941, by a sergeant pilot of No. 91 Sqn., R.A.F. flying Spitfire Vn W3126. On the 10th July, just one year after the first experimental flight, the R.A.F. acquired their first airworthy example of the Bf 109F when Hauptmann Rolf Pingel, *Gruppenkommandeur* of I/JG 26, was forced to belly-land his F-2 near Dover after engine damage. It was quickly repaired and test-flown by the R.A.E. Farnborough, but was completely destroyed soon afterwards in a crash.

The first of many four-engined bombers to fall to the guns of JG 26 was shot down on 18th July, when Feldwebel Ernst Jäckel of 2 *Staffel* destroyed a Short Stirling off the Kent coast; during the action Jäckel fired 96 cannon shells and 679 rounds from his machine guns.

On the night of 11th/12th February 1942 the German capital ships *Scharnhorst* and *Gneisenau*, both of 26,000 tons, together with the 10,000 ton heavy cruiser *Prinz Eugen* covered by seven destroyers and numerous smaller escort vessels began their epic break-out from Brest and the "Channel Dash" to safer anchorages at Kiel and Wilhelmshaven. To cover this operation Galland, newly appointed Inspector of Fighters, had at his disposal 252 fighters.



Two machines of JG 54 "Grünherz", the famous unit commanded by Johannes Trautloft which served with Gen. Keller's Luftflotte 1 in the northern sector at the beginning of the Russian campaign. The lower photograph is thought to show Trautloft's aircraft—the "Green Heart" under the cockpit apparently bears the superimposed insignia of the three *Gruppen*, and this practice is known to have been followed by Trautloft. The upper picture shows an F-4/B. (Photos: Hans Öbert.)





Two Bf 109F-2's shot down by Soviet forces during the early stages of the Russian campaign; both are thought to be machines of JG 3. (Photos: Imp. War Mus. RUS 566,574)

JG 2 mustered 90 Bf 109F-4's; III/JG 26 had some 30 Bf 109F-4's on strength, the remainder of the *Geschwader* operating Fw 190A-2's. Sixty F-4's were made available by JG 1 on its bases in the German Bight, and a further dozen Messerschmitts were provided by a fighter school at Paris. Thirty Bf 110 night fighters were assigned to dawn and dusk operations. The operation, code-named "Thunderbolt", was a resounding success for the *Luftwaffe* and *Kriegsmarine*; and during the course of the almost continual fighting above the naval force 49 R.A.F. aircraft were listed as confirmed victories and 13 as probably destroyed.

On 10th March 1942 a directive initiated by the commanding general of *Luftflotte III*, General Hugo Sperrle, ordered the formation of fighter-bomber *Staffeln* within both JG 2 and JG 26; this was simply regularising an existing situation in the former case, 10 (*Jabo*)/JG 2 having been formed on 10th November 1941 under the command of Hauptmann Frank Liesendahl. By 26th June 1942 the unit had claimed the destruction of 20 ships totalling some 63,000 tons; its activities mainly centred around British coastal shipping. Between 19th April and 18th June, 10 (*Jabo*)/JG 26 carried out 32 raids while equipped with the Bf 109F-4/B; the targets were ships (6), railway installations (8), factories (5), gasworks (2), barracks (8), and harbour installations (2); one mission was carried out in search for "targets of opportunity" and recorded simply as a "reconnaissance with bombs". During this period the *Staffel* was led by Hauptmann Karl Plunser; the first loss was suffered on 24th April during an attack on a gasometer at Folkestone. Feldwebel Hans-Jürgen Fröhlich, flying as wingman for Oberleutnant Hans Ragotzi, had scored good hits with two SC 250 bombs and was pulling away when his aircraft was severely hit by flak. Late in June, both *Jabo-Staffeln* were re-equipped with the Focke-Wulf Fw 190A; their operations became a serious

In one isolated and rather distasteful incident, two pilots of 9/JG 3 are said to have deliberately surrendered themselves and their Bf 109F's to the Russians. Here one of the aircraft is seen under Soviet guard. (Photo: Imp. War Mus. RR871)



threat to civilian morale and were almost impossible to counter, even with the introduction of tedious and uneconomical standing patrols by R.A.F. fighters. These "hit-and-run" raids continued until the closing months of 1942, when the two *Jabo* units were stood down because of the urgent need for interceptor fighters; to an extent their activities were taken on by specialist units, but these fall outside the scope of the present *Profile*.

In December 1941, *Luftflotte II* was transferred from Russia to the Mediterranean with the aim of finally removing the threat to the North African supply route by reducing the British-held bastion of Malta; and of driving British and Commonwealth forces from North Africa and the Western Desert. The entire strength of JG 53 "Pik-As" and II/JG 3 "Udet" took up positions on forward airfields in Sicily, where they remained until May 1942; the latter unit and I/JG 53 were then moved back to Russia while III/JG 53 joined the three *Gruppen* of JG 27 in Africa. In the ranks of 3/JG 27 was to be found a young pilot who was perhaps the most outstanding of all exponents of the Bf 109F; Leutnant Hans Joachim Marseille, who was to die on 30th September 1942 credited with 158 aerial victories. Controversy has raged around the astonishing claims made for this officer for the past twenty years; but even if details of his career were distorted for propaganda purposes, there can be no doubt that he was a born fighter pilot who achieved a remarkable number of victories in a very short period. One of his most famous actions was fought on 3rd June, when as an Oberleutnant and *Staffelkapitän* of 3/JG 27 he claimed six kills within an eleven-minute combat with a formation of P-40 Tomahawks of No. 5 Sqn., South African Air Force, led by the redoubtable Major John E. Frost. The S.A.A.F. later admitted the loss of five P-40's on this occasion. Marseille was flying his famous Bf 109F-4/Trop., "Yellow 14", which is believed to have been *Werke Nr.* 5237. Three days later he was awarded the Oak Leaves of the Knights Cross.

ACES IN THE EAST

Meanwhile in the Russian theatre many pilots were continuing to run up their scores while flying the Bf 109F. On 20th May 1942 Major Gordon Gollob, *Kommodore* of JG 77, scored his 100th victory while flying Bf 109F-4 *Werke Nr.* 10253, being the tenth *Luftwaffe* fighter pilot to reach this score. The 9th *Staffel* of JG 52, operating further south, was at this time probably the most formidable *Jagdstaffel* in the *Luftwaffe*; led by Hermann Graf, the unit claimed 47 victories in a 17-day period between 28th April and 14th May 1942. No less than seven claims on 14th May took Graf's score to 104, and made him the



(Left and above) Two Bf 109F's flown by Johann Pichler of 7/JG 77 in Russia; Leutnant Pichler ended the war with 75 confirmed victories and the Ritterkreuz. (Photos: Hans Obert)

seventh pilot to reach a "century". His wingman, Oberfeldwebel Leopold Steinbatz, claimed 35 victories during the month of May and became the first N.C.O. pilot to receive the Oak Leaves and Swords to the Knights Cross. Other prominent members of the *Staffel* during this period were Oberfeldwebeln Füllgrabe and Süss and Feldwebel Alfred Grislawski.

The ninth pilot to reach 100 victories was the *Gruppenkommandeur* of IV/JG 51 "Mölders", Hauptmann Heinz Bär; he scored the 100th kill on 19th May. In the northern sector JG 54 "Grünherz" was also scoring heavily during May; on 12th May the *Staffelkapitän* of 7/JG 54, Oberleutnant Max-Hellmuth Ostermann, reached his hundred while flying *Werke Nr. 13114*. Leutnant Hans Götz of 2/JG 54 claimed 25 victories during May, and Oberleutnant Heinrich Jung, *Staffelkapitän* of 4/JG 54, claimed 18.

During the early summer of 1942 several pilots of JG 54 flew improvised night fighter missions with their Bf 109F's. A handful of officers proved very successful in this type of operation; Hauptmann Joachim Wandel, *Staffelkapitän* of 5/JG 54, claimed no less than 16 kills in night actions. The outstanding exponent of this type of action was undoubtedly Oberleutnant Erwin Leykauf, who claimed six victories on the night of 22nd/23rd June 1942.

EXPERIMENTAL PROGENY

As soon as the basic Bf 109F series was established in production, work proceeded on further developments; and a variety of interesting projects stem from the original F-configuration. The Bf 109G and Bf 109H series were developed in parallel, the H being a high-altitude fighter development based directly on the F. Development work started early in 1943 and the Bf 109H V1 was transferred to the Rechlin

(Right and below) Two other machines of JG 77, carrying the wolf's head insignia of III Gruppe; one carries a drop-tank, the other appears to be the victim of a freak accident. (Photos: Hans Obert)



experimental establishment after the completion of factory tests in the autumn of that year. The machine was later moved to the Daimler-Benz facility at Echterdingen near Stuttgart for engine development work; it was destroyed, together with a captured Spitfire re-engined with a DB 601 powerplant, in an air raid during August 1944.

The prototype was converted from an F-series airframe, as were the pre-production H-O aircraft. The span was increased to 40 ft. 1½ in. by the installation of a rectangular section at each wing root, and the DB 601E engine was fitted with the GM-1 booster unit. Armament comprised two MG 17's and an MK 108, the latter firing through the propeller spinner. Although the loaded weight had risen to 8,378 lb., maximum speed was 466 m.p.h. at altitude and the aircraft could operate at altitudes of up to 47,000 ft. The H-O machines were tested under operational conditions at Guyancourt in France, but numerous problems were encountered, especially those associated with wing flutter. This led to several structural failures, and tests were suspended. A small number of production Bf 109H-1 aircraft were completed and flew a number of fighter reconnaissance



Predictably, the Bf 109F suffered the undercarriage weakness of the whole 109 series; here an aircraft of Jagdfliegerschule 4 is illustrated after an accident at Mont de Marsan in the spring of 1942. The pilot was Hans Seyringer. (Photo: Hans Obert.)

missions over England in 1944. Projected developments of the H-series included the H-2 and H-5, to be powered by the Jumo 213E and DB 605 engines respectively.

One other development directly related to the Bf 109F deserves mention—the Bf 109Z *Zwilling*. Produced as a prototype during 1942/43, it consisted of two Bf 109F fuselages linked by new wing and tail sections; powered by two DB 601E engines, the prototype was never flown. Wing span was 43 ft. 6½ in. and the all-up weight about 13,200 lbs. Production developments of the *Zwilling* were to have been based on the Bf 109G series, but the project was abandoned.

A large number of Messerschmitt Bf 109's were used for experimental work and several interesting exercises were carried out on F-series aircraft. One of the earliest of these was the Me 209 II project; Bf 109F-1 V31 (W.Nr.5642, SG+EK) was modified to test the wide-track undercarriage envisaged for the Me 209, a far superior installation to the narrow undercarriage of standard Bf 109's which caused so many losses during the fighter's career. A later addition was a streamlined fairing projecting from the trailing edge of each wing to house the cannon-breaches of the Me 209's planned armament. Later still, the V31 was employed in tests connected with the Me 309 project. The original F-series *Versuchs* machine, W.Nr.5604 VK+AB, tested Me 309 cooling system components in the Göppingen wind tunnel; and the V31 was used to flight-test this system, and also landing flaps. Coded CE+EP, W.Nr. 5603 was used in tests of the nose-wheel undercarriage for the Me 309 and later received a twin-nose-wheel unit similar to that intended for the Me 264 bomber. The Bf 109F V30 (W.Nr.5716, ND+IE) and V30a (W.Nr. 5717, ND+IF) were used for systems development of the Me 309's pressurised cockpit. The Me 309 programme was finally abandoned late in 1943 when it proved to offer no significant advantages over later Bf 109 variants.

An H-series aircraft was involved in development work on the Me 209H high altitude fighter for competition with the Ta 152H; V55 (W.Nr.15709, DV+JC) was modified in the autumn of 1943 by the installation of a DB 605 engine and an increase in wing-span to 43 ft. 6 in. Work on the Me 209H was stopped at the end of 1943 and the V55 was destroyed in an air raid on Augsburg in February 1944.

One of the most striking modifications to a Bf 109 was that carried out on Bf 109F-4, W.Nr.14003,

coded VJ+WC, which was fitted with a "butterfly" tail. Flying characteristics were superior to those of the standard F-series aircraft but the arrangement was not adopted for production machines. Another experiment which improved flying characteristics was the provision of wing "fences"; again, although it would have been a cheap and easy modification to introduce on production aircraft, it was not adopted. One F-series airframe was married to a BMW 801 radial for airflow comparison with the standard DB 601E; another was fitted with the Junkers Jumo 213 with an eye to installation in later H- and Z-series aircraft.

THE BEETHOVEN-GERÄT

No description of the career of the Bf 109F would be complete without mention of the much-discussed "composite"—the pick-a-back bomber variously referred to as the *Beethoven* and the *Mistel*. The official designation of the project was initially *Beethoven-Gerät* and subsequently *Mistel-Programm*. In its original form the pick-a-back concept owed much to the influence of gliding and sailplane experts, being simply a scheme for substituting a vertically-linked tug aircraft and cargo glider for the normal tug and glider configuration. The early stages of the research were carried out at DFS, the German Gliding and Soaring Research Institute, and the development work reached its logical conclusion with the successful mating of a Bf 109E-3 and a DFS 230 glider; the combination was capable of take-off, flight, and landing under its own power. (An in-flight photograph of this composite appears in *Profile No. 40, The Messerschmitt Bf 109E*.)

Possibly the development of this cargo composite into a weapon of assault was inspired by early reports of Japanese *kanikaze* operations in the Pacific; but the origins of the project are extremely obscure. Junkers began work on the programme and perfected a system for the control of both aircraft and eventual separation from the cockpit of the upper aircraft; and the first machines produced comprised a Bf 109F-4 mounted above a modified Ju 88A-4. A total of 15 pre-production composites were built, the Ju 88A-4's being transferred from Junkers' Leipzig plant to Merseburg for modification, and the 7,700 lb. warhead being installed at Nordhausen. These pilot models were used operationally shortly after the Allied landings in Normandy and appear to have achieved some success; it was decided to implement production after certain changes. Production com-

Many Bf 109F's were used for experimental and project work; here an F-1 airframe is shown fitted with a nose-wheel undercarriage. It should be noted that the print has been heavily retouched at some stage in its career. (Photo: Messerschmitt AG.)



posites were to employ the Fw 190 as the control aircraft, and thus fall outside the scope of this Profile. Basic data on the Bf 109 F/Ju 88A composite has been reported as follows:

Gross weight, 36,960 lbs.;
Cruising speed, 280 m.p.h.;
Maximum speed, 300 m.p.h.;
Range, between 418 and 440 miles; Endurance, 1 hour 36 mins.; Range of control aircraft (return flight), 495 miles.

The Ju 88 carried two fuel tanks of 91 Imp.gal. capacity and two of 93 gal. capacity for its own consumption, and a total of 268 gallons was carried in the forward fuselage for the use of the Bf 109F on the outward journey. For its return the Messerschmitt carried 88 gal. (internal) and 66 gal. (external) fuel tanks. Separation was carried out between 3,000 and 10,000 feet altitude, the pilotless Ju 88 diving onto the target at a speed of about 370 m.p.h. (Readers may be interested to compare the sequence of photographs on page 16 showing the composite at three stages of the flight pattern with the photograph of a composite with warhead installed on p.12 of Profile No. 29, *The Junkers Ju 88A.*)

LUFTWAFFE FIGHTER UNITS

The basic tactical unit of fighter aircraft within the Luftwaffe during the Second World War was the Jagdgeschwader, with a strength of approximately 110-140 machines. The Jagdgeschwader, or JG, was identified by a number (e.g. JG 52) and in some cases by an honour-title as well (e.g. JG 2 "*Richtshofen*"). Each Jagdgeschwader was divided into three or four Gruppen of approximately 40 aircraft; and each Gruppe was identified by a Roman numeral (e.g. I/JG 77, II/JG 77, etc.). These Gruppen were sub-divided into Staffeln of between 12 and 16 aircraft, identified by Arabic numerals. Thus, I Gruppe of any Jagdgeschwader comprised 1, 2, and 3 Staffeln; and II/JG 3 comprised 4/JG 3, 5/JG 3, and 6/JG 3. An entire Geschwader seldom operated together; the various Gruppen were dispersed on a number of airfields over a greater or smaller area and would operate under the overall direction of, but with a varying degree of independence from the Geschwader. It was not unknown for individual Staffeln to be transferred many hundreds of miles from any other sub-unit of the parent Geschwader.

In an article of this size it would be impossible to describe in detail the vast number of variations of marking and insignia employed by Luftwaffe fighter aircraft; but a few basic practices were often observed. The first, second and third Staffeln in a Jagdgruppe were identified by a colour; white, red and yellow respectively. The individual aircraft carried a large numeral between one and 16 painted in the Staffeln colour in front of the national marking on each side of the fuselage. The first, second, third (and where it existed, fourth) Gruppen of a Jagdgeschwader were identified by a symbol painted in the Staffeln colour aft of the national marking. No symbol

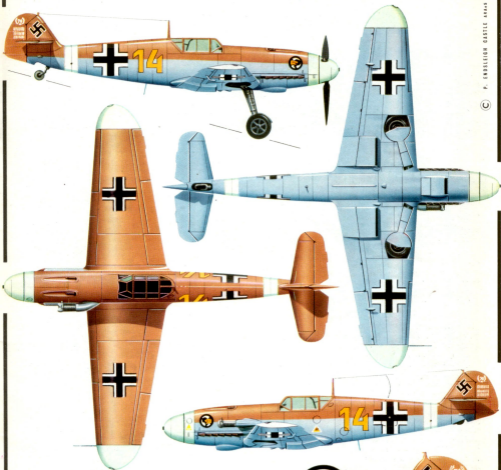
indicated I Gruppe; a horizontal bar, II Gruppe; a wavy line, superseded in the later years of the war by a vertical bar, III Gruppe; and where applicable, a small cross or a solid disc, IV Gruppe. Officers holding staff positions in the Geschwader organisation, such as Gruppenkommandeurs, Adjutants, and Operations and Technical Officers, carried symbols made up of a variety of bars and chevrons in place of numerals ahead of the national marking on the fuselage sides of their aircraft. These symbols were almost invariably in black and white, and associated Gruppe symbols aft of the national marking on such aircraft would also be marked in black and white. Considerable variation was observed in the significance of any given symbol between one Jagdgeschwader and another; the example most consistently used seems to have been the double chevron of a Gruppenkommandeur.

Each Jagdgeschwader, each Gruppe, and the majority of Staffeln used a badge or insignia to identify itself. Thus most single-seat fighters could carry any combination of three separate insignia; in most cases one, or at the most two, were actually marked on the aircraft. Ranging in theme from patriotic and heraldic devices to cartoon figures, these insignia were usually applied to the nose or under the cockpit of the aircraft. A selection is illustrated on the colour pages of this Profile.

For the reader's interest, the composition of a Jagdgeschwader is given on page 16. In this case the unit is JG 26 as on 1st October 1943, long after the

SPECIFICATION Messerschmitt Bf 109F-3

Structure: Wings: All-metal with single main spar built up of 'T' section flanges and sheet ribs reinforced at rib intersections. Main spar located 45° back from leading edge to accommodate wheel wells. Stressed skin flush riveted metal skin, ailerons fabric-covered; wing panels attached to fuselage at three points, forward point consisting of steel forging which also accommodates top of undercarriage leg and base of engine mounting. Slotted leading edge. Handley-Page type flaps in four sections at trailing edge. Outwards-retracting main undercarriage. Fuselage: Oval section metal monocoque comprising top-hat section transverse frames and "Z" section stringers; flush riveted stressed skin covering. Tail: All-metal structure with flush riveted stressed skin covering. Control surfaces metal framed, fabric-covered. Cantilever adjustable incidence unit.
Powerplant: One twelve-cylinder inverted-Vee liquid-cooled Daimler-Benz DB 601E of 1,100 h.p.
Dimensions: Span, 32 ft. 6 1/2 ins.; length, 29 ft. 0 1/2 ins.; height, 8 ft. 6 ins.; wing area, 174.375 sq. ft.
Weights: Empty, 4,330 lbs.; loaded, 6,254 lbs.
Armament: One 15 mm. MG 151 cannon mounted between engine cylinder banks and firing through propeller spinner, with 200 r.p.g. Two 7.92 mm. MG 17 machine guns mounted in a light alloy cradle on top of engine and firing through blast troughs in upper cowling, with 500 r.p.g.
Performance: Max. speed, 390 m.p.h. at 22,000 ft. Cruising speed, 310 m.p.h. at 16,500 ft. Max. climb rate, 3,320 ft./min. at 5,000 ft. Service ceiling, 37,000 ft. Normal range, 440 miles. Endurance, 1 hr. 24 mins.



MESSERSCHMITT Bf 109F-4/Trop, Werke Nr. 5237, flown by Oberleutnant Hans Joachim Marseille, Staffelführer of 3 Staffel, Jagdgeschwader 27; Ain-EI Gazala, Libya, 19th June 1942.

1 Gruppe, JG 27



Detail of tail markings



Marseille scored his 101st victory on 18th June 1942, and was subsequently awarded the Swords to his Knight's Cross with Oak Leaves for this feat. He died bailing out from his Bf 109G-2 after an engine fire on 30th September 1942; at that time he held the rank of Hauptmann and was credited with 158 victories. Marseille was 22 years of age when he died, one of only twelve German airmen to be awarded the Knight's Cross with Oak Leaves, Swords and Diamonds.



One of the most interesting of all German aircraft projects was the well-known Beethoven/Mistel composite. This sequence of photographs shows the Beethoven-Gerät composite of a Bf 109F-4 and a Ju 88A-4 at three stages of the performance pattern: running up, in flight, and immediately following separation.

Bf 109F had been replaced by the Fw 190A; but the basic structure is applicable to the earlier period. It will be noted that by this period each Gruppe of JG 26 mustered four Staffeln.

Foreign Units

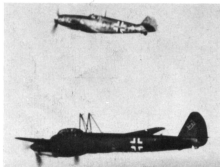
The Bf 109F was supplied in small numbers to two of Germany's allies, Italy and Hungary. In October 1942 a flight from the Hungarian Air Force's 1/1 Fighter Squadron took a Bf 109 course and were attached to a German Jagdgeschwader in the Stalingrad area. By agreement with the German authorities the pilots of the 5/1 Fighter Group converted onto Bf 109F and Bf 109G aircraft under Luftwaffe tutelage; 5/1 Sqn. was transferred to Stary Oskol and 5/2

Sqn. to Uman for training. Initially the Hungarians on the Russian Front formed a separate flight attached to II/JG 51 but eventually the whole "Puma" Group went into action as a unit, first seeing combat late in June of 1943.

Early in 1943 two Gruppi of the Regia Aeronautica, the 3^a and the 150^a, were equipped with the Bf 109F-4; a mixture of F-4/B and F-4/R1 versions were flown. Both units, based on forward airfields in Sicily and Italy, were involved in fierce fighting following the German collapse in Tunisia. Enemy action and supply problems caused serious serviceability difficulties and very few of the aircraft were available by the time the Allied forces landed in Sicily.

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ORGANISATION: JAGDGESCHWADER "SCHLAGETER" NR.26 : OCTOBER 1943

(Strength and structure of the Großflotilla, Staffelschwärme and Staffeln common to all three Gruppen.)

Total strength: Aircraft—140
Ground personnel—1,200
—1,360 men, 160 aircraft.

Stab JG 26 (Lille-Nord)

Kommandire (Oberstleutnant Priller); Adjutant; Ia (Adj.'s assistant, commissioned ranks); Ib (Adj.'s assistant, non-commissioned ranks); Staff Major; Ia (Operations officer); Ic (Intelligence officer); Nachrichtenoffizier (Security officer); IVa (Gruppe administrative officer); TO (Technical officer); Kfz-Offizier (C.O. of combat detachments, airfield defence etc.); Staffschwarm of four aircraft; 1 Rotte flown by Komv. & Adj.; 2 Rotte by Staff Maj. & Gesch. Ia.

Unterstab JG 26

Clerks, drivers, ground crew for staff aircraft, general service troops; total strength, app. 60 men.

(Each Staffel mustered 12 pilots and 98 ground personnel.)

Communications Coy.
(C.O., Hptm. Wesser)
Radio, telephone and control networks; total strength, app. 150 men.

I Gruppe (Wevelghem)

C.O., Maj. Borric
Stab I JG 26
Adjutant; Staff Captain; Ia;
Ic; IVa; IVb (Medical Officer);
TO; NO; Airman's Officer; Kfz-OR;
Staff Coy. commander.
Staffschwarm of four aircraft.
Staffelkompanie
Staffeln: 1 JG 26 (Obst. Boese);
2 JG 26 (Maj. Grash); 3 JG 26 (Hptm.
Herrnichen); 4 JG 26 (Hptm. Ebersberger)

II Gruppe (Besenval)

C.O., Obst. Seifert.
Stab II JG 26
Staffschwarm
Staffelkompanie
Repairs, technical, communications,
flak, combat troops and general
service troops; total strength,
app. 280 men.
Staffeln: 5 JG 26 (Hptm. Hoppe);
6 JG 26 (Hptm. Sternberg); 7 JG 26
(Hptm. Naumann); 8 JG 26 (Obst. Luschel)

III Gruppe (Lille-Vendeville)

C.O., Maj. Mieruch.
Stab III JG 26
Staffschwarm
Staffelkompanie
Staffeln: 9 JG 26 (Hptm. Dippel);
10 JG 26 (Hptm. Schneider); 11 JG 26
(Hptm. Steindl); 12 JG 26 (Hptm. Stager).