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LUFTWAFFE NIGHT FIGHTER UNITS 1939–45

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A GOOD PAIR OF EYES...

In common with other air forces of the period, the German Luftwaffe did not possess an organized night fighter force at the beginning of World War II; no specialized night fighter aircraft existed and those units that were engaged in the demanding art of nocturnal interception did so on an *ad hoc* basis, a situation that was to continue well into 1940. But that is not to say that the requirement for night fighting was totally overlooked; such was the confidence in German airpower being able to overcome all possible opposition in the early phases of the war, that it was estimated that the enemy would be forced to mount retaliatory operations only under cover of darkness. Thus, some groundwork was carried out before the war by a few fighter units charged with night flying, usually as a supplement to regular daylight operations.

On 1 September 1939 five Luftwaffe fighter *Staffeln*, 11 (Nacht)/LG 2, 10 (N)/JG 72, 11 (N)/JG 72, were designated as dual day/night fighter units, 10 (N)/JG 2 and 10 (N)/JG 26, the latter two being based in the Heligoland Bight area as part of a sizeable fighter defence in the event of attacks by the RAF. It was somewhat ironic that these same units were directly responsible for elevating their secondary night flying role to a vital (if not *the* vital) element in the defence of Germany, when they shared in the destruction of 12 Wellingtons on 18 December 1939, the disastrous daylight action that led to the British bomber offensive being conducted mainly at night.

There was little immediate need, nor would there be for some months to come, for the Germans to be unduly concerned at this change of tactics by the enemy. It soon became clear that the raids Bomber Command was able to mount in 1940 posed little threat, even on those occasions when the aircraft dispatched actually carried bombs rather than propaganda leaflets. The finding and destruction of a given target frequently proved to be beyond the capabilities of RAF aircrews in those early days of the war. In any event, interception of bombers at night was an extremely hit or miss affair. Patrols by small numbers of single-seat fighters were usually flown on the initiative of individual unit commanders and only when conditions were ideal. But on clear moonlit nights pilots developed a degree of co-operation with the searchlight batteries which were at that time their only form of guidance apart from a good pair of eyes. They also appreciated the necessity of being in regular communication with ground radio beacons in order to complete the sortie and to be directed safely back to base.

In February 1940 the existing night fighter *Staffeln*, using the Bf109, were absorbed into a fourth *Gruppe* of JG 2, the component units of which were concerned primarily with night flying. But the Luftwaffe's much vaunted single-seater was hardly the best machine for such work, as it could not be flown 'blind'. There were also numerous take-off and landing accidents, and when pilots were able to reach the approximate interception area they ran the risk of being blinded by the searchlights for minutes on end, by which time their elusive quarry could be lost. Equally unnerving was their own flak, which had no way of distinguishing friend from foe over the target.

An aircraft far better suited to night interception work was the Bf110, which in this role was about to take on a new lease of life. As it had been largely withdrawn from operations against England as a result of crippling losses, there was a ready pool of *Zerstörer* aircraft and crews who could be retrained for nocturnal flying duties, despite considerable feeling that such work was fruitless and a punish-

1. Overall black was the finish adopted for night fighters during the early days of the force and the majority of aircraft also sported the 'Englandblitz' badge on both sides of the nose. This Bf110C is having the nose fairing over the four 7·9mm machine guns replaced by the armourers. One of the blast tubes inside the fairing can be seen and the white individual aircraft letter 'F' can just be made out on the extreme tip of the nose.

ment for the lack of success in the ill-conceived long-range 'destroyer' role. Most of the pioneer *Nachtjagdgeschwader* personnel came from such units.

Being large enough to accommodate up to three crewmen, possessing a heavy armament and performance adequate to catch the bombers the RAF was then sending over Germany, the Bf110 would form the backbone of the Luftwaffe night fighter force throughout the war. Initially the Bf110C was used, indistinguishable from the day fighter; it was armed with two 20mm MG FF cannon and four 7·9mm machine guns in the nose and a single MG151 machine gun for rear defence, and no specialized night interception equipment was fitted.

Some months before the official formation of the first *Nachtjagddivision*, Bf110s had occasionally been used as nocturnal interceptors by the two *Staffeln* which comprised I *Gruppe* of ZG1. After having flown combat operations in Poland, I/ZG 1 had occupied Aalborg airfield during the Norwegian campaign of April 1940. *Gruppenkommandeur* Wolfgang Falck and other crews experienced in blind flying had introduced dawn patrols in an effort to intercept the RAF bombers which frequently raided German-occupied airfields in Norway. Pilots such as Werner Streib, Walter Erhle, Martin Lutz and Victor Mölders, brother of the famous Werner, attempted to find the enemy aircraft, although cloud and mist often frustrated interception.

Returning home to Gutersloh in May, I/ZG 1 took part in the French campaign, and in June its two *Staffeln* with Bf110Cs were transferred to Düsseldorf for night flying training in company with IV/JG 2, which had recently converted from the Bf109D to the Bf110. Regular operational training flights were made in the next few weeks, which proved invaluable for the demanding new role. On clear nights, the fighters searched for the British bombers reported by the *Fluko* air reporting centre, but actual results were still disappointing. However, men such as Streib and Mölders persevered. They found that even on an overcast night, at altitudes of 10,000 feet and above the sky was usually clear, there was a good horizon and visibility was unlimited; additionally, in the intended target zone, the flak and searchlights were an unmistakable beacon.

On 20 July, ZG 1's night role was confirmed and it became *Nachtjagdgeschwader 1*, the first night fighter wing of the first night fighter division under the overall command of *Oberst* Josef Kammhuber. With HQ at Ziese, Holland, the division was initially subordinated to *Luftflotte 2*. Falck was promoted to command NJG 1, *Hptm* Gunther Radusch taking over his I *Gruppe*, which mainly comprised the personnel and equipment of the three *Staffeln* of IV/JG 2. I/JG 1 was the nucleus of III *Gruppe* under

Hptm von Bohmer, while II *Gruppe* absorbed the aircraft and crews of the former (Z)/KG 30 and operated a mixture of Do 17Z-1s and Z-10s, Ju88C-2s and Bf110Cs.

On the night before the night fighter force was established, a concerted effort was made to intercept an RAF raid and Werner Streib's patience at last paid dividends. Diving into the searchlight beams over the Ruhr, Streib followed the directions of his radio operator and closed with a Whitley to make positive identification. Satisfied, he turned and made a beam attack and dispatched the bomber with four short bursts. The Whitley caught fire and crashed in flames at 02.15 hrs.

The Luftwaffe night fighter force was gradually expanded throughout the summer and autumn of 1940, but interceptions continued to be sporadic and overcast conditions frequently curtailed operations; any system that was at the mercy of the weather had severe limitations and something far more reliable was necessary. It was a problem that had occupied Kammhuber for some time and by October 1940 the first *Himmelbett* station was nearing completion, ready to give the fighters their first positive aid to interception—reliable guidance from the ground. Before then, however, Kammhuber did what he could to improve the fighters' chances of contact. Working with Hubert Weise, overall head of the German air defence organization, he ordered the removal of most searchlights from the cities and relocated them in a single belt, stretching from Liège in Belgium to Schleswig-Holstein on the Franco-Dutch border, through which the majority of RAF bombers would have to pass. No German aircraft other than night fighters were permitted to enter this zone and there followed an immediate drop in fighter casualties from friendly flak, although the accuracy of the latter was severely limited on overcast nights until adequate *Würzburg* radars could be made available to direct the guns.

In the meantime, the aircraft of II/NJG 1 had achieved considerable success in the *Fernnachtjagd* night intruder role over the British Isles. Becoming I/NJG 2 in September under the command of *Hptm* Karl Heyse, the unit was the first to undertake the

2. One of the pioneers of the night fighter force was Wolfgang Falck. He was Kommodore of NJG 1 until June 1943 and subsequently held a number of staff positions.

type of operations Kammhuber hoped would be an integral part of the night defence of Germany—attacks on the enemy over his home bases. As Kammhuber succinctly put it: 'If I want to smoke out a wasps' nest I do not go for the individual insects buzzing about, but the entrance hole when they are all inside.'

Based at Gilze-Rijen, in Holland, II/NJG 1 mounted its first intruder sorties on the night of 23 July 1940, claiming the destruction of two Wellingtons.

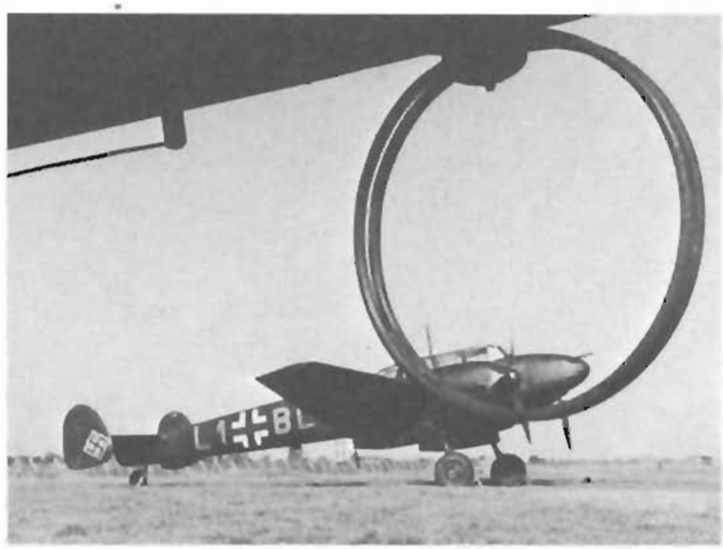
As the first fighter variant of the outstanding Junkers Ju88 series to be used as a night fighter, the C-2 was an adaptation of the Ju88A-1 bomber with similar powerplants and one MG FF cannon and three MG 17 machine guns in a solid nose-cone ahead of an 11mm thick armoured bulkhead. A

3. When 1/NJG 3 was formed from 13 Staffel of (Z)LG 1 in October 1940, its Bf110s were sent to the Western Desert to operate in the night fighter, day reconnaissance and ground attack roles for a short period, during which the old unit code 'L1' was retained. In black finish, this machine also has the Staffel badge, a blue and white owl on a yellow quarter moon with black facial detail, on each side of the nose. The code letters are light grey and the individual letter 'A', outlined in white, is repeated under the starboard wing.

number of Ju88A-1 airframes were converted to C-2 standard during 1940, although with Messerschmitt Bf110s being plentiful, Ju88 night fighter production was afforded low priority at that time. But the small number of aircraft delivered was put to good purpose by NJG 2; intruder attacks were greatly aided by the fact that the German radio intercept service was able to monitor radio test transmissions from the English bomber bases prior to a raid. Precise details of the number of bombers likely to be dispatched and their location were passed to the fighter crews either before take-off or en route to the target area. Ideally, the first wave of night fighters would arrive over the selected base as the bombers were taking off, so as to cause the maximum amount of havoc, with a second wave timed to intercept incoming bombers over the North Sea on known lines of approach. Those bombers that penetrated inland would be the responsibility of other night fighter forces, while a third wave of intruders from NJG 2 were prepared, to attack when the bombers were due to return to base after the raid. Aircraft of the third wave would carry fragmentation bombs in addition to full ammunition tanks, and would infiltrate the landing pattern. Over brightly-lit airfields the Hampdens, Whitleys and Wellingtons made ideal targets as they approached slowly with wheels and flaps down, some probably damaged, and their crews tired and glad to be back—the inevitable relaxation of vigilance all too often proving fatal.

Air-to-air attacks would be followed by strafing of dispersal points, taxiways and installations; even if the actual destruction was not great, considerable confusion was caused, with the bonus to the Germans that British anti-aircraft guns rarely fired for fear of hitting friendly aircraft. *Hptm* Hülshoff, who was later to command I/NJG 2, had divided eastern England (where most of the bomber bases were located) into three sectors: East Anglia, Lincolnshire and Yorkshire. Crews familiarized themselves with the bases in each area and had a good idea of the type and numbers of aircraft located at each one. Even though NJG 2 rarely had more than 20 serviceable machines at any given time, the unit was able to mount regular intruder sorties until October 1941, when it was transferred to the Mediterranean, having shot down 143 aircraft over England.

Along with the Ju88, I/NJG 2 had received the first conversions of the Dornier Do17 bomber for the nocturnal role. As both aircraft possessed a similar forward cross-section, it was found to be possible to graft the nose of a Ju88C-1 fighter onto a Do17Z-3. Designated Do17Z-6 *Kaus I* (Screech Owl I), the hybrid night fighter was not particularly success-

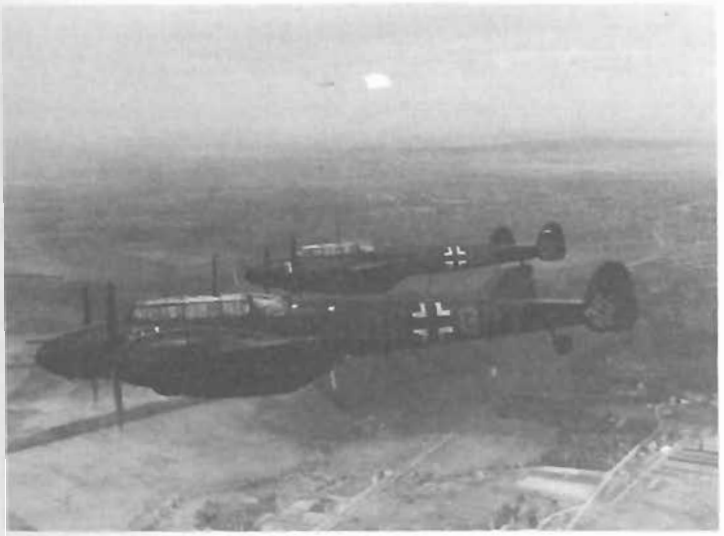


4. This time lacking the underwing individual letter, a Bf110 of 1/NJG 3 coded L1 + BL is seen through the D/F loop of a sister aircraft.

ful, and a second version with a redesigned nose was developed, the Do17Z-10 *Kaus II*. The three MG 17 machine guns and single MG FF 20mm cannon of the Ju88 nose section were replaced by a new unit housing four MG 17s and two MG FF cannon, the breeches of the latter extending back into the crew compartment, making it possible to reload the weapons in flight.

The Do17Z-10 was also fitted with the first, if rudimentary, aid to night interception, a special infra-red spotlight known as *Spanner Anlage*. Used in conjunction with a *Q-Rohr* FF sighting screen built into a standard Revi C 12/D gunsight, the device gave a 'black light' image of an aircraft up to 650 feet ahead. Dornier Do17Z-6 and Do17Z-10 night fighters began operations with I/NJG 2 in the autumn of 1940 and on the night of 18/19 October, *Oblt* Ludwig Becker of 4 *Staffel* shot down a Wellington.

October also saw the establishment of three night fighter zones across the path of RAF bombers flying to and from the Ruhr, each with a searchlight battery and two *Würzburg* radars, one of which linked a night fighter to a ground control, the other to a master searchlight which in turn controlled a searchlight cone to illuminate the bombers. A plotting control room completed the defensive zone and three night fighters, one in each zone, could be vectored simultaneously, the system being known as *Helle Nachtjagd*, or 'illuminated night fighter'. The three original zones were joined by two others near Kiel and Bremen, and more positive results

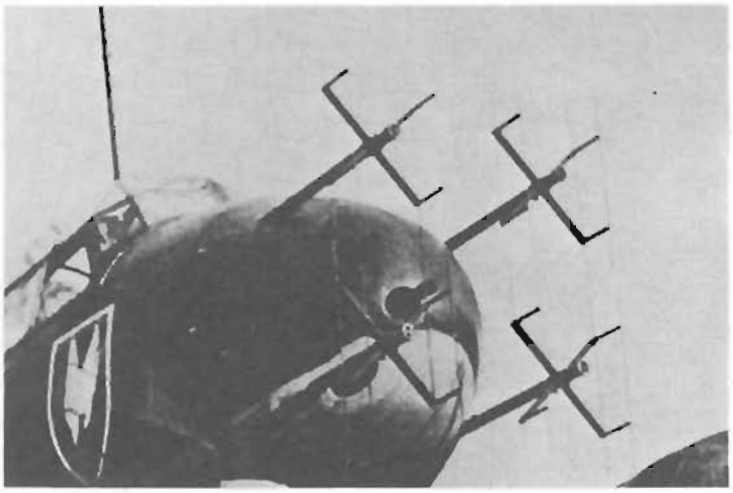


6. A Bf110 of 9. Staffel, NJG 3 coded D5 + DT and bearing the 'Haifischmaul' (shark's mouth) marking of II/ZG 76 from which III/NJG 3 was formed in the autumn of 1941.

began to be obtained. But despite the fact that enemy aircraft could now be detected by radar at 20 miles, successful interception was still difficult in overcast conditions. Kammhuber continued work on a system based entirely on ground control by radar and, in late 1940, production of the new *Würzburg Riese* (Giant Würzburg), with the ability to detect targets at 40 miles, enabled the establishment of the first links in the *Himmelbett* chain.

Working closely with *Gen* Wolfgang Martini, Luftwaffe Director-General of Signals, Kammhuber had developed the idea of establishing ground control interception 'boxes' right across Germany and the occupied countries which would eventually cover the entire continent against bomber attacks. The word *Himmelbett*, meaning 'heavenly' or 'four-poster bed', indicated the four elements of the system—two *Würzburg* radars, one short range *Freya*, and a *Seeburg* plotting table cited in the centre of a triangle formed by the three radars. Each early warning box, or 'room' as it was known, controlled its own night fighters within the 30-mile deep zone covered by its radar and, by establishing these boxes from the northern tip of Denmark in a line running to the Elbe estuary, west by south along northern Germany and Holland and down through Belgium and France to the Swiss-Italian border, Kammhuber sealed off all air approaches to the Reich.

5. A Rotte of Bf110s coded 3C + GR and 'LR, of 4 Staffel, NJG 4. II/NJG 4 was formed in April 1942 and the black camouflage continued to be used by night fighters at that time.



7. The FuG 202 'Matratzen' aerial array of the Lichtenstein BC radar on the nose of a Ju88R-1. (Via EJC)

Each *Himmelbett* box was identical and worked in the following manner. The initial radar contact was picked up on the 'blue' *Würzburg*, control having been previously warned of the approach of raiders by a coastal warning station. If the enemy aircraft approached or flew near to the *Himmelbett* box, it was picked up by the *Freya* and fixed by the 'red' *Würzburg*, while the blue radar continued to track it. Each *Würzburg* was connected by direct line to an operator on the ground level of the *Seeburg* table in the control room. The *Seeburg* was a two-storey structure that simulated, on a small scale, the cube of a given *Himmelbett* zone. Two operators controlled respectively the blue (fighter) and red (bomber) *Würzburg* simulators from floor level, from whence their blue and red pencils of light shone upwards onto the ground glass 'ceiling' above. At the upper level, the fighter controller looked down on a grid plan of the sky. In constant communication with his fighters by R/T, he talked the blue spot that represented the interceptor across the grid onto its red target. Should the fighter fail to locate the target, it returned to orbit the radio beacon and await another contact. The fighters still had help from the searchlights, but would come to rely solely on the more positive guidance that radar could give.

Simple and effective though *Himmelbett* was, there was still room for improvement and a high priority was to have airborne interception radar installed in the night fighters. But it would be a good year before enough *Lichtenstein* sets were available to close the 'interception gap', which often made the difference between success and failure for the night fighter pilot. Even if he followed his instructions exactly, he had to make final contact unaided and close the distance between his aircraft and the enemy bomber sufficiently to use his guns effectively—all too often it was at that point that the quarry would be lost. Many pilots did not, in fact, directly seek the silhouette of a heavy bomber at all, preferring to pick up the invisible turbulance left by its passage—a disturbance that could stretch for miles behind a large aircraft. In calm air, this turbulance was unmistakable: a light shock similar to normal turbulance if the bomber was still some distance away, becoming increasingly violent as the range closed.

By the end of 1940 the Luftwaffe night fighter force had been expanded to five *Gruppen*, three in NJG 1 (a new II *Gruppe* having formed from I/ZG 76 in October) and one each in NJG 2 and 3. The majority of the 165 aircraft on hand were Bf110Cs, followed numerically by the Ju88C-2 and the Do17Z.

LICHTENSTEIN AND SCHRAGE MUSIK

Throughout the early months of 1941 the night fighter crews concentrated on their exacting task of intercepting RAF raids, which were gradually increasing in number if not accuracy. For both sides, it was a time of building up experience with the equipment each air force was obliged to use. The British bombers continued to penetrate Europe on a 'broad front', coming over the fighter defence line in ones or twos during a period of several hours, which was ideal for the *Himmelbett* control system, as each box could only handle one interception at a time. The men who would emerge as the *Experten* of the Luftwaffe night fighter arm cut their teeth at this time, their machines being perfectly adequate

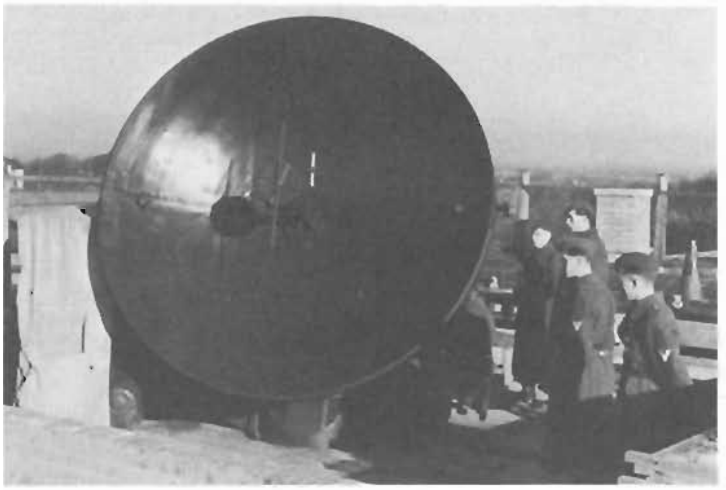
to deal with such slow twin-engined bombers as the Whitley, Wellington and Hampden, as well as the first of the four-engined heavies, the Short Stirling. If their closing speed was high enough to catch the bombers, the German fighters' armament was more than adequate to destroy them, all types being equipped with cannon. Against them, the enemy aircraft's rear turret was the most dangerous, where the concentration of fire from four ·303in Browning machine guns more than made up for any lack of hitting power or range. It was usually necessary for the night fighters to put the rear gunner out of action early in an attack and then concentrate on the bomber's vulnerable areas, particularly the wing fuel tanks.

Among the pilots who began their night fighter careers in 1941 was Helmut Lent, one of the outstanding personalities of the Luftwaffe whose success was to inspire the entire force. Having achieved his first victory on the second day of the war over Poland, Lent transferred to the night fighter arm, becoming *Staffelkapitän* of 6/NJG 1 on 1 January, a position he held until the end of the year. Lent's first night victory came on 12 March.

As the premier night fighter *Geschwader*, NJG 1 contained the cream of crews and II *Gruppe* numbered among its pilots one of the two princes to fly with the night fighters, Egmont Prinz zur Lippe-Weissenfeld. A former Austrian Air Force pilot, he had come from II/ZG 76 and had taken command of 4 *Staffel* on 20 October 1940, scoring his first victory on 17 November.

There were few men as dedicated to night fighting as the other titled pilot, Heinrich Prinz zu Sayn-Wittgenstein, who flew bombers until August 1941, when he became *Staffelkapitän* of 9/NJG 2. His run of victories began in 1941 and eventually reached 83, to bring him to third place in the *Experten* table after Schnaufer and Lent.

Throughout 1941, the *Nachjagdgeschwader* mainly used the reliable Bf110, output of the Ju88C remaining at low level. By June, four of the five *Gruppen* were equipped with the Bf110, while the design was updated to bring it closer to night-fighting requirements. By the end of 1941 the Bf110E-1/U1, which provided for a third crew

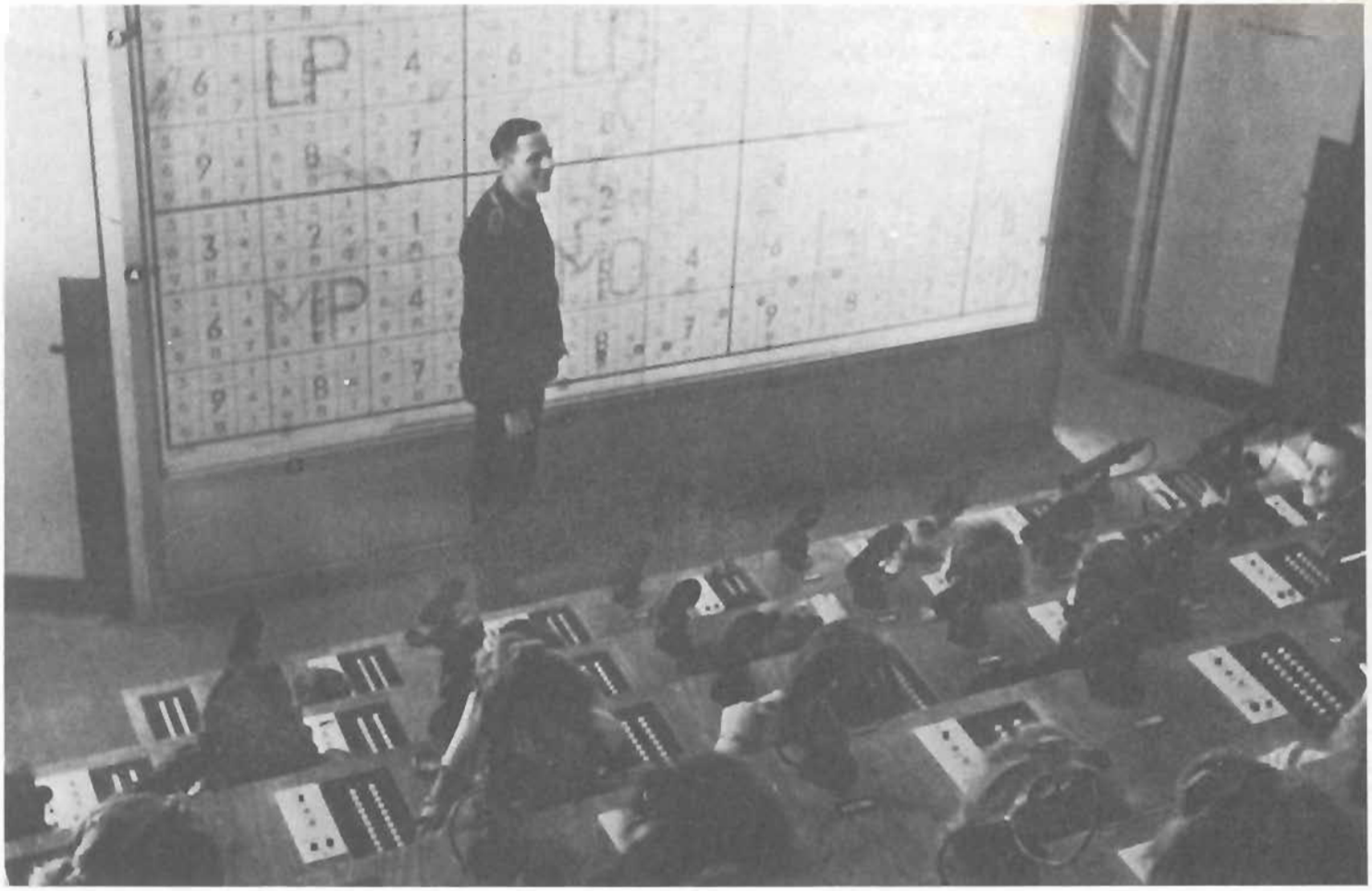


8. The electronic 'eyes' for searchlights, flak and fighters was the Telefunken Würzberg radar, the compact 'dish' of which is clearly seen here.

member, had entered service, followed by the F-4/U1 which had the ventral tray for two MK 108 cannon of the F-4 replaced by a twin MK 108 *schräge Musik* installation. Two men, *Oblt* Schönert, *Staffelkapitän* of 4/NJG 2 and Paul Mahle of II/NJG 5, were involved in the development of this upward-firing cannon arrangement, the former having experimented with such armament for the Dornier Do17Z-10 in 1941.

It is believed that Mahle, on a visit to the armament test centre at Tarnewitz, had seen one of these conversions prior to joining NJG 5 and had then suggested a similar mounting for the Bf110. But whatever its origins, *schräge Musik* was to become one of the most potent weapons of the night fighter force, making the destruction of heavy bombers a relatively safe and simple process for a skilled pilot.

For the invasion of Russia on 22 June, no specialized night fighter units were included in the Luftwaffe order of battle, but a nucleus of Bf110 crews enabled the subsequent formation of I and II/NJG 100 and NJG 200, three independent *Gruppen* established mainly to combat nocturnal Red Air Force 'nuisance' raids and to fly similar sorties themselves. They were known as the *Eisenbahn-Nachtjagd* or 'railway night fighters', their ground control being operated from trains. The fluid ground situation in the East necessitated the quick transfer of these *Gruppen* from one sector to another and railway carriages provided adequate



9, 10. A touch of glamour was provided in the fighter control centres by the members of the 'Luftwaffenhelferinen', the German equivalent of British WAAFs. Each girl used a light pencil to illuminate a point on a large glass situation map and thus build up a comprehensive picture of an air battle as it developed. Each light spot represented an enemy aircraft, friendly fighters, areas of jamming and so forth. As can be seen, each section of a given area was identified by a two-letter code for rapid ground-air communication. Pilots nicknamed these centres with their tiered consoles 'battle opera houses'.

mobile quarters for radio equipment and controllers. Among the various aircraft used on nocturnal operations in Russia were Fw58s, Fw189s and Ju87s, as well as standard day fighters.

In April 1941 the Luftwaffe night fighter division was placed under a new command of *Luftflotte* status known as *Luftwaffenbefehlshaber Mitte* or AOC-in-C Centre, and on 1 August the force became *Fliegerkorps XII*.

The month before, Telefunken AG had begun experiments with airborne radar, and by early 1942 the first aircraft so equipped, Ju88Cs, were de-

livered to NJG 1 at Venlo. A number of types had been used in the radar test programme, including the Bf110E-7/U1 pending the introduction of the F-4a, the first service variant with FuG 202 *Lichtenstein* BC, an AI radar working on the wavelength of 490 MHz. The aerial system comprised four double pairs of dipoles mounted on carrier struts on the aircraft nose, an array which effectively cut speed by some 25mph, but did not otherwise have a detrimental effect on handling.

At first, night fighter crews were highly sceptical. There were, as with most other innovations, teething troubles; but as the advantages of the *Lichtenstein* equipment came to be realized, grudging acceptance gave way to enthusiasm. Under ideal conditions, the FuG 202 enabled the fighter crew to 'see' the target over a range of between 3,500 and 6,100 yards, its image appearing as a 'blip' on two cathode ray tube screens. These screens gave off a pale flickering blue light, which taxed the eyesight of the operator, particularly if his attention was diverted. After thirty minutes of sustained scanning, many individuals were unable to identify even the brightest stars on a clear night—such were the problems that had to be overcome. But airborne radar at last closed the fighter gap and the Dorniers, Messerschmitts and Junkers of the night fighter force began to be distinguished by the nose aerials of their *Lichtenstein* equipment.

There was an obvious need at this time to give the *Nachtjagd* a more modern fighter to replace the Bf110, which, while adequate, could not match the Ju88 in certain respects, particularly that of endurance, the latter being capable of staying airborne for five hours. The Bf110 replacement was intended to be the Me210, but this proved a costly failure, and only an improved version of the Bf110 could be made available quickly. Consequently, the interim F-4 night fighter was joined on the production lines by the Bf110G-4, the first variant intended solely for the night fighter role. The Bf110G was introduced into Luftwaffe service in February 1942, equipped with the *Lichtenstein* BC or C-1. Eight U-series modifications and R-series conversion kits were also provided, giving the G-4 considerable flexibility in armament, fuel capacity and engine-power boosting. The choice of armament ranged from the MK 108 to MG 151 cannon and MG 17 machine guns in the extreme nose, with twin 20mm cannon in the *schräge Musik* configuration installed in the aft cockpit section, positioned to fire at an angle of 70 to 80 degrees and aimed by a special reflector sight.

After being taken off intruder operations over England, I/NJG 2 soon settled in its new home in Sicily and on the night of 13 December *Ofw* Hermann Sommer scored the unit's first kill in the Mediterranean when he shot down a Beaufighter over Crete. Two others were to follow on the 15th, both British machines falling in the vicinity of Malta. The unit found itself up against a wide variety of British and American types, Wellingtons being frequent victims of its Ju88s. Three pilots—Sommer, Heinz Rökker and Paul Semrau—each had five desert victories to their credit by the end of 1942, Rökker going on to score 64 by the end of the war, only one of which was in daylight.

Italy's lack of suitable night fighters led to the visit of an Italian mission to Germany in January 1942 to examine the Luftwaffe's night fighter organization, and subsequently a request was made for 24 Bf110s to bolster the few Fiat CR.42Ns then available to combat RAF bomber raids. Selected Italian crews would also undertake night fighter training in Germany. Only three Bf110s were actually delivered, however, the Germans offering instead supplies of the Do217, much to the chagrin of their allies.

Disappointing though the early Do17/215 conversions had proved to be in the night fighter role, Dornier had not abandoned development in this field, although the company was unable to emulate Junkers' success with such adaptations from bombers. With the introduction of the Do217E series into Luftwaffe bomber units in the spring of 1941, work commenced on the Do217J heavy night fighter with a forward-firing armament of four cannon and four machine guns and retaining single dorsal and ventral weapons, the first examples of which were ready for service in early 1942. By that time the few Do215B-5 night fighters, powered by Daimler-Benz DB601 liquid-cooled engines, were

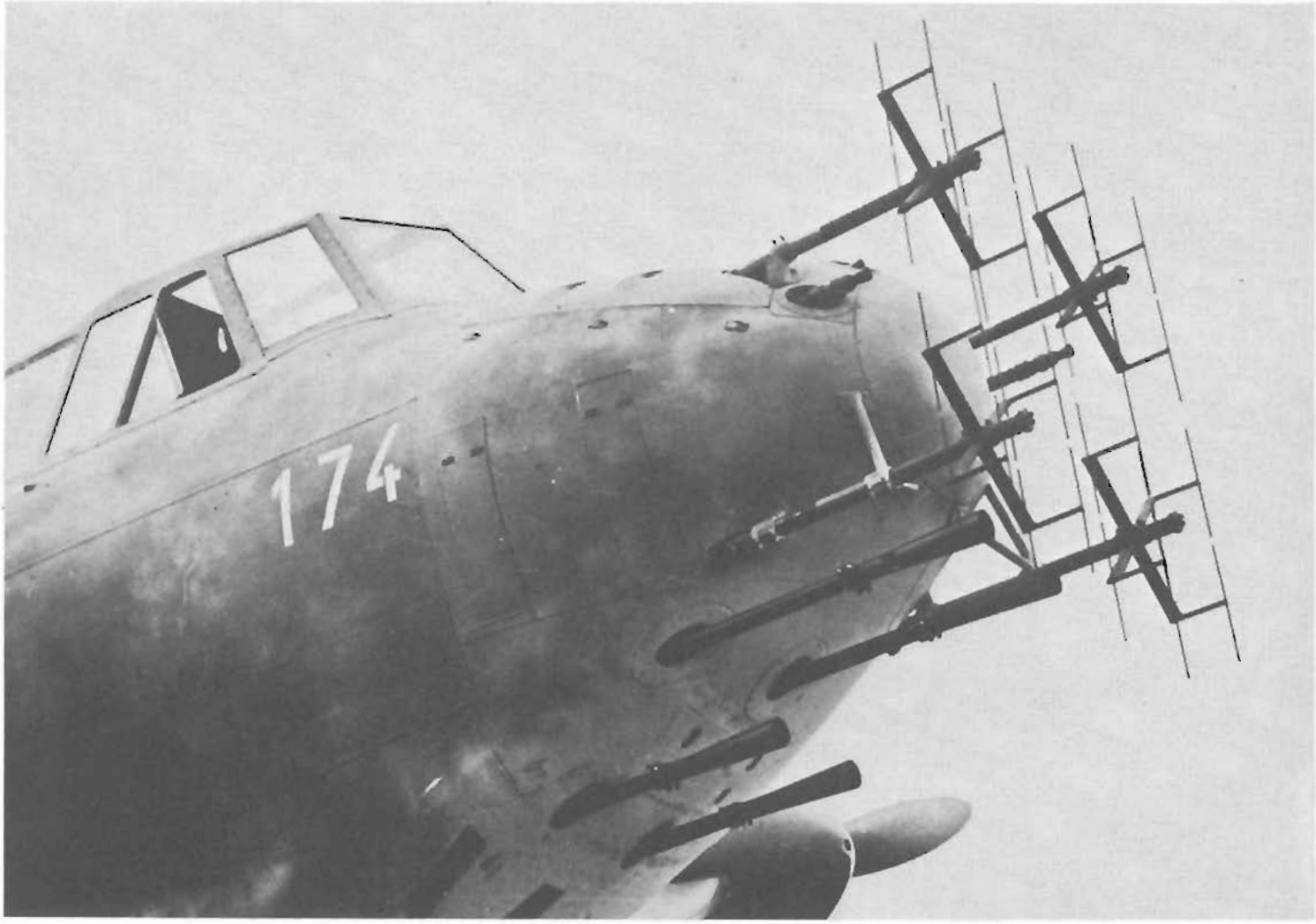
being phased out of service with 4/NJG 2; simultaneously II and III *Gruppe* of this *Geschwader* began to receive examples of the Do217J-1 intruder.

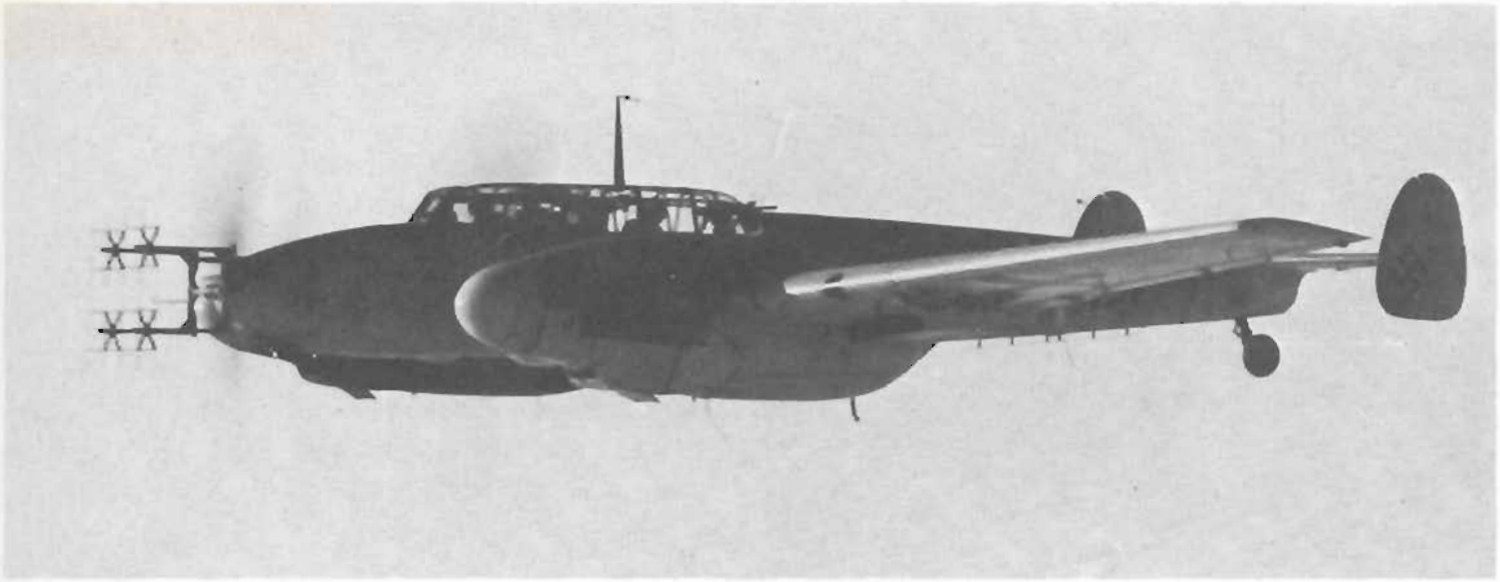
During 1942 the Do217J entered service with II, III and IV/NJG 1; II and III/NJG 2; all *Gruppen* of NJG 3, NJG 100 in Russia and III/NJG 4. There was considerable criticism of the aircraft as a night interceptor, as it was considered too heavy and lacking in manoeuvrability in comparison with the Bf110 and Ju88.

Such comments were not lost on the Italians. The agreement over transfer of Dorniers to the Regia Aeronautica, did, however, include the proviso that the Luftwaffe would maintain the aircraft and replace any machines lost for a period up to April 1943. Two weeks after Kammhuber's visit, on 1 August, two Italian pilots arrived at Venlo to plan a programme for Italian crews to train with the Luftwaffe. Ten days later they transferred to Echterdingen for night flying familiarization with the Do217, and were able to observe German interception techniques during a number of RAF raids. Six Do217s were meanwhile delivered to the first Italian night fighter unit, the 41° *Stormo*, with two *Gruppi*: the 59° with the 232° and 233° *Squadriglia*, and the 60° with the 234° and 235° *Squadriglia*, based initially at Treviso and later at Lonate Pezzolo. On 29 September the Dorniers inaugurated patrols in the area Beilla-Venegono-Como; a pair of Bf110s worked to the north of Turin in a triangle pattern Lanzo-Torines—Lake Candia—Biella, starting on 7 November.

As the Luftwaffe developed its new night tactics its adversary began to realize the limitations of the

11. The nose section of a Dornier Do217N-2 showing the FuG 202 aerial array and part of the exceptionally heavy armament carried by these aircraft. Four 20mm MG 151 cannon with flash suppressors are set below the aerials, with four MG 17 machine guns above. In addition, two pairs of upward-firing cannon could be positioned in the upper decking of the fuselage. (Dornier)





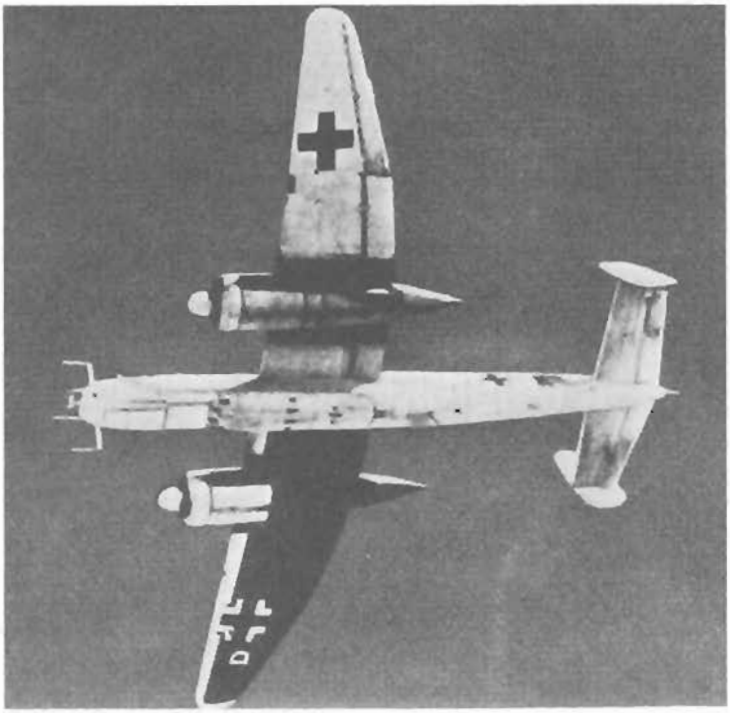
12. The aerials of the early FuG 202 Lichtenstein BC were grouped on a rectangular carrier on the nose of the Bf110 and were the most compact of all the aerial arrays. Here, the carrier is a Bf110G-4/R1.

Himmelbett system and strove to exploit that knowledge. It was realized in England that if bombers were sent *en masse* through the 'Kammhuber line' losses would be few, as the defences would be swamped with targets—far too many for the system to cope with. This move came at a time when Bomber Command had reached something of a crisis point, losses being out of all proportion to the amount of damage being done to the would-be targets. With the introduction of the bomber 'stream', whereby a large number of aircraft flying together would pass over a given point in the shortest possible time, the RAF set out to prove that a target could be found and hit hard. On 30 May 1942 orders went out for a 'maximum effort' attack on Cologne—the first of Arthur Harris's 1,000-bomber raids which would transform the disappointing results achieved thus far. Using a bomber stream for the first time, a devastating attack was made on Cologne for the loss of 41 aircraft, 3·8 per cent of the force of 1,046 that reached the city. In each sector penetrated by the bombers, the Luftwaffe night fighters were, as expected, presented with a plethora of targets, the raid being compressed into 150 minutes rather than the seven hours it would have taken using a 'broad front' assault.

HAMBURG AND AFTER

While the second half of 1942 had not brought a repeat Bomber Command raid on the scale of the attack on Cologne, it was not for want of trying, and the increasing availability of the Avro Lancaster and improved versions of the Handley-Page Halifax did not auger well for the future of Germany's cities and civilian population. The RAF was dedicated to the policy of 'area bombing', which was deemed far more profitable than precision attacks at night.

13. An indistinct but interesting view of a Do217N-2 carrying the night fighter arm badge and individual and Staffel letters 'HM' behind the pre-war pattern fuselage Balkenkreuz. Although it is a 4 Staffel aircraft, the unit marking cannot be discerned, but is probably '3J' indicating NJG 3. (Via EJC)



14. Well-known photograph of a Heinkel He219A-0 coded G9+FK, of NJG 1 showing the single-black-wing underside scheme which served to identify German night fighters to ground defences. (VFW-Fokker)

Precision was, on the other hand, the key word in the American daylight bomber offensive, which began in the summer of 1942 and was steadily building up by the end of the year. For the German night fighters, the new RAF heavy bombers did not appear to constitute a particularly awesome threat, their defensive guns remaining similar in number and weight of fire to those carried by the twin-engined types. The USAAF aircraft posed an entirely different problem, for they were far more heavily armed and their guns packed a more powerful punch.

Even as the day fighter *Gruppen* began to identify the weak spots of the Fortresses and Liberators, it became obvious that the American formations would not be stopped unless the Luftwaffe could keep up the pressure all the way into and out of the target area. With the war on other fronts draining the available stocks of the Bf110, it was inevitable that the night fighter force, which maintained the largest number of long-range fighters within the European combat zone, would be called upon to help tackle the heavy bombers. But logical as it was to employ aircraft that could make sustained attacks against bombers without having to break off through lack of fuel, night fighter crews had had little experience of such operations, and consequent losses represented a steady drain on specialist crews and resources.

In January 1943 a fourth *Gruppe* was added to NJG 4 under the command of *Hptm* Heinrich Wohlers. The following month one of the most skilled of the *Nachtjagdflieger*, *Oblt* Paul Gildner of NJG 1 lost his life when his aircraft crashed at Gilze-Rijen as a result of an engine fire. On 4 February, all the eight Bf110s of IV/NJG 4 sent against US 8th Air Force bomber formations were damaged, despite claims of three B-17s shot down (including one by *Hptm* Hans-Joachim Jabs of II/NJG 1, temporarily attached to NJG 4). Before the month was out another night fighter pioneer, Ludwig Becker, was lost in combat with the USAAF bombers. Then *Staffelkapitän* of 12/NJG 1, Becker was part of a force of Bf110s that attacked B-24s raiding Wilhelmshaven on the 26th. Nothing was heard from him after the attack developed and it was believed that his aircraft went into the sea.

But the German night fighters were about to be more than occupied during the hours of darkness. Two devices then entering operational service with RAF Bomber Command would give the available force of about 900 heavy and medium bombers a terrifying increase in striking power. The first of these was 'Oboe', a blind bombing system used in conjunction with two ground stations and giving an effective range of 280 miles, which included the Ruhr industrial area. H2S was an advanced centimetric radar which scanned the ground underneath the aircraft, giving strong echoes from any built-up area and displaying the information in the form of a moving map on a cathode-ray tube screen. While both Oboe and H2S were subject to considerable margins of error, they were a vast improvement on anything the RAF had used previously and were instrumental in enabling the main weight of Bomber Command's 1943 offensive to be concentrated within three major phases which became known as the Battles of the Ruhr, Hamburg and Berlin.

Backing the two navigational aids were target indicator bombs which would be released by

pathfinders to guide the main force of 'heavies', and four electronic devices designed to maximize the bombers' safe penetration of the *Himmelbett* system—'Monica', 'Boozer', 'Mandrel' and 'Tinsel'. Monica was a tail-warning radar; Boozer was a radar receiver tuned to the frequencies of *Würzburg* and *Lichtenstein* radars, which gave visual indication of their emissions; Mandrel was an electronic noise jammer, and Tinsel was a system of vocal interference relayed on night fighter control frequencies.

There were a number of teething troubles with the new equipment, but H2S was fully vindicated on the night of 5 March 1943, when the target markers fell squarely on Essen and the main force obliterated 160 acres of the city. For the next five months Bomber Command struck targets in the Ruhr, the German night fighters intercepting as far as the restrictive *Himmelbett* system allowed. On 29 May, 719 bombers devastated Wuppertal, some 50 fighters of NJG 1 engaging and shooting down 22. *Ltn* Heinz-Wolfgang Schnaufer, subsequently to become the top night fighter ace of the war, claimed three of them, his II *Gruppe* being the first to make contact.

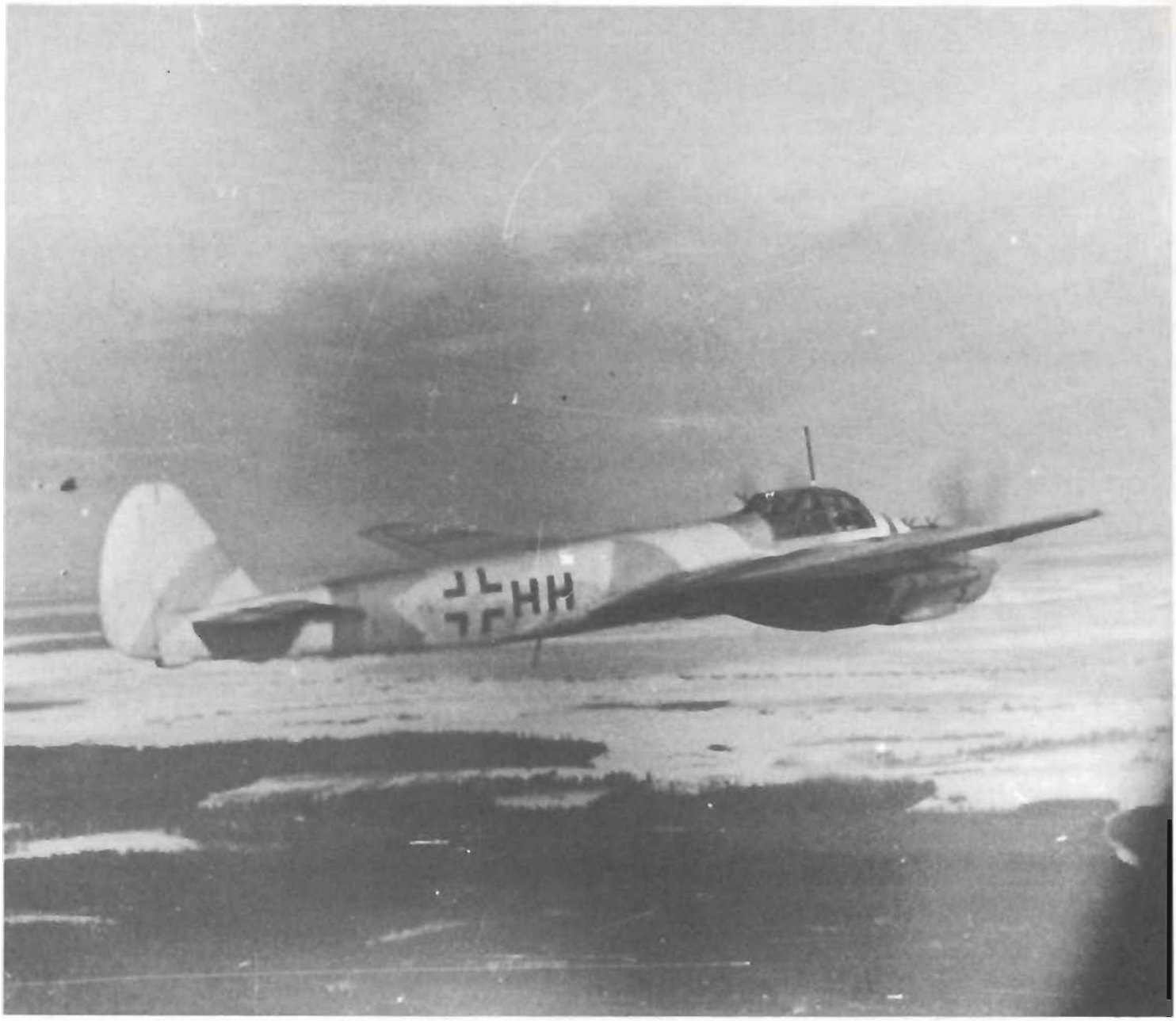
British night fighter activity was stepped up in the spring months; Beaufighters flew shallow penetration sorties in support of the bombers, and many of them were equipped with 'Serrate'. This small radar receiver picked up signals from *Lichtenstein*, working in conjunction with standard AI radar; it also detected enemy aircraft ahead and gave adequate tail warning.

While the devices mentioned went some way towards alleviating bomber losses, it was apparent that mass jamming of all German radars must be the ultimate objective. Thus, on the night of 24 July, Hamburg was selected as the target for the first 'Window' attack. Both sides had realized that by dropping millions of strips of metal foil cut to exactly half the wavelength of the enemy's radar, his defences would be rendered virtually powerless. By July 1943, the RAF had the amount of Window deemed necessary and 746 bombers were able to cause terrible damage to Hamburg in a raid that was to have far-reaching consequences for both

15. Oberstleutnant Viktor von Lossberg, originator of the 'Zähme Sau' system of night fighting in 1943.

the combatants. German night fighter and flak radars indicated an attack by *11,000* aircraft that night, as huge glittering clouds of Window cascaded from the bomber stream. Individual night fighter pilots ignored the useless antics of their radar screens and went after bombers silhouetted against the fires of the stricken city, but with minimal results—only 12 raiders were brought down, about half by fighters.

The destruction wreaked on Hamburg finally convinced the German High Command that every effort must now be made to protect the Reich: sweeping changes were made throughout the Luftwaffe and the night fighter force had to develop new tactics which reduced much of its reliance on radar. One result was the disbanding of *Fliegerkorps* XII. There were those who had questioned the inflexibility of the *Himmelbett* system even before the Hamburg raid and alternatives had been under



16 A Junkers Ju88C-6 of NJG 100, the only night fighter unit to use the type on the Eastern Front. The aircraft is in an unusual three-tone camouflage scheme, with the swastika overpainted and a yellow band around the rear fuselage. The lower fin has the fairing for the aerials of tail warning radar, but the aerial itself does not appear to be fitted.

discussion for some time. An individual who favoured using single-seat fighters for night interceptions, not vastly different from the old *Helle Nachjagd* system but without radar, was *Maj* Hans-Joachim ('Hajo') Herrmann, an ex-bomber pilot who had been in command of a new *Jagdgeschwader* for almost a month. Herrmann's unit, JG 300, had formed on 27 June 1943 to explore the possibility of sending up fighters in the target area to attack bombers silhouetted against the light of target indicators, massed searchlights and the enormous fires which were becoming synonymous with RAF raids, under the general heading of *Wilde Sau* operations.

On the face of it, the activities of JG 300 did seem to be turning the clock back and Kammhuber was not at all accommodating, but both Göring and *Generaloberst* Weise had fully backed Herrmann's ideas—after Hamburg any scheme that did not rely solely on radar was welcome. By late July, JG 300's three *Gruppen*, based at Bonn-Hangelar, Oldenburg and Rheine, had been joined by JG 301,

commanded by *Maj* Helmut Weinrich at Neubiberg, and JG 302 at Döberitz, led by *Maj* Ewald Janssen. Each *Geschwader* came within the jurisdiction of 30 *Jagddivision*, under Herrmann's overall command. Subsequent to the Hamburg raid these three *Geschwader* gained considerable success, initially with virtually standard Bf109Gs and Fw190As fitted with exhaust flame dampers and anti-glare screens.

For their part, the *Nachtjagdgeschwader* introduced *Zähme Sau* tactics, whereby fighters would take off as enemy aircraft were approaching and, under instruction from ground radio beacons, make their way to the vicinity of the bomber stream. Two types of beacon were used, *Funkfeuers* and *Leuchtfeuers*, the first giving only radio guidance to twin-engined aircraft, the second radio contact and visual homing in the form of a powerful light that flashed an identification code letter in Morse for the aid of *Wilde Sau* pilots. They were situated in pairs consisting of one of each type and sharing a common code name.

Having given the night fighter the approximate location of the bombers the controller could then turn the enemy tactics to his advantage, by positioning his aircraft in an area where radar interference was worst; a visual search by the night fighter crew would invariably result in a contact. Under the direction of its originator, *Oberst* von Lossberg, *Zähme Sau* had many advantages. It was hoped that running battles would develop to harry the enemy into, over and out of the target area; and on overcast nights the searchlights could silhouette bombers by playing their beams onto the base of clouds and produce a soft glow on top, against which an aircraft showed up clearly. Flak crews were directed to restrict their fuse settings to 15,000 feet initially, above which altitude the fighters could have free rein.

These new operational expedients led to a parallel change in procedure on the ground. Previously, the *Himmelbett* system dictated that a given group of night fighters operate within 50 miles of their home base, with the advantage that navigation was not of paramount importance. After July 1943, however, night fighter crews were able to seek their prey

17. Oberst Hans-Joachim 'Hajo' Herrmann, the father of 'Wilde Sau' night fighting.

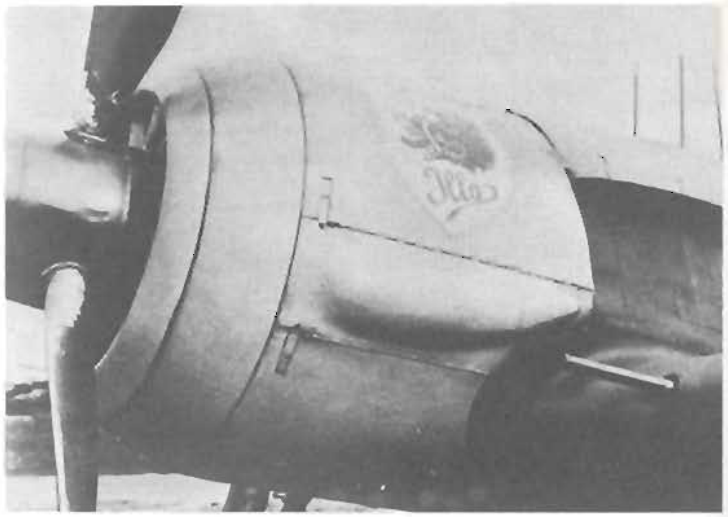
where they pleased, using airfields anywhere along the track of the bomber stream, a course that could cover hundreds of miles of Germany, Holland, France and Belgium. One drawback was that some airfields, especially in the target area, became congested with dozens of night fighters waiting to land, refuel and take off—a situation ripe for accidents.

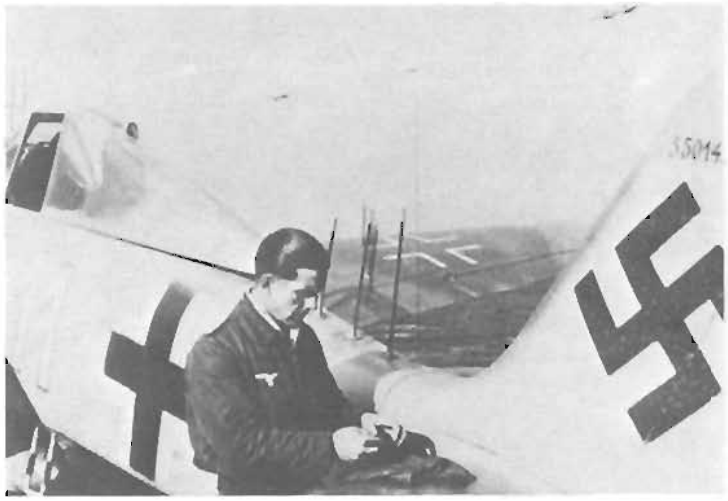
Whereas radar had been the primary early warning aid, this mantle now passed to the fighter controllers at divisional headquarters, who sifted the limited information from the radars, ordered the aircraft off and passed them from beacon to beacon until they were in a position to leave ground control to make the interception, a system of 'running

commentary' that remained in general use until the end of hostilities.

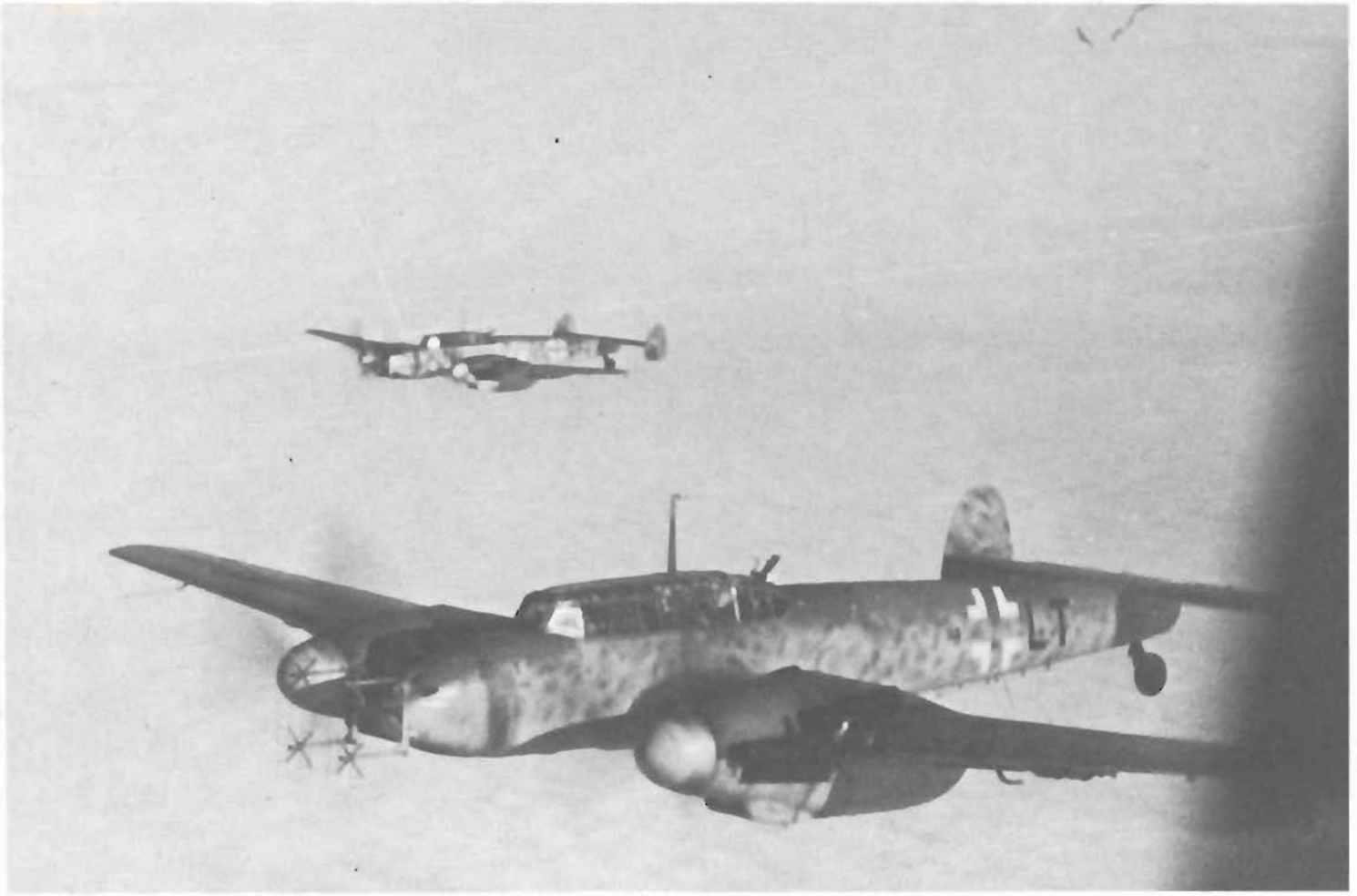
Fighters automatically came under the control of five fighter divisions: 1, covering eastern Germany from its HQ in Berlin; 2, the northern regions (HQ Stade); 3, the north-eastern approaches (HQ Arnhem-Deelen in Holland); 4, the western approaches (HQ Metz, France); and 7, southern Germany (HQ Schleisshelm, near Munich).

By August, therefore, the Germans had made a remarkably rapid recovery from the shock of the first use of Window by the enemy and were able to continue the night war against the heavy bomber at, if anything, a more effective level than before. Notwithstanding counter-measures to the various electronic aids to interception, there was little that the RAF could do in the latter months of 1943 to prevent destruction of its heavy bombers, once contact had been made by a night fighter. August saw the elevation of Shnaufer to *Staffelkapitän* of





18, 19, 20. A sequence of pictures showing the Focke Wulf Fw190A-5/U2 flown by Oblt Fritz Krause of JG 300. Bearing W. Nr 550143 and 'white 11', the aircraft has the triple aerials of FuG 217J-2 Neptun radar on both wings and the forward and rear fuselage. The name 'Illo' under the wild boar emblem was Krause's nickname.



21. Bf110G-4s of NJG 3 during a daylight sortie. The nearest aircraft is coded D5+LT, with 'DT' behind, and both are fitted with FuG 202.

12/NJG 1, his score having risen to 21.

Large-scale use of *Wilde Sau* and *Zähme Sau* was made on the night of 17 August 1943, when 597 bombers attacked the research establishment at Peenemünde on the Baltic Coast. After a feint target-marking of Berlin by eight Pathfinder Force Mosquitoes to distract the night fighters, the bomber stream continued 100 miles north to the real target. Earlier that night, three out of five Bf110s of IV/NJG 1 had been lost when they fell into a trap set by a number of 'Serrate'-equipped Beaufighters patrolling off Friesland for just this purpose.

The diversionary attack by the Mosquitoes successfully drew 158 twin- and 55 single-engined fighters away from the main force, which caused considerable damage to Peenemünde's installations and living quarters before the ruse was discovered. The few twin-engined fighters with enough fuel streaked towards the glow from the target fires and managed to shoot down a number of bombers in the last two attacking waves. Six of them fell to the *schräge Musik* cannon of *Gefr* Paul Hölker of 5 *Staffel*, NJG 1 (two kills) and *Ltn* Peter Erhardt of 6 *Staffel*, with four kills inside 30 minutes. Other night fighters scrambled to intercept the raids on their way home, NJG 3 being one of the units involved. The loss of 41 bombers was far less than it might have been had the Mosquitoes not caused an ineffectual melée of night fighters and bursting flak shells over Berlin.

The Peenemünde raid served to highlight the obvious weaknesses of freelance night fighter tactics. Failure on the part of the controllers to recognize a turn made by the bomber stream and to judge which raid was a feint and which was the actual attack would continue to result in a low number of contacts. But fighter controllers generally became extremely adept at making the correct judgement, and the bomber force suffered accord-

22. Two of the leading figures in the night fighter arm were Werner Streib (left) and Helmut Lent.

ingly. The night of 23 August was to see considerable success for the defenders when 727 bombers did attack the capital. Relentlessly the fighters hacked at the bombers approaching and over the target, the latter coming as a shock to the RAF crews, who were used to a little respite—notwithstanding flak—on their bombing runs. Bomber Command took the highest loss on a single raid so far—56 aircraft failed to return.

For their own part, the *Nachtjagdgeschwader* found on occasions that their efforts were frustrated, even after a bomber had been attacked.

Experienced bomber crews had found that an alternate dive-climb-dive manoeuvre—with the aircraft holding a steep turn to port or starboard, starboard to port—was the most effective way to shake off a night fighter if it was seen in time. 'Corkscrewing', as it was called, saved many bombers, for German pilots would often break away when the manoeuvre was executed and seek another, less alert, target. But the most effective form of attack was from below, where the fighter could formate with the bomber and make maximum use of its *schräge Musik*. Skilled night fighter pilots could place their rounds straight into the bombers' fuel tanks with the upward-firing cannon, which was usually fatal for the machine, but often gave the crew time to bail out.

The Berlin raid recorded 48 aircraft lost to night fighters, some of which were able to use their *Lichtenstein* sets, despite the now familiar clouds of Window. As these concentrations tended to be heaviest in the centre of the bomber stream, individual targets could still be picked out on the fringes, where the interference was not so great. Also, it was soon noted that the radar image of a bomber would hold its position relative to the fighter as their speeds were approximately the same—Window appeared as a rapidly closing blip

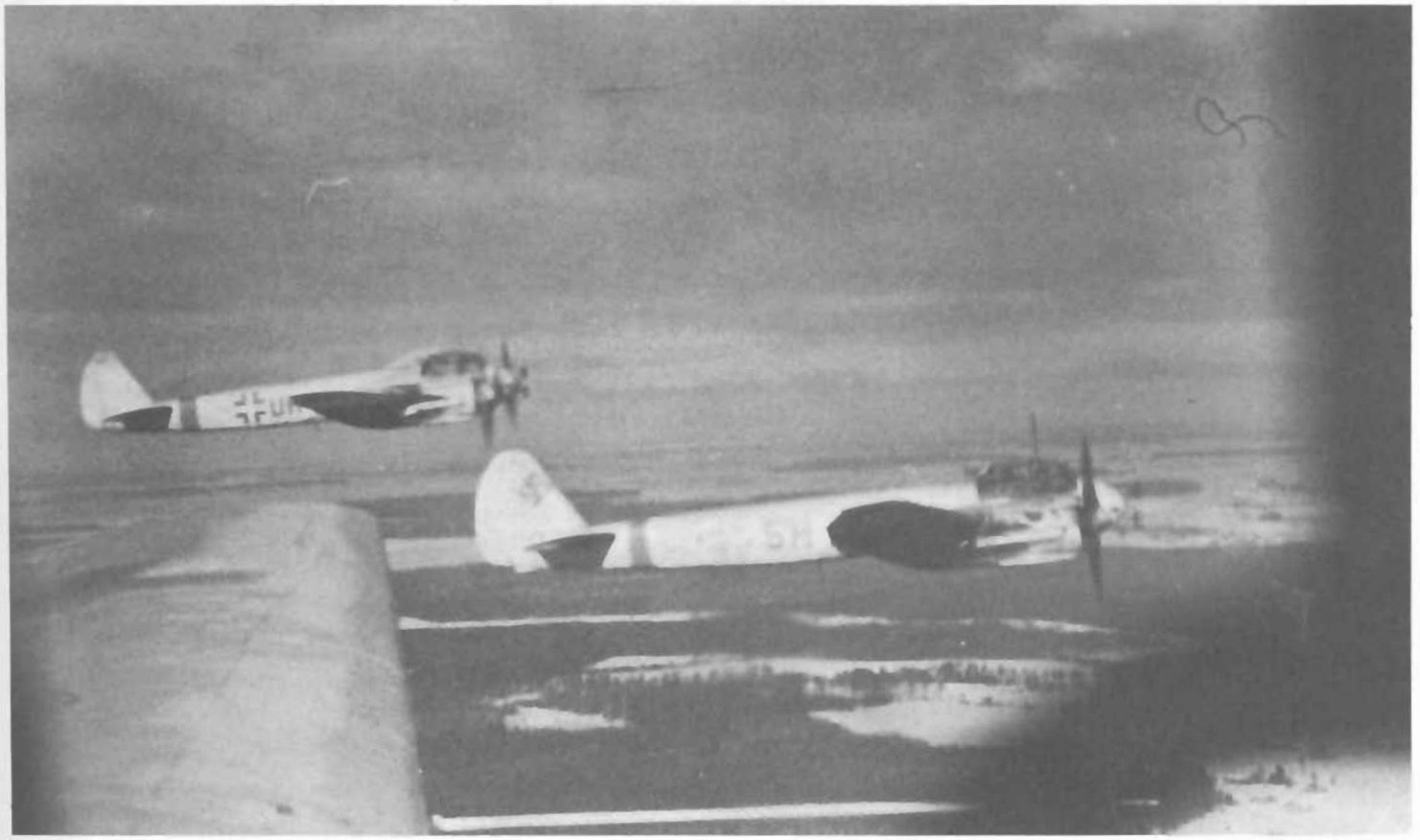
on the radar screen.

Such passive counter-measures by the Luftwaffe helped bring the total of bomber losses during the Battle of Berlin to 128 and Bomber Command henceforth stepped up its efforts to confuse the night fighters' running commentary method of control. Instead of pushing straight through to the target on an easily detectable course, feint attacks and zig-zag flight paths were flown in order to delay the detection of a given target until the last possible moment. Jamming was also increased; Tinsel became Special Tinsel, whereby night fighter control frequencies were monitored in England and passed to the bombers, which used their radios to cause widespread jamming on low frequency bands. VHF bands were, however, immune to this type of interference, and ABC, 'Airborne Cigar' began to be used by Lancasters of No. 101 Squadron to blot out the fighters' ground control. ABC was a high power R/T jammer operated by a German-speaking crew member who located the frequencies the Germans were using and neutralized them with continuous high pitched noise. Patience became the watchword of the Luftwaffe night fighter crews in the face of these new hazards, aircraft orbiting until the bombers could be positively located, their crews' eyesight once more proving to be the most reliable interception aid.

With the Germans usually having to delay their attacks until the target had been identified, short-range British night fighters had less chance to intercept, but on the night of 29 September 1943 a Serrate Beaufighter of No. 141 Sqn shot down the Bf110 flown by *Hptm* August Gieger of NJG 1. With 53 victories, Gieger was one of the top scorers of the night fighter force; although he managed to bail out of his crippled machine, he is believed to have drowned in the Zuider Zee. By September No. 141 Sqn had destroyed 23 German night fighters from the force that von Lossberg had moved to forward areas to infiltrate the bomber stream before it reached the coast.

By the autumn of 1943, the Germans had a number of new devices ready for service, including *Naxos* and *Flensburg*, the former being an excellent

23. A pair of Ju88C-6s of NJG 100 seen from a third aircraft.



24, 25, 26. Three of the night fighter 'Experten': Manfred Meurer (65 victories), Reinhold Knacke (44) and Rudolf Schönert (64).

homing device that could detect emissions from H2S from a distance of 25–30 miles. As FuG 350 *Naxos* Z, this homer was progressively fitted to most twin-engined fighter types and to a handful of Bf109G-6/N aircraft, which were converted Bf109G-6 Trop variants. (Some of these single-seaters were issued to NJG 11 from late 1944 to complement the Me262B-1a night fighters of 10 *Staffel*.)

The other homer, *Flensburg*, was able to pick up the emissions from the RAF Monica tail-warning radar, and third and most important was SN-2, an AI radar that, because it operated on a longer wavelength, was virtually immune to Window. Necessitating an even larger external aerial array called *Hirschgeweih* (Stag's antlers) by night fighter crews, SN-2 was able to operate effectively some four miles out from the target, but was limited in that its minimum range was 1,200 feet. This meant that aircraft had to retain FuG 202 in a simplified form, to bridge the last 300 feet or so before a visual contact could be made.

As well as these electronic aids, the German night fighter force had by the end of 1943 an aircraft capable—under perfect conditions—of holding its own with the dreaded Mosquito, some of which had begun 'Mahmoud' offensive patrols in August. This machine was the Heinkel He219, which had had an auspicious combat debut on the night of 11 June. Flying one of a number of He219A-0 evaluation aircraft which had arrived at NJG 1's base at Venlo that April, *Maj* Werner Streib destroyed five heavy bombers from a force attacking Düsseldorf. On returning to Venlo, Streib found that he was unable

to control the flaps. As the machine touched down barely under control, an engine seized and the aircraft started to break up. The ensuing crash left the He219 in several large pieces; both Streib and his radar operator, *Unteroffizier* Fischer, emerged from the dismembered cockpit section considerably shaken but otherwise suffering only abrasions and bruises. Working-up trials with the He219 continued in the hands of the *Gruppenstab* of I/NJG 1, under Streib's guidance, but by the end of the year a considerable number of technical defects had still to be resolved. I/NJG 1 then had only seven machines available, all of which were chronically unreliable.

Another new type intended for the nocturnal role was the Ta154, the third prototype of which had made its first flight in November. The production night fighter variant, the Ta154A, was fitted with FuG 202 *Lichtenstein* BC-1 and saw limited service with NJG 10 and I/NJG 3. Of wooden construction, the Ta154 was an interesting project that could not be developed fully owing to a number of difficulties, one of which was the lack of a suitable bonding agent for its component sections. Only seven machines equipped as night fighters were delivered.

The Bf110 and Ju88 therefore still constituted the bulk of the night fighter force at the end of 1943, although there were still insufficient numbers of the latter on hand because of high operational attrition—some 70 machines were lost in the first six months of the year—and also because of Junkers' diversification into advanced bomber projects. Development work on the Ju88G began later in the year, this night fighter variant's main external difference from the earlier Ju88C being the fitting of the square vertical tail unit of the Ju188 bomber.

The success of *Wilde Sau* operations indirectly led to changes in the command structure of the *Nachtjagdverbande* in the autumn; Hermann's enthusiasm for freelance night fighting had not been shared by Kammhuber and the untimely neutralization of the *Himmelbett* chain gave Göring a legitimate excuse to remove a man whom he had long regarded as far too much of a perfectionist for a system which was costly and demanded high utilization of manpower. Kammhuber was posted to Norway, and replaced by *Gen Maj* Josef Schmidt.

THE BALANCE RESTORED –AND LOST

Apart from the addition of a third *Gruppe* to NJG 6 in May, the Luftwaffe night fighter force had reached its peak by the start of 1944, with six complete *Geschwader* and a number of units on strength. These were: NJG 1, 2, 3, 4, 5, and 6, I and II/NJG 100 and I/NJG 200 in Russia, representing a force of approximately 600 aircraft. In addition, JG 300, 301 and 302 continued to support the regular night fighter force, although operational attrition had

resulted in a high number of losses in the *Wilde Sau Gruppen*. The one enemy night fighter directly opposing the German force was the Mosquito, but this was not to become a serious menace much before the end of the year; as 1944 opened, the Luftwaffe embarked upon its most bitter combat phase of the war, a phase that in terms of bomber losses at night represented its period of greatest success.

In January route interception of bomber formations was re-introduced, night fighters ranging as far as the North Sea to make contact, without waiting for the bombers' target to be identified. Improved RAF counter-measures had made interception in the vicinity of the target extremely difficult and these tactics enabled fighters to converge on the bomber stream from all directions as early as possible. Small formations could also be directed by local control not unduly affected by

27, 28. Typical of the victory markings applied to night fighter Bf110s was this presentation on W. Nr 1740039, the machine flown by Hptm Leopold Fellerer, Staffelkapitän of 5/NJG 5. Fellerer, seen in the centre of the group of pilots, added to the 22 kills shown and ended the war with 41.

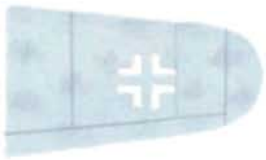
jamming, so that the multiple raids the enemy was now able to mount could be intercepted simultaneously.

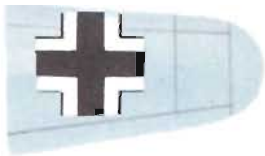
Bomber Command also introduced new equipment for use in 1944, including the Mk III version of H2S, which operated on a higher frequency than hitherto and gave a much clearer radar picture. Some H2S sets were also improved by the addition of 'Fishpond', an attachment which allowed scanning of the area immediately below the aircraft, the most vulnerable quarter during fighter attack. Fishpond was extremely welcome as both Boozer and Monica had revealed their limitations, the former because of the cessation of radar control for the fighters and the latter because it could not distinguish friend from foe. A simpler move to confuse the night fighters was 'Corona', the broadcasting of fake instructions on their radio frequencies, first employed during a raid on Kassel on 22 October 1943. The initial impact of Corona was successful and not a little entertaining for the British participants, as the German controllers became increasingly frustrated by the stream of contradictory orders. But although some of the fighter crews were deceived that night, others found the bombers and exacted a toll of 42.

Following relatively low loss-rates on five raids in January, Bomber Command attacked Magdeburg on the 21st, which resulted in the loss of 55 British and four German aircraft. For the Luftwaffe that low loss-figure was far higher in terms of individual expertise, for numbered among the dead were *Maj* Wittgenstein and Manfred Meurer, with 79 and 65 kills respectively the leading and third highest scorers of the night fighter arm.

The bombers were intercepted later than planned owing to an error on the part of a German controller, who misjudged a course change by the incoming stream and ordered the fighters to orbit Hamburg—14 minutes before the bombers passed right over the night fighters' marshalling point at beacon *Quelle* located between Cuxhaven and Hamburg. There were no fighters in the vicinity of *Quelle* as about 160 aircraft thundered over it, heading for the manufacturing centre of Magdeburg, some 70 miles south-west of Berlin.

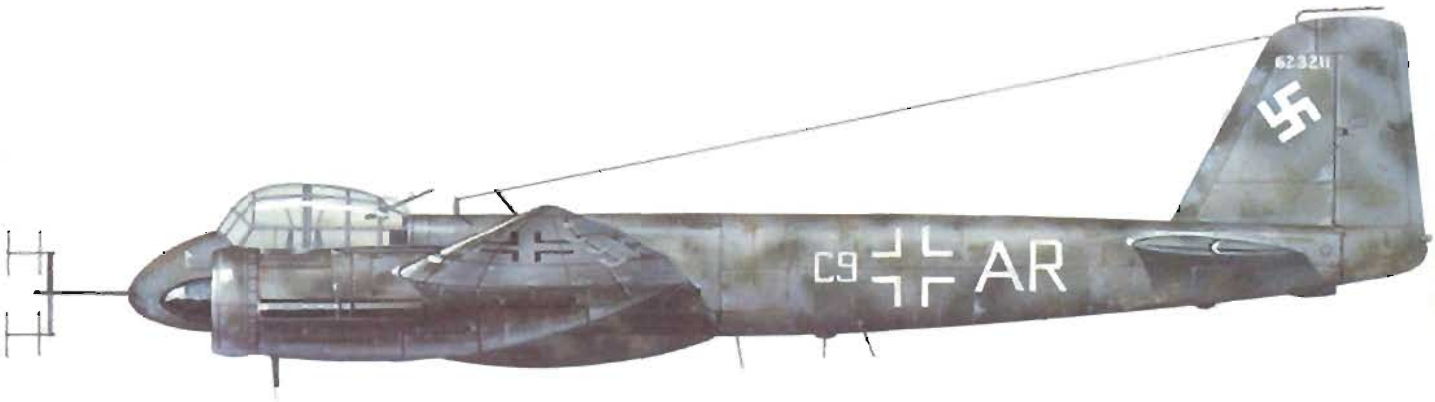
Aircrew Leutnant, 1942, wearing the heavy fleece-lined winter flying suit known as the 'Bulgarian' suit. Officially this was for flights over land; flying suits of dark brown or black leather, usually in two pieces, were officially issued for flights over the sea in winter, but in practice the distinction was not rigidly applied. Rank symbols in white on a dark-blue ground were sewn to each arm.

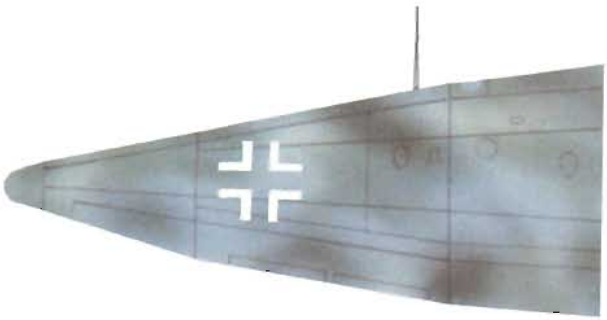


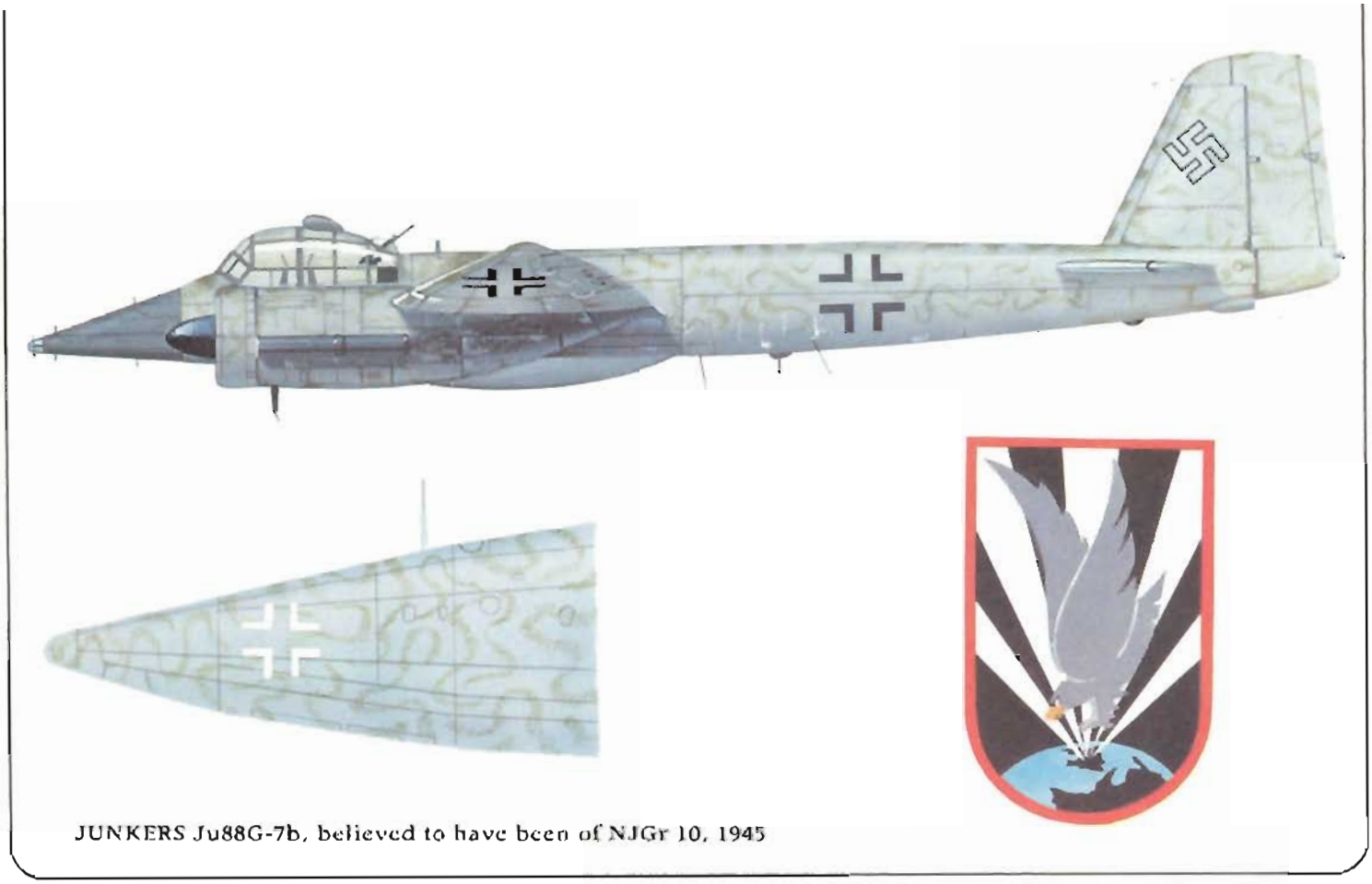


DORNIER Do217J-2 of NJG 5,
Lonate Pozzolo, Italy, February 1943

JUNKERS Ju88G-7b, W. Nr 623211 of 7/NJG 5, Dubendorf, Switzerland, late May 1945





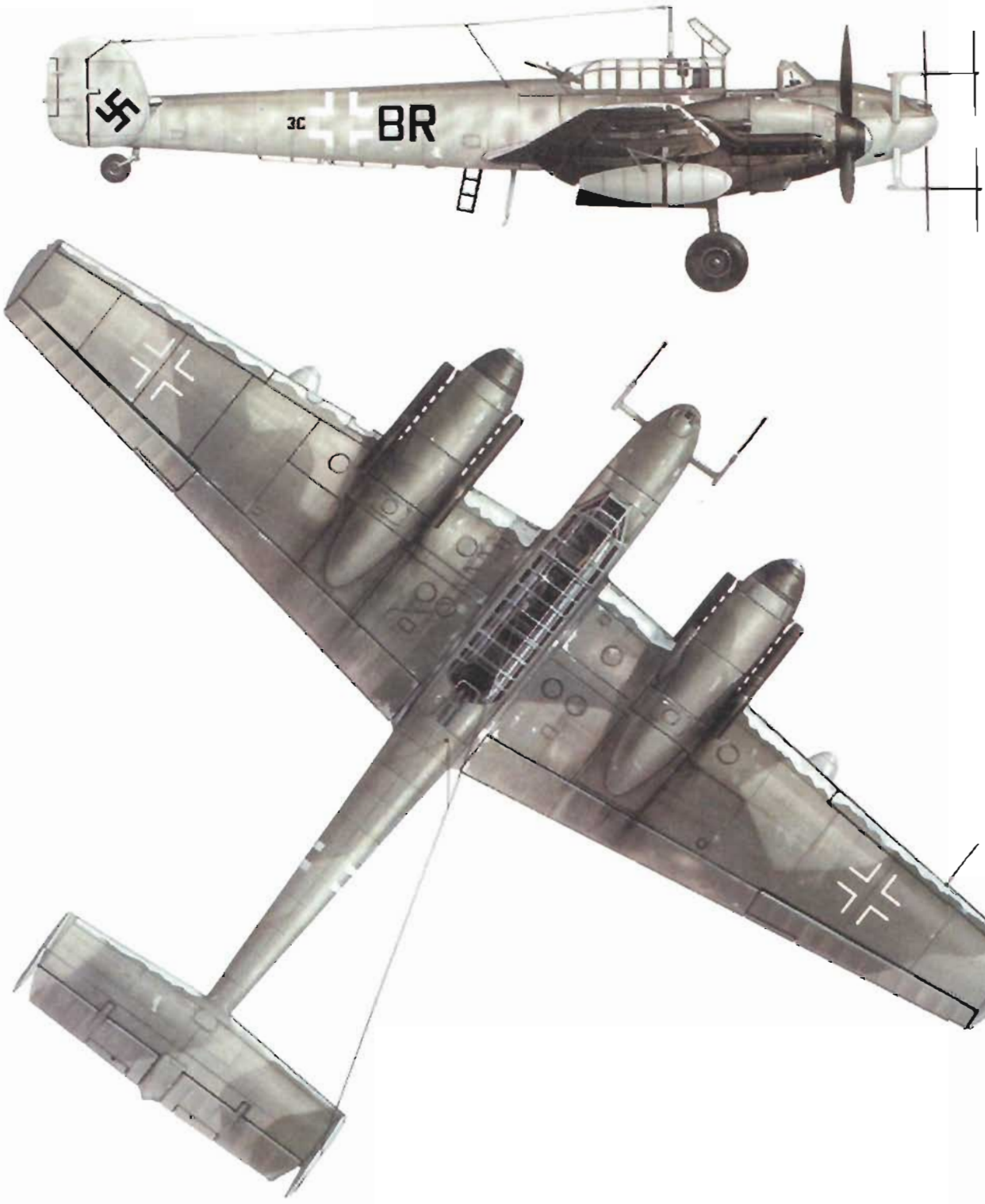


JUNKERS Ju88G-7b, believed to have been of NJGr 10, 1945

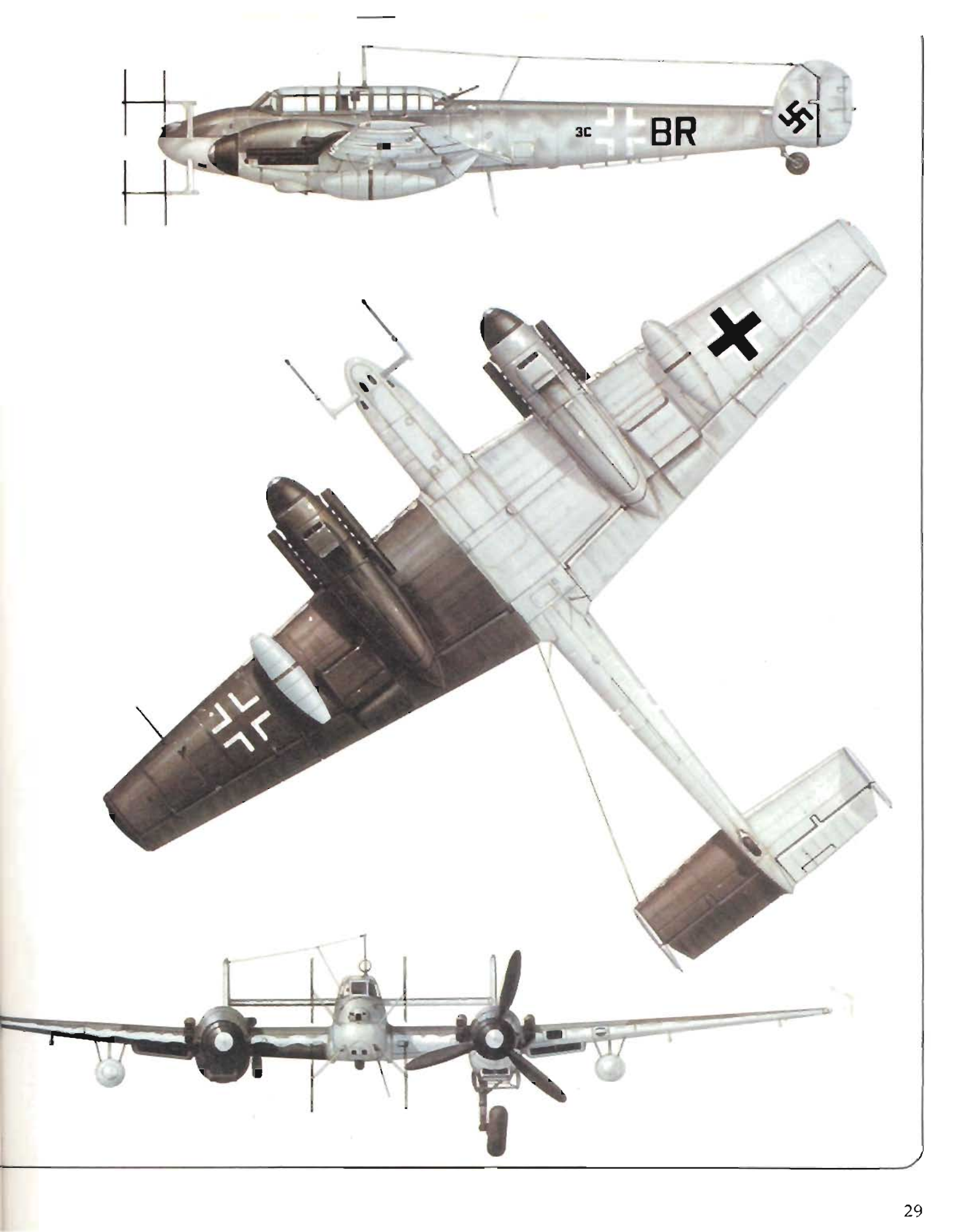
OPPOSITE, TOP: A Dornier Do217J-2 recorded at Lonate Pozzolo, Italy on 23 February 1943. An aircraft formerly used by NJG 3, the code of which it still bears, it has been partially repainted in the colours of its new owners, the Regia Aeronautica. Dornier Do217s were used to train Italian crews before being used briefly as night fighters in defence of southern Italy against RAF bombing raids. The machine illustrated is fitted with FuG 202 Lichtenstein radar, although both the ventral and cockpit-mounted machine guns were removed from night fighter variants, rear defence being a single 7·9mm MG 15 machine gun.

OPPOSITE, BOTTOM: Junkers Ju88G-7b, W. Nr 623211, of 7 Staffel, NJG 5, seen at Dubendorf, Switzerland in late May 1945, after being flown in by its crew. The aircraft carries the 'Hirschgeweih' aerial array for FuG 218 Neptun VR radar on the nose and, unusually, a tail warning aerial on the fin, rather than below the rudder. The camouflage shows the increasing use of green, rather than grey shades by the Luftwaffe night fighter arm towards the end of the war to render aircraft less visible on the ground. NJG 5 experimented with a wide variety of such schemes. Below the sideview is a portion of the upper surface of the port wing, showing the wavy line pattern of the green overspray. On the right is the 'Englandblitz' badge of the night fighter arm with the accompanying roman numeral indicating the second Gruppe of NJG 1. III Gruppe of which used a similar marking. This practice is believed to have been unique to NJG 1, and carried only by the Bf110.

ABOVE: A Junkers Ju88G-7b believed to have been on the strength of NJGr 10 in 1945. The machine has the plywood and fabric fairing over the aerials of the FuG 218 Neptun VR radar with the tips of the dipoles protruding and ending in a transparent tip. No unit codes or W. Nr were applied and the machine has a predominantly green camouflage scheme. Below the sideview is a portion of the port wing upper surface showing the 'wave mirror' green overspray. On the right is an early variation of the badge of the night fighter arm. The searchlight beams were deleted, probably after the Himmelbett system rendered the lights less necessary for nocturnal interception.



MESSERSCHMITT Bf110G-4d/R3 of 7./NJG 4, Stade, 1944

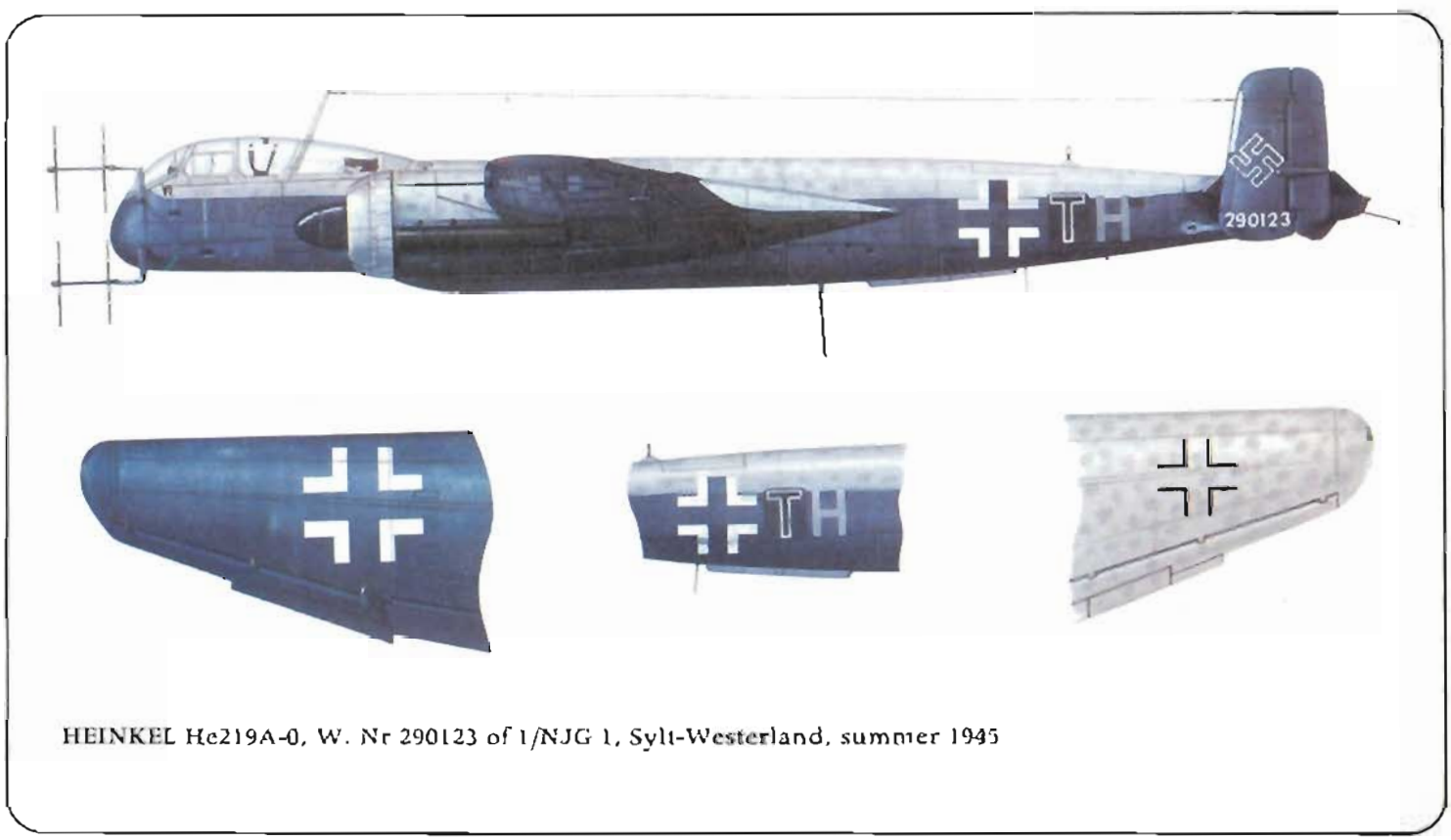

3C
BR

PAGES 28–9: A Messerschmitt Bf110G-4d/R3 of 7 Staffel, NJG 4. The machine is unusual in that it has the under surface of the starboard wing and tailplane in black, an application that recalls the similar treatment of RAF day fighters during the early war period. In the German case, the application is believed to have been mainly for the benefit of searchlight crews and was probably extremely effective when one considers that the aircraft would have appeared to have 'lost' one wing. The scheme was also used on other types and is shown on an He219 elsewhere in this book. The machine has the later grey upper surface splinter pattern camouflage, in RLM shades 75 and 76.

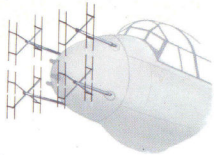
BELOW: Heinkel He219A-0, W. Nr 290123 of 1/NJG 1 at Sylt-Westerland, summer 1945. As the photograph elsewhere in this volume shows, a number of He219s of NJG 1 received dark underside camouflage and there is evidence to suggest that some also had the half-black, half-Hellblau wing undersides. There is little sign that the 'G9' unit code was applied to this particular machine, although the individual letter has been carefully outlined in white in a similar manner to those on the early overall black machines of NJG 1 and other units. The significance of the very widely applied 'VI' marking under the forward cockpit section of the He219 is something of a mystery, but it almost certainly originated at manufacturer, rather than unit, level. The small views show the large white Balkenkreuz under the wings, the reverse side of the fuselage and the wing upper surfaces camouflage and national markings, the dimensions of which vary considerably from those under the wings.

OPPOSITE, TOP: Some of the radar aerial arrays carried by night fighters: (A) FuG 202 Lichtenstein BC as fitted to the Ju88C-6 (B) The small central 'X' array of the FuG 212 and the large SN-2 aerial arrangement on a Bf110G (C) The ultimate radar fitted to the Bf110, FuG 218 Neptun, with its large 'X' pattern aerials (D) The He219 standardized upon the 'Hirschgeweih' arrangement of aerials for SN-2 although some machines also had the small central array of FuG 212.

OPPOSITE, BOTTOM: A mobile Freya radar set mounted on a heavy transporter. As the fixed radar sites were captured by Allied ground armies, mobile units such as these still enabled the night fighter force to retain a degree of early warning of an impending enemy air attack.



HEINKEL He219A-0, W. Nr 290123 of 1/NJG 1, Sylt-Westerland, summer 1945



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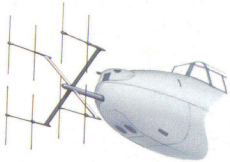

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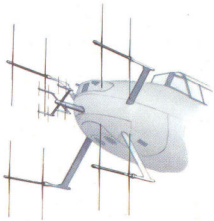

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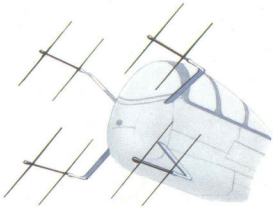
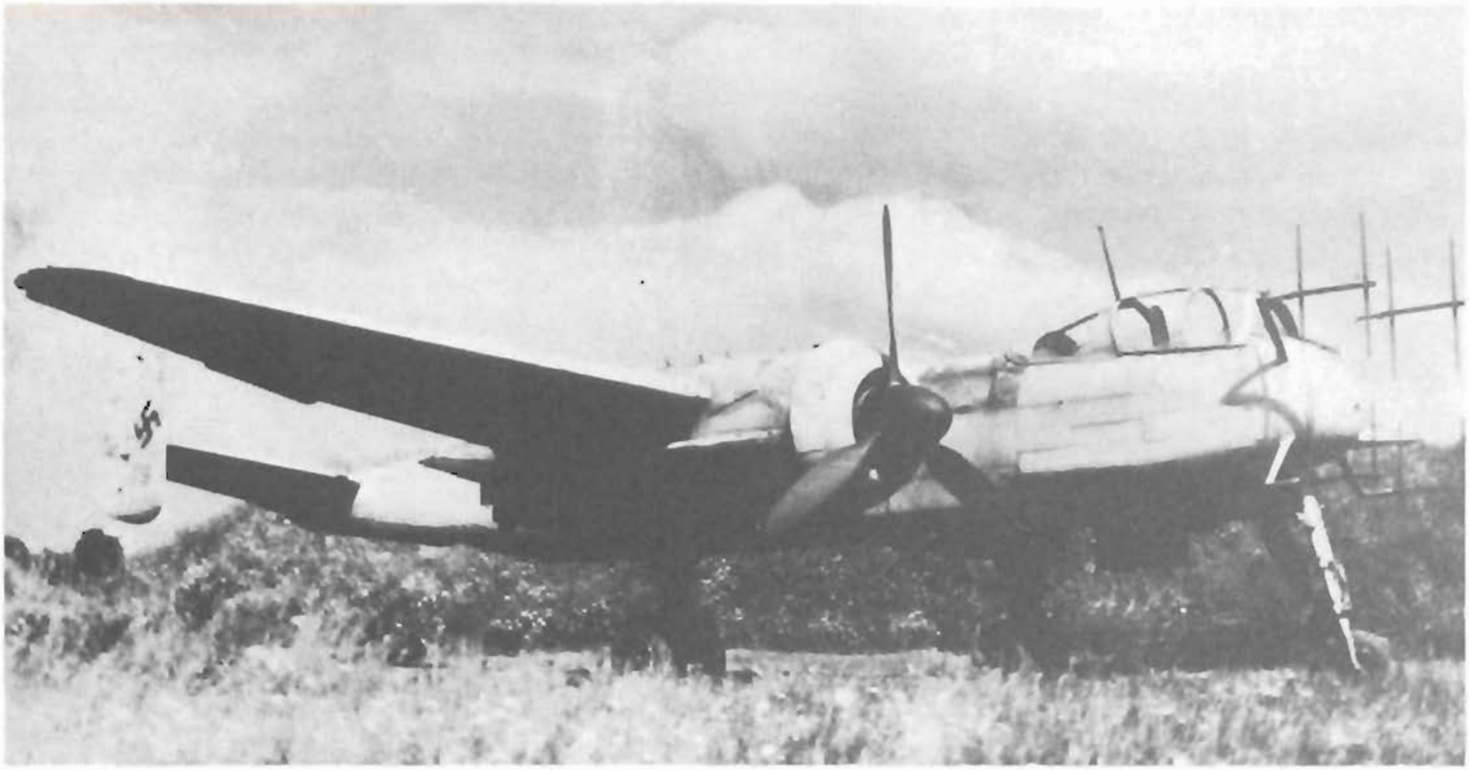


D

Führerin commanding a Luftnachrichten-Helferinnen Betriebszug, 1944. The women's auxiliary of the Luftwaffe manned the Air Warning Service and the Telephone and Teletype Department, and was thus intimately involved in the ground control aspect of the Night Fighter Arm. This junior officer has the cuff braid and cap and collar piping of 'commissioned' rank in the service; the collar stars were also worn by all 'commissioned' grades, and the left arm chevron identifies exact rank. The trade badge above it is that of a senior qualified radio operator. Note Luftwaffe eagle badges on cap, breast, and tie stick-pin. Grades below Führerin wore golden-brown cap piping.

Hitler Youth Flakhelfer, 1944. Fifteen-year-old boys served as auxiliaries with home defence flak batteries, acting as messengers, signallers, and even as ammunition numbers within flak crews. HJ cap badge and brassard are worn on a blue-grey blouse and field cap, with black HJ shoulder straps piped light blue and bearing rank distinctions, and a special light-blue-on-black breast eagle badge. This boy has been awarded the Luftwaffe Flak Badge for outstanding service.



29. Potentially the best aircraft used by the Nachtjagd was the Heinkel He219, although the small number delivered to operational units could make little difference to the air-war picture. This is an example of the initial production A-series. (Via EJC)

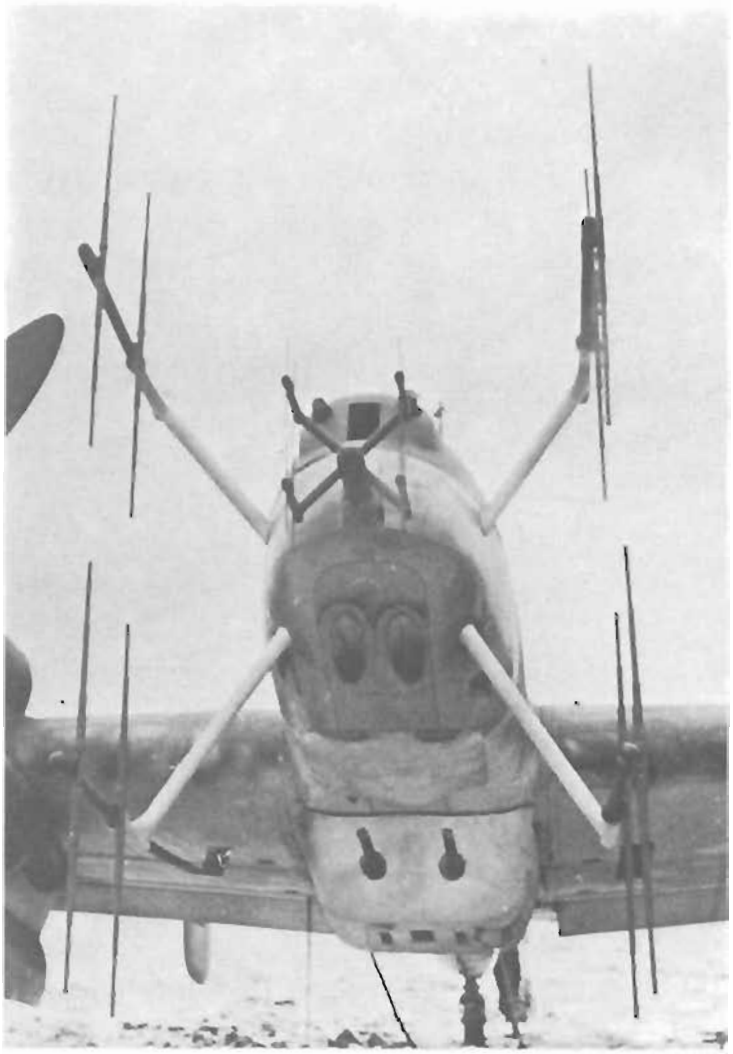
As target markers fell on a predetermined point south of Hamburg they were seen by the fighter crews, some of whom ignored orders to remain where they were, and made for the bomber stream. *Maj* Wittgenstein, the *Geschwaderkommodore* of NJG 2, had taken off from Stendal near Berlin in his Junkers Ju88G and made contact with his first victim at approximately 22.00 hrs. The Lancaster crashed in flames. A second followed and a third and fourth, and it was during an attack on a fifth bomber that the Luftwaffe ace's machine was hit. *Maj* Wittgenstein ordered his radar operator, *Feldw* Ostheimer, to bale out, which he did as the Ju88 fell away. They found the aircraft the next day with the prince's body in the wreckage; it was believed that the German pilot fell victim to the guns of a bomber below him.

The running battle continued over the target, the main body of night fighters intercepting near Leipzig. Most were twin-engined types; the *Wilde Sau* single-seaters generally failed to make contact, as radio and radar counter-measures prevented identification of the intended target until the last minute. Meurer, the second night fighter ace to lose his life that night, did so when the Lancaster he was attacking rolled over and collided with his He219. Locked together, the two machines plunged to earth.

It cost Bomber Command 158 aircraft to make four more attacks on Berlin throughout January and February 1944, and a raid on Leipzig on 19 February resulted in the loss of 78, the highest to date. For the German cities, however, a respite was not far off, as the Allied air forces became increasingly occupied with pre-invasion strikes in France.

On 1 March, Heinz-Wolfgang Schnaufer became *Gruppenkommandeur* of IV/NJG 1, and by the 25th of that month he had scored his 50th kill. But 12 March brought another gap in the ranks of the *Experten*, when *Maj* Egmont Weissenfeld crashed in the Ardennes. Having taken over command of NJG 5 on 2 February the prince was on a day flight, returning from a visit to his old unit, III/NJG 1 at Athies-Laon, when his aircraft hit the ground.

As with American daylight attacks, the weather did have an effect on Bomber Command operations



30. A close-up of the nose of a Bf110G-4b/R3 fitted with abbreviated FuG 212 aerials and the large SN-2 array. Although reducing overall performance, these aerials did not appreciably affect the Bf110's handling qualities, which always remained docile. The fuselage pack contains two 20mm MG 151 cannon. (Via EJC)

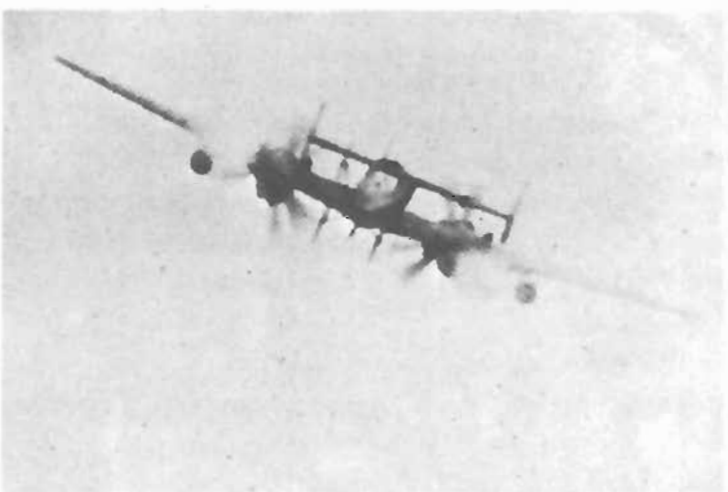
although the area-bombing nature of the British attacks made aiming far less critical. The extent to which the elements could disrupt an elaborately planned operation was graphically illustrated on the night of 24 March, when the German capital sustained the last attack in the early-1944 series of raids. Jetstream winds slowed the bombers considerably and scattered the attackers. The night was clear and the flak was able to inflict fearful casualties on small formations of aircraft which were sometimes forced to fly at hardly more than 100mph. No less than 72 machines failed to return from this raid, the majority of them falling to flak. The winds were equally unco-operative to the night fighters.

It was unusual for such a high number of aircraft to fall to flak, as night fighters were the primary cause of bomber losses. This was shown on 26 March, when the target for 683 heavies was Essen. Once again the German controller failed to 'read' a turn by the bomber stream early enough and over 100 fighters were left milling around over Holland waiting for an enemy who never arrived. Only four bombers were shot down.

Thus far March 1944 had been a bleak month for the night fighter crews, but on the night of the 30th/31st they had their biggest single success of the war during an RAF raid on Nuremburg, a city that would become notorious in the annals of Bomber Command.

As the 725 Lancasters and Halifaxes droned across Belgium, 361 twin- and some 150 single-engined fighters waited on the airfields of each of the five fighter divisions within range of the bomber stream. It had been estimated by the radar station at Texel that the bombers were heading for Berlin and Hamburg, and fighters were ordered off to orbit the radio beacons *Ida* and *Otto* south-east of Cologne and north of Frankfurt, respectively. Nearly 200 German aircraft converged on these

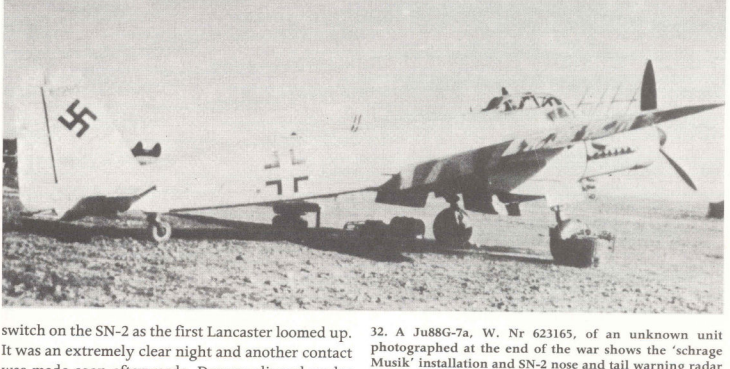
31. A photograph that demonstrates the plight of the Nachtjagd after the summer of 1944. A Bf110G had little chance of escaping an Allied fighter bomber if caught in daylight, as was the machine here. Strikes can be observed on the starboard wing and the port engine. (USAF)



beacons, which were close to the bombers' route into Nuremburg, one of the longest round-trips they had ever made.

With fighters approaching the stream from all directions, contact was made early; the first aircraft to do so was the Bf110 of Martin Drewes of III/NJG 1, en route from Laon. His radar operator, *Unteroffizier* Erich Handke, had not even had time to switch on the SN-2 as the first Lancaster loomed up. It was an extremely clear night and another contact was made soon afterwards. Drewes slipped under the Lancaster and dispatched it with a short burst from the *schräge Musik*.

By the time the bomber stream had reached the Rhine, 12 aircraft had been lost—an unusually high number so early in a raid. The German crews were surprised to find the bombers coming straight for them, as they usually had to wait for a contact. That night, however, the fighter controllers could not have arranged things better—everything was set for the slaughter that was about to take place. Rarely had night fighters had such good conditions. There was a brilliant half-moon and high winds made it difficult to maintain the stream. By the time the bombers reached the vicinity of Cologne there was a new hazard: many of them began to leave vapour trails. The conditions of the Luftwaffe's most successful night action of the war were clearly reflected in the experience of *Oblt* Helmut Schulte, Technical Officer of II/NJG 5. He picked up his first Lancaster at 20,000 feet and put its starboard inner engine out of action before his *schräge Musik* jammed. Even a violent dive could not save a bomber that night; Schulte kept it in sight and used the upward-firing cannon again. The Lancaster crashed in flames. Three further victims followed,



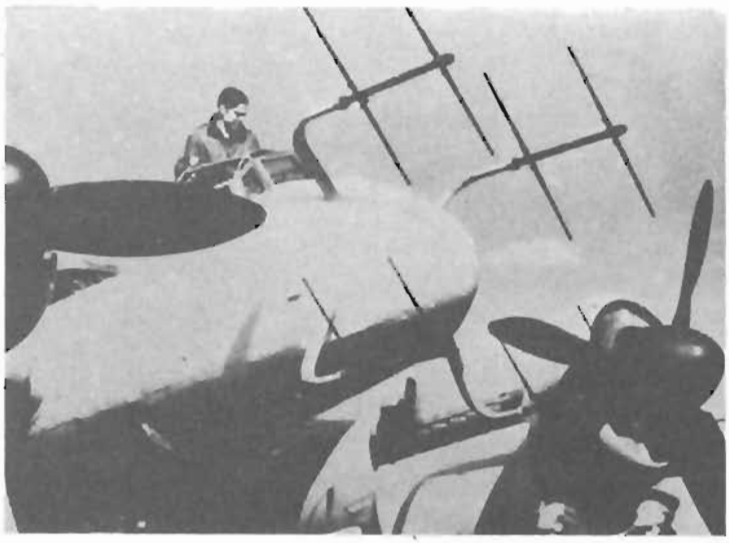
32. A Ju88G-7a, W. Nr 623165, of an unknown unit photographed at the end of the war shows the 'schrage Musik' installation and SN-2 nose and tail warning radar aerials. (Via EJC)

and when the German crew landed it was found that their *schräge Musik* had used only 56 rounds.

The carnage continued as the bombers pressed on to Nuremburg. When the raid was over 97 British aircraft had failed to return, the Luftwaffe having lost ten aircraft and shot down an estimated 79 heavies. Had there been no USAAF daylight bomber offensive, it is entirely possible that the German night fighter force could have seriously curtailed Bomber Command operations after the Nuremburg raid—indeed it might have succeeded in blunting the offensive to the extent of changing the course of the war, as no air force could sustain the nightly loss of around 100 heavy bombers and their crews for long. Equally, the day fighters might have made German airspace untenable for the American

34. A Ju88G-7a of NJG 100 being prepared for a sortie having been manhandled from its hiding place in the trees behind—nature's camouflage was a necessity on Luftwaffe airfields in late 1944 and 1945. (Via EJC)

33. The nose aerials of SN-2 on a Ju88C-7a, probably the same aircraft as that in Fig. 31. (Via EJC)



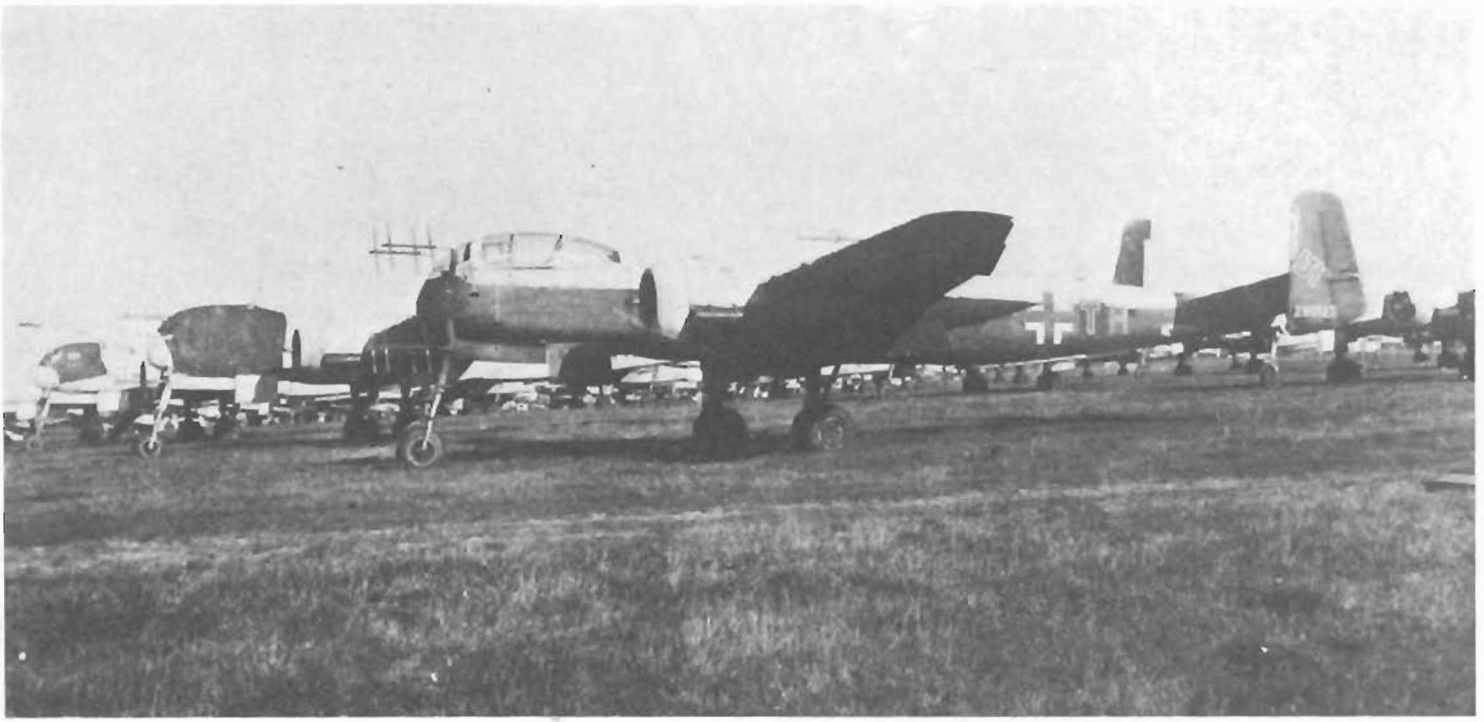
bomber force had the threat been handled differently; but by mid-1944, US escort fighters began to sound the death knell of the Luftwaffe. Such was the appalling attrition rate by day that night fighters had to be thrown piecemeal into the fray, until eventually the force reached a position from which it could no longer fight effectively. This reversal was caused not so much by the loss of aircraft, as by the elimination of experienced personnel, coupled with the gradual erosion of vital supplies, particularly oil, as a result of bombing. In the immediate future Allied armies would capture forward airfields and radar stations and punch an irreparable breach in the air defence chain.

On the day following the Allied landings in Normandy, the Luftwaffe night fighter force had 301 operational aircraft out of a total of 494 in the west distributed through elements of six *Nachtjagdgeschwader*. In the majority was the reliable but obsolescent Bf110, with four *Gruppen* operating a

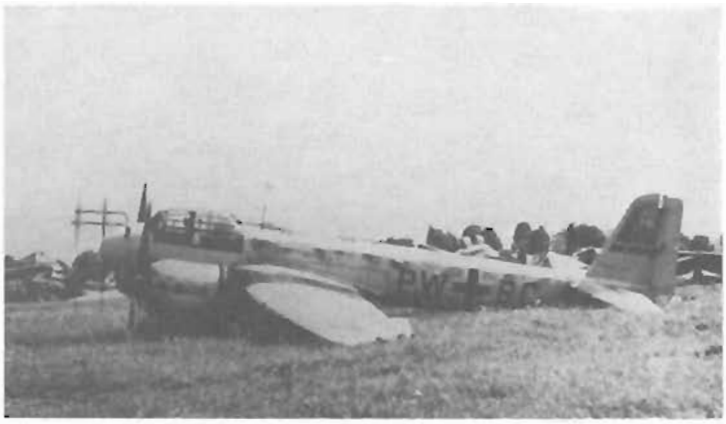
number of He219s; ten flying Ju88s and Bf110s; two units had a number of Do217s supplementing their Messerschmitts; and one, I *Gruppe* NJG 1, also had a few Me410s. Additionally there were approximately 120 Bf109s and Fw190s on the strength of the *Stab*, I and II *Gruppen* JG 300 and I *Gruppe* JG 301; and some Bf109s were on hand at Werneuchen, where NJGr 10 used a variety of types for operational evaluation, principally to find an answer to the Mosquito. An aircraft which might have provided a decisive answer was the Heinkel He219, the development programme of which was hampered as much by official interference as by the effects of Allied bombing. Consequently, deliveries of this long-overdue and potent new machine to the night fighter arm were very slow, and NJG 1 and NJGr 10 were the only units to receive it in any numbers. I/NJG 1 was the sole recipient up to May 1944, command of the *Gruppe* having passed to *Hptm* Hans-Dieter Frank when Werner Streib was promoted to *Geschwaderkommodore* in July 1943. He219s were subsequently delivered to II/NJG 1 at Arnhem-Deelen, IV/NJG 1 at St Trond (late in June) and finally to III/NJG 5.

On 13 July 1944 an event took place that marked the beginning of the end of the German night fighter force, enabling the RAF to take a giant step towards mastery of the night skies. Making a navigational error, a crew of 7 *Staffel* NJG 1 landed their Ju88G-1 at Woodbridge in Suffolk. On board was SN-2 and *Flensburg*.

As a result of this invaluable prize, the RAF rushed a new type of Window into service which nullified SN-2, and *Flensburg* was rendered impotent by the virtually complete removal of the Monica tail warning radar. For the Germans, worse was to come: early in 1944 the RAF had formed a new specialized group, No. 100, which took over the jamming cover for the main force and operated long-range Mosquitoes against the Luftwaffe night fighters. No. 100 Group aircraft carried a variety of equipment to blot out enemy radio and radar communication, including 'Mandrel' jamming transmitters; 'Jostle', a high-powered audio-jammer of R/T communications, and 'Piperack' to jam SN-2. The excellent AI Mk 10 and an assortment of homing devices enabled the Mosquitoes to become a lethal thorn in the side of the *Nachtjagdgeschwader* despite their relatively small numbers.



35. The Allies found hundreds of aircraft intact on German airfields, despite widespread destruction by Luftwaffe personnel before the collapse. The He219 in the foreground of this scene at Sylt-Westerland is the subject of the colour view on p. 30. (Newark Air Museum)



36. A wrecked Ju88G-1, W. Nr 414811, left to the mercy of souvenir hunters, who invariably 'liberated' the fin swastikas. Note the pre-service delivery radio code letters, PW + BC. (Via EJC)

To combat the effects of the latest RAF countermeasures, the Germans strove to overcome the worst of the jamming, but with only partial success. In the summer of 1944 a new radar, *Jagdschloss*, came into service, which was designed to be immune to jamming. With a range of 90 miles, it was able to retain control of *Zähme Sau* fighters by changing frequencies.

Apart from combat losses, the not inconsiderable hazards of merely maintaining an intensive operational schedule took its toll of the night fighters. On 5 October an accident claimed the life of Helmut Lent, one of the most able men in the Luftwaffe and one who had done much to build the *Nachtjagdverbande* into the highly efficient force it was. Landing at Paderborn that day, Lent's Bf110 suffered an engine failure, touched a high-tension wire and crashed. *Oberst* Lent was fatally injured and died two days later; his crew was also killed as a result of the crash. Lent had 110 victories and had been decorated with the Oak Leaves, Swords and Diamonds to the Knight's Cross. Only eight of his kills had been by day, and he had flown some 300 operational sorties.

37. NJG 1 retained some Bf110Gs until the end of the war. This example, G9 + BR, served with 7 Staffel. (Via EJC)

At dawn on 16 December 1944 *Field-Marshal* von Runstedt launched the last German offensive in the West, aimed at breaking through to the vital port of Antwerp. Supporting the Panzers, the Luftwaffe called upon elements of the night fighter force to make nocturnal ground attacks on US motorized columns. Among the aircraft involved in this highly dangerous work were the Bf110s of NJG 6, which undertook a typical attack on the night of December 23/24. The Bf110Gs took off singly from Kitzingen at 13.30 hrs, armed with two 500kg bombs on the fuselage belly rack and four 250kg weapons on the wing racks. An American armoured column was sighted and individual aircraft aimed their bombs at the leading and rearmost vehicles to halt the convoy. Strafing attacks followed, the aircraft then withdrawing to orbit out of range for some 20 minutes. They then made further runs on the vehicles with machine guns and cannon, taking the defences by surprise. One Bf110 was lost, apparently due to premature explosion of a 20mm cannon round—no ground fire was reported. One man went missing after the crew bailed out, the aircraft coming down near Euskirchen.

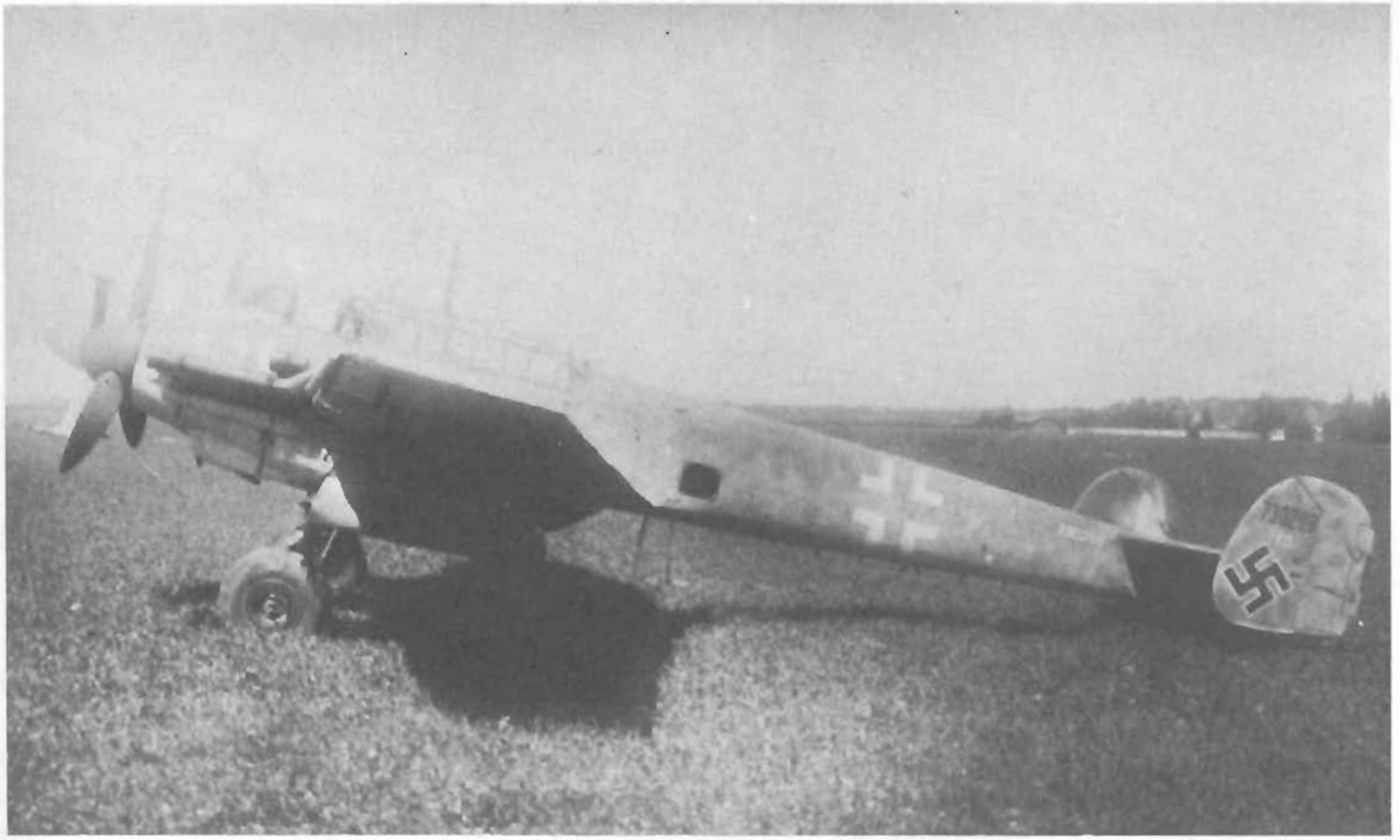
Some success was achieved by such attacks, but the risk to men and machines was hardly justified by the results. As the weather began to ease in the last days of December, the Allied fighter bombers returned.

MOSQUITOES AND JETS

A few hours into 1945 the Luftwaffe launched *Bodenplatte*, the mass New Year's Day strike on Allied airfields in Belgium and Holland, each element of the attacking fighter force being led to its target by a *Lotsen* or 'pilot' Ju88 of the night fighter

arm. The previous night Luftwaffe activity had been limited to some reconnaissance sorties by *Lehrgeschwader* 1 and strafing attacks on road and rail targets by machines of NJG 3.

Little was achieved by the ambitious fighter operation, and every day that passed thereafter reminded the Germans of the inexorable advance of the Allies, on the ground and in the air. City after city had suffered appalling casualties and damage, and the Luftwaffe night fighters were increasingly hard put to offer more than a token resistance to the relentless attacks. With the capture of the early-warning stations on the Channel coast, advance indication of an air raid was at best scanty, and often came too late for fighters to be concentrated in any numbers. Such was the case on the night of 13 February 1945, when a force of bombers was reported heading for a target in southern Germany. The usual guessing game took place, and the controllers finally decided that either Leipzig, Chemnitz or Dresden was the target. At 21.55 hrs, V/NJG 5 was ordered off from its base at Dresden-Klotzsche, but by then the target markers were already falling on Dresden. It took the Bf110s more than 30 minutes to gain altitude, and while circling over the airfield one machine was caught in searchlights and immediately shot down by German flak. A pilot called 13 February the saddest day he had experienced as a night fighter pilot; there were only 25 aircraft to defend the Saxon capital, which was about to be laid waste in two massive RAF raids. The night fighters that had taken off managed to make contact with only nine enemy aircraft. The RAF reported the loss of six bombers out of 1,407 making the two attacks, only one to a night fighter.



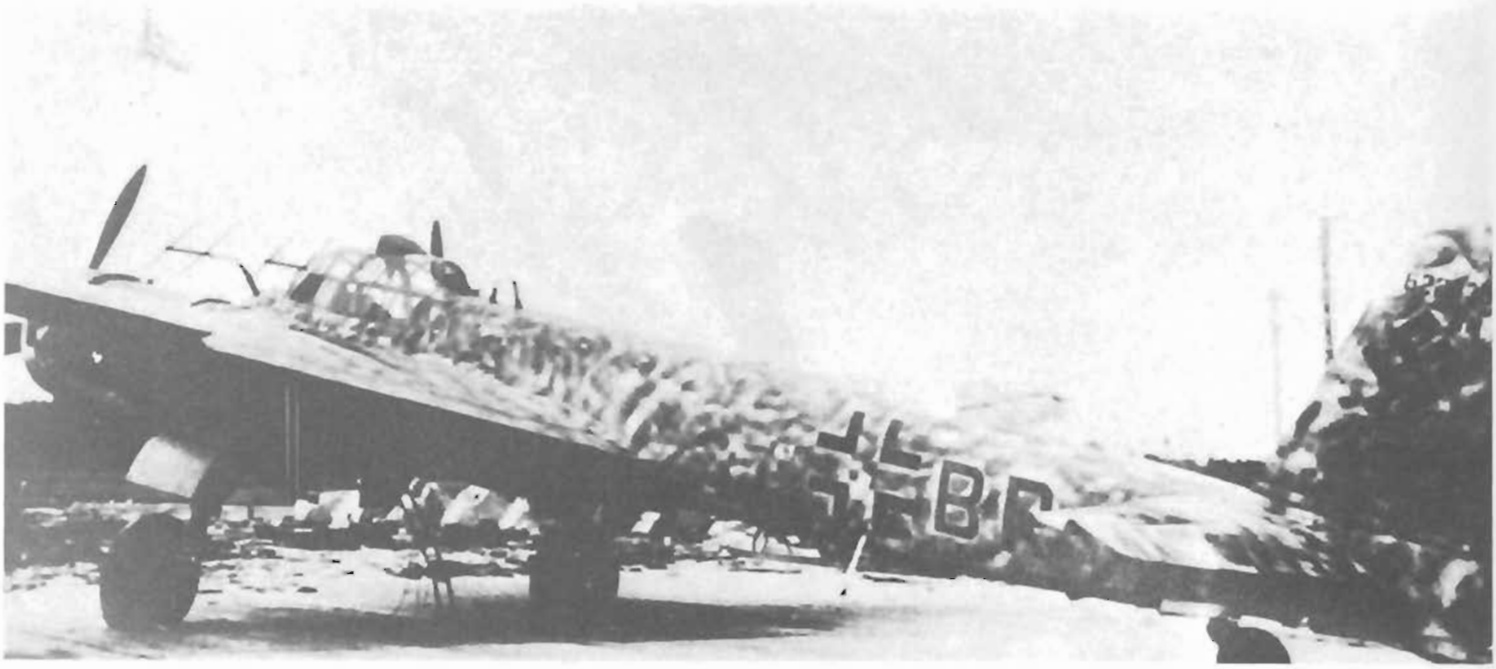
38. An abandoned Bf110G without unit markings but displaying its W. Nr 730299, in black on the fin and in white on the rear fuselage forward of the tailplain. (Via EJC)

As the second raid on Dresden developed, 18 Bf110 crews of NJG 5 at Klotzsche stood by at 'cockpit readiness' and, with mounting frustration, awaited the order to take off, while they watched the RAF annihilate the city. And there they

remained. The station commander was unable to contact the 1 Division HQ at Döberitz and obtain permission to scramble his fighters.

On 21 February, Hans-Joachim Jabs destroyed two Lancasters and on 7/8 March the *Kommodore* of NJG 4, Heinz-Wolfgang Schnaufer, made it a costly night for the enemy by bringing down no less than seven Lancasters, in addition to the two he had destroyed in the early hours of 7 March.

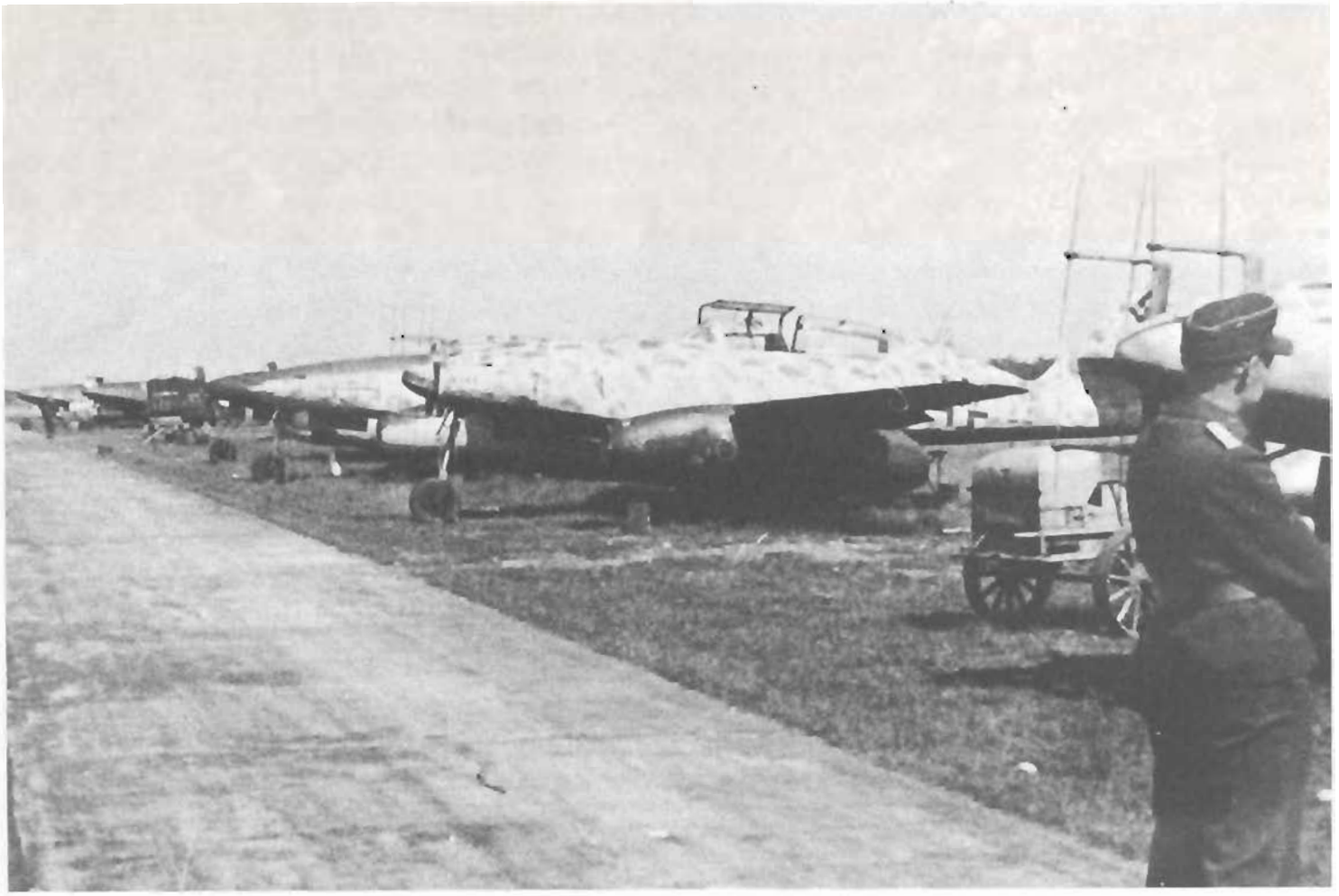
39. Oblt Brieglib, Staffelkapitän of 7/NJG 2, flew this Ju88G-6, W. Nr 622338 and coded 4R+BR, which is marked with 25 kills on the fin below the swastika. (Via EJC)



These were among the final victories scored by the *Experten* of the night fighter arm, although there would be considerably more activity before the end of hostilities, including the world's first interceptions by jet aircraft at night.

The necessity for a conversion trainer for the Me262 led to the development of the first two-seat variant, the Me262B-1a, in October 1944. Trials had by then been conducted with an Me262A-1a fitted with FuG 220 *Lichtenstein* SN-2, and the irrepressible Hajo Herrmann had recommended the aircraft as an ideal night fighter. Work then began on the installation of radar in the Me262B-1a/U1, the resultant night fighter being considered an interim version pending development of the production Me262B-2a. This variant would have had centimetric radar in a bulged rose section, intended to offset the loss of 37mph that was experienced with the standard SN-2 aerial array, but none had been completed before the war ended.

Commanded by *Maj* Gerhard Stamp, a jet night fighter unit had begun forming in November 1944, its primary task being the defence of Berlin. Under the designation *Kommando Stamp*, the detachment had about ten Me262B-1a development aircraft flown by experienced *Wilde Sau* pilots, and is stated to have destroyed some 20 bombers. However, as the Me262 was well able to catch the elusive Mosquito, anti-intruder operations became top priority. In January the unit was based at Burg, 70 miles west of Berlin, from where it flew a number of such sorties, initially employing searchlight illumination of the target not unlike the old *Helle Nachtjagd* method. In the first three months of the year the RAF lost 13 Mosquitoes in the Berlin area, and Me262s were believed to have claimed most of them. Command of the unit passed to *Oblt* Kurt Welter and it undertook operations as *Kommando Welter* for a brief period before becoming 10/NJG 11 in April. With a number of *Neptun*-equipped aircraft on hand, sorties were occasionally flown from autobahns as well as airfields—the number of usable airstrips was rapidly diminishing by this point, as they were constantly subjected to attacks by Allied fighter bombers. An early form of napalm



40. Me262B-1a/U1s of 10/NJG 11 photographed on an airfield near Berlin on 6 June 1945. Although these aircraft were among the most modern in the world at that time, some of their ground support equipment had a distinctly primitive look. (USAF)

was used in some of these Allied strikes, RAF Mosquitoes flying a number of 'Firebash' sorties from late 1944.

The conventional fighters struggled on in the face of the daylight assault, and at night there was little respite from the Pandora's box of radio and radar counter-measures that the RAF now had at its disposal. But the night fighter force still had teeth. On the night of 3/4 March the Luftwaffe launched operation *Gisella*, the belated renewal of night intruder attacks against bomber bases in the British Isles. Participating units included NJG 3, 4 and 5, and the force totalled some 140 machines. The long break in concentrated intruder attacks inevitably gave the Luftwaffe an element of surprise, and 19 bombers were destroyed as the Ju88s and the He219s caused widespread confusion over 27 bases in Suffolk, Lincolnshire and Norfolk; many caught bombers landing from a raid on Kamen near Dortmund.

As these attacks were reported, Mosquitoes quickly intercepted some of the intruders. NJG 4 lost a Ju88 which had fired at a B-24 before it was itself shot down, and the same fate befell a Ju88G-6 of 7/NJG 5. In total, the defences claimed six of the attackers in this, the penultimate penetration of British airspace by the Luftwaffe. The final sorties against England were flown on 17 March when 18 Ju88s mounted a second strike from airfields in Holland; but there were no heavy bomber operations that night, and only one aircraft was shot down by the intruders.

On 5 March *Oberst* Walter Borchers, *Kommodore* of NJG 5 for most of the previous year and with at least 48 night victories, was shot down by a Mosquito flown by Wg Cmdr Gibb.

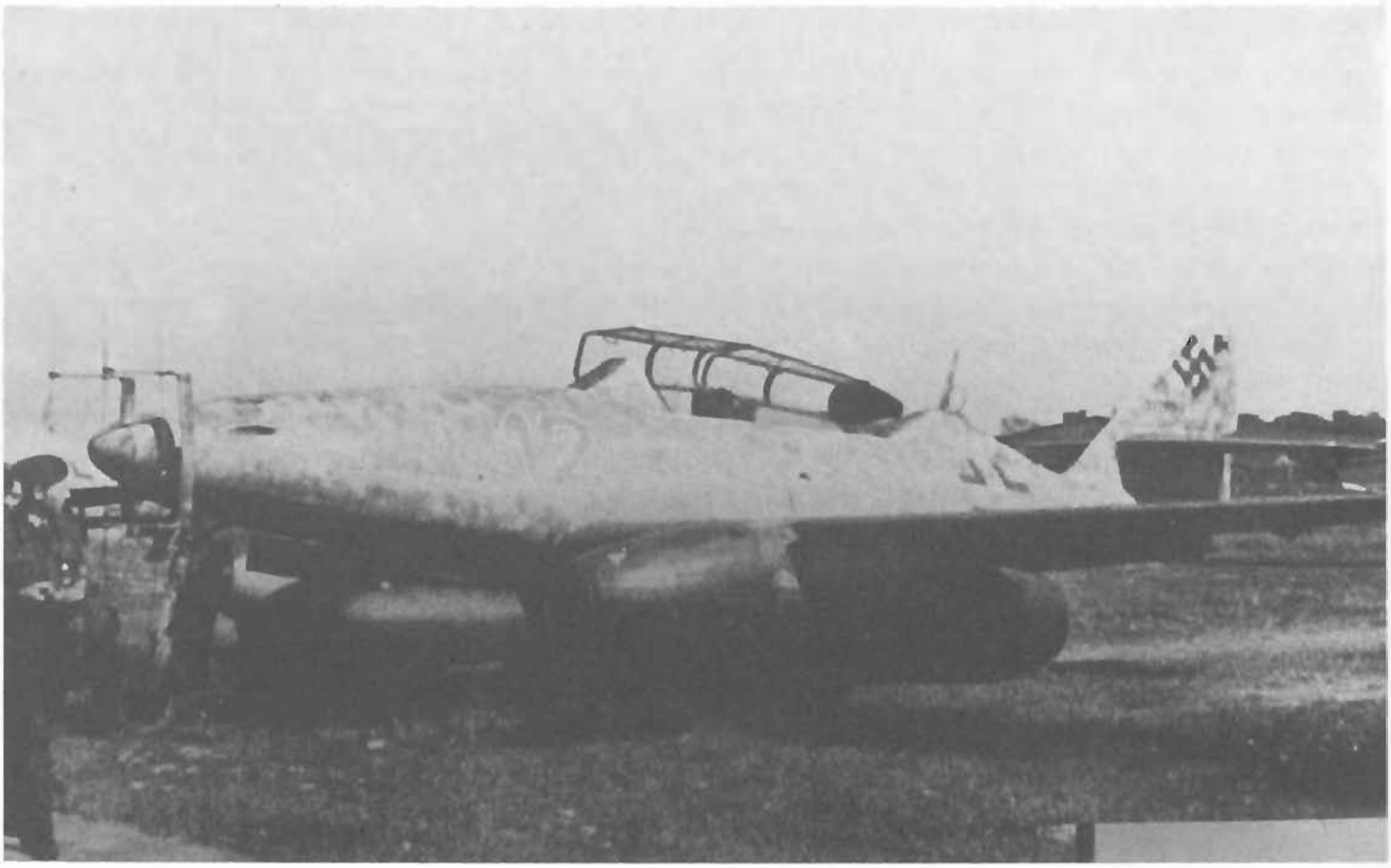
Despite their plight, the Germans were still able

to employ a number of new radars to replace the virtually useless SN-2, including FuG 228 *Lichtenstein* SN-3, which used the same aerial array as SN-2 but could vary its operative frequency and thereby avoid the worst effects of Window and other jamming; the FuG 217 and 218 *Neptun* series of shortwave radars, which could operate over a wide range of frequencies; and the most advanced of all, the centimetric FuG 240 *Berlin*. *Neptun* used either the *Hirschgeweih* or *Morgenstern* (morning star) aerial array, the latter a central pole carrying two pairs of crossed X dipoles, later enclosed in a wooden nose cone which also contained the aerials of *Berlin*, a number of Ju88G-7a aircraft being modified in this way.

As the territory of the Third Reich shrank between the advancing Allied armies, the jet fighter units represented the last throw of an exhausted Luftwaffe: after 27 March there was a break in night fighter sorties until 1 April, when about 25 aircraft operated in the Nuremburg area. By mid-April, total night fighter sorties had fallen to about 25 per night; the chain of command had collapsed bringing inevitable chaos, the shortage of fuel had become critical, and before the end of the month all operations against the Western Allies had ceased. Token sorties against the Russians continued until the final surrender on 8 May, pilots being able to take their pick of the hundreds of new fighters that the production centres were still rolling out until the very last days.

An Allied mission visiting Eggebeck airfield in Schleswig-Holstein as part of Exercise *Post Mortem*, the evaluation of German radar and equipment, discovered the Bf110G of *Maj* Heinz-Wolfgang Schnaufer, the rudder markings of which bore mute testimony to the effectiveness of the *Nachtjagdverbande*. The leading Luftwaffe night fighter ace's 121 kills represented but a small proportion of the 4,000 heavy bombers the RAF had had to lose to make that inspection possible.

41. 'Red 12' of NJG 11, an Me262B-1a/U1 W. Nr 111980 with black underside paintwork and mottled blue-grey camouflage on top, seen on a Berlin airfield after the war. (Via EJC)



MAJOR UNITS

Nachtjagdgeschwader 1 Code: G9

I/NJG 1 formed from elements of IV/JG 2 and I/ZG 1	20 July 1940	Based Venlo with Bf110C, Ju88, He219
II *Gruppe* ((Z)/KG 30)	20 July 40	Gilze-Rijen, St Dizier, Bf110, Do17Z, Ju88C-2. Became I/NJG 2,
II *Gruppe* (new unit) (I/ZG 76),	Sept 40	Bf110,
III *Gruppe* (I/ZG 1)	20 July 40	Athies-Laon, Bf110
IV *Gruppe* (II/NJG 2)	1 Oct 42	St Trond; Bf110

Nachtjagdgeschwader 2 Code: R4/4R

I *Gruppe* (II/NJG 1)	Oct 40	Gilze-Rijen; 1 *Staffel* Ju88C; 2 *Staffel* Do17Z; 3 *Staffel* Ju88. At Catania, Sicily Dec 41—all *Staffeln* with Ju88C. To North Africa April 42. Bad Langensalza, March 44, Ju88
II *Gruppe* (I/ZG 76)	1 Nov 40	Deelen, Bf110D, Do215B-5, Do217J. Became IV/NJG 1, 1 Oct 42
II *Gruppe* (new unit) from III/NJG 2	Oct 42	To Catania, Sicily with Ju88C-6. Quackenbrück 1944, Ju88
III *Gruppe* (new unit)	July 43	Twente/Langendiebach, 1944, Ju88
IV *Gruppe*		Bf110, Ju88

Nachtjagdgeschwader 3 Code: L1/D5 and 3J for short period

I *Gruppe* (13 (Z)/LG 1)	Oct 40	Vechta, Bf110. To Sicily early 1941. Vechta, 1944. Stade, 1945, Ta154, Bf110
II *Gruppe*	Oct 41	Vechta, Ju88
III *Gruppe* (II/ZG 76)	Nov 41	Stade, Bf110, Ju88
IV *Gruppe*	Nov 42	Westerland, Bf110, Ju88
V *Gruppe*	Aug 43	Kastrupp, Ju88C

Nachtjagdgeschwader 4 Code: 3C/G9

I *Gruppe*	Oct 42	Frankfurt, Florennes, Bf110, Do217N, Ju88
II *Gruppe*	April 42	Frankfurt, Bf110, plus two *Staffeln* with Do217; Coulommiers 1944, Bf110, Ju88
III *Gruppe*	May 42	Frankfurt, Bf110, Do217N. Mainz/Finthen, 1944, Bf110, Ju88
IV *Gruppe*	Jan 43	Mainz/Finthe, Bf110. Became I/NJG 6, 1 Aug 43

Nachtjagdgeschwader 5 Code: C9/3C from Jan to July 43

I *Gruppe*	Sept 42	Stendal, Bf110
II *Gruppe* (II/NJG 5)	Dec 42	Parchim, Bf110. Became III/NJG 6, 10 May 44
III *Gruppe*	April 43	Brandis, Bf110, He219, Ju88
IV *Gruppe*	Sept 43	Erfurt, Bf110, Ju88
V *Gruppe*	Aug 43	Klotzsche, Bf110. Became II/NJG 5, 10 May 44

Nachtjagdgeschwader 6 Code: 2Z

I *Gruppe* (IV/NJG 4)	Aug 43	Mainz, Bf110, Ju88
II *Gruppe*	Aug 43	Echterdingen, Bf110, Ju88
III *Gruppe* (II/NJG 5)	May 44	Bf110, Ju88
IV *Gruppe*	June 43	Bf110, Ju88

Codes of other night fighter units were as follows: NJG 7 D9; NJG 100 7W; NJG 101 9W; NJG 102 7J; NJG 200 8V; Nachjagdstaffel Norwegen B4.

THE AIRCRAFT

Messerschmitt Bf110F-4a
Powerplant two Daimer-Benz DB 601F liquid-cooled engines of 1,350hp each *Span* 53ft 4·75in *Length* 39ft 8·5in *Height* 11ft 6in *Weight empty* 11,466lb *Combat weight* 14,884lb *Maximum speed* 311mph at 14,760ft *Cruising speed* 278mph at sea level *Service ceiling* 35,760ft *Range* 745 miles *Armament/radar* two 20mm MG FF cannon and four 7·9mm MG 17 machine guns firing forward plus one 7·9mm machine gun for rear defence. FuG 202 Lichtenstein BC plus 66-gal drop tanks as standard equipment.

Bf110G-4d/R3
Powerplant two DB 605B-1 liquid cooled engines of 1,475hp each *Span* 53ft 4·75in *Length* 41ft 6·75in *Height* 13ft 1·5in *Weight empty* 11,245lb *Combat weight* 20,727lb *Maximum speed* 342mph at 22,967ft *Cruising speed* 317mph at 19,685ft *Service ceiling* 26,248ft *Range* 1,305 miles *Armament/radar* two 30mm MK 108 and two 20mm MG 151 cannon firing forward plus two 7·9 mm machine guns for rear defence. All Bf110G night fighters could also be fitted with a 'Waffenwanne' 151Z ventral tray with two MG 151 cannon. FuG 220b Lichtenstein SN-2 and FuG 227/1 Flensburg.

Junkers Ju88C-6c
Powerplant two Junkers Jumo 211J-1 or J-2 liquid-cooled engines of 1,340hp each *Span* 67ft 7·5 in *Length* (excluding radar aerials) 47ft 1in *Height* 16ft 7·5 in *Weight empty* 19,973lb *Combat weight* 27,225lb *Maximum speed* 303mph at 19,685ft *Cruising speed* 279mph *Service ceiling* 32,480ft *Range* 1,230 miles *Armament/radar* three 20mm MG FF/M cannon and three 7·9mm MG 17 machine guns firing forward and one 7·9mm machine gun for rear defence plus two 20mm MG 151 in 'schräge Musik' installation. FuG 202 Lichtenstein BC.

Junkers Ju88G-7b
Powerplant two Junkers Jumo 213E liquid-cooled engines of 1,725hp each *Span* 65ft 7·5in *Length* (without radar) 47ft 8·5in *Height* 15ft 11in *Weight empty* 28,900lb *Combat weight* 30,480lb *Maximum speed* 363mph at 33,500ft *Cruising speed* 270mph *Service ceiling* 34,000ft *Range* 1,400 miles *Armament/radar* four 20mm MG 151 cannon in ventral tray firing forward and two upward-firing MG 151 aft of cockpit plus one 13mm machine gun in aft cockpit. FuG 240 Berlin or FuG 218 Neptun V.

Heinkel He219A-0
Powerplant two Daimler Benz DB 603A liquid-cooled engines *Span* 60ft 8in *Length* 51ft *Height* 14ft 5in *Weight empty* 21,730lb *Combat weight* 27,661lb *Maximum speed* 385mph *Cruising speed* 295mph *Service ceiling* 41,660ft *Range* 1,243 miles *Armament/radar* two 20mm MG 151/20 cannon in each wing root plus four MG 151/Mk 108/Mk 103 cannon in ventral tray faired into fuselage plus (later aircraft) two upward-firing Mk 108 cannon in upper decking of fuselage. FuG 220 Lichtenstein SN-2

Dornier Do217N-2
Powerplant two Daimler-Benz DB 603A engines of 1,720hp each *Span* 62ft 4in *Length* (including aerial array) 62ft *Height* 16ft 4·75in *Weight empty* 22,665lb *Combat weight* 29,101lb *Maximum speed* 320mph at 19,685ft *Cruising speed* 264mph *Service ceiling* 29,200ft *Range* 1,090 miles *Armament/radar* four 20mm MG 151 cannon and four 7·9mm MG 17 machine guns firing forward plus four 20mm MG 151 cannon firing upwards from the centre fuselage. FuG 202/212 or SN-2.

Night fighter pilots credited with 50 or more victories

Rank	Name	Victories	Units
Maj	Heinz-Wolfgang Schnaufer	121	NJG 1/4
Oberst	Helmut Lent[1]	110	NJG 1/2/3
Maj	Heinrich Prinz zu Sayn-Wittgenstein[2]	83	NJG 2/100/2
Maj	Wilhelm Herget	71	NJG 3/1/4/JV44
Oberst	Werner Streib	66	NJG 1
Hptm	Manfred Meurer[3]	65	NJG 1/5/1
Oberst	Günther Radusch	64	NJG 1/3/5/2/3
Hptm	Heinz Rökker	64	NJG 2
Maj	Rudolf Schönert	64	NJG 1/2/3/5/100 NJGr 10/NJG 5
Maj	Paul Zorner	59	NJG 2/3/5/100
Hptm	Gerhard Raht	58	NJG 3/2
Hptm	Martin Becker[4]	57	NJG 1
Hptm	Heinz Strüning[5]	56	NJG 2/1
Hptm	Josef Kraft	56	NJG 4/5/6/1
Oblt	Gustav Francsi	56	NJG 100
Hptm	Hans-Dieter Frank[6]	55	NJG 1
Ofw	Heinz Vinke[7]	54	NJG 1
Oberst	Herbert Lütje	53	NJG 1/6
Hptm	August Geiger[8]	53	NJG 1
Maj	Martin Drewes	52	NJG 1
Maj	Werner Hoffman	52	NJG 3/5
Maj	Egmont Prinz zur Lippe-Weissenfeld[9]	51	NJG 1/2/5
Oberst	Hermann Greiner	50	NJG 1
Oberst	Hans-Joachim Jabs	50	NJG 1
Oblt	Kurt Welter	50	JG 301/NJG 11/ Kommando Welter

[1] Died on 7/10/44 after accident on 5/10/44
[2] Killed in action 21/1/44
[3] Killed in action 21/1/44
[4] Missing in action 26/2/43
[5] Killed in action 21/12/44
[6] Killed in accident 27/9/43
[7] Missing in action 26/2/44
[8] Killed in action 29/3/43
[9] Killed in accident 12/3/44

Glossary of equipment code names/abbreviations

ABC	'Airborne Cigar', British airborne transmitter for jamming Luftwaffe GCI frequencies
Active jamming	Jamming with powerful transmissions on German radar frequencies
AI	Airborne Interception, British night fighter radar
Berlin	German centimetric AI radar
Bernhard	German GCI communications transmitter designed to overcome jamming
Blip	Illuminated spot on radar screen indicating target
'Boozer'	British passive receiver tuned to *Lichtenstein/Würzberg* frequencies
Bremen	German centimetric AI radar
Coned	Aircraft held in beams of a number of searchlights
Corkscrew	Widely used dive and climb manoeuvre by bombers to evade night fighter attack
'Corona'	Verbal transmissions of false information on German GCI frequencies
CRT	Cathode-ray tube
Deceptive jamming	Active jamming, broadcasting false positions and velocities
D/F	Direction finding (radio)
Düppel	German word for Window
'Fishpond'	British warning system for heavy bombers, used with H2S and AGLT
Flensburg	German radar receiver enabling aircraft to home onto RAF 'Monica' tail warning radar
Freya	German early warning radar made by GEMA
FuG	German airborne radio (abb. of *Funk Gerät*)
GCI	Ground Controlled Interception
GEE	British navigational aid
Giant Würzburg	German fighter control radar made by Telefunken
Heinrich	German jammer to counter GEE
Helle Nachtjagd	Illuminated night fighting; Luftwaffe term for fighters operating at night with only searchlight guidance
Himmelbett	Heavenly (four poster) bed, German night fighter control system

Hirschgeweih	Stag's antlers, German AI radar aerial array
H2S	British ground-mapping radar
H2X	American adaptation of H2S with shorter wavelength
IFF	Identification: Friend or Foe. Radio transponder that gave coded identification of friendly aircraft
Intruder	Fighter/fighter-bomber operating over enemy territory
Jagdschloss	German fighter control radar
Jamming	Various methods of obscuring enemy radar image
Jostle	British active jamming device
Kleine Heidelberg	German airborne detection system that homed on radiations from British radar
Korfu	German ground receiver that gave bearings on British H2S emissions
kW	Kilowatt (one thousand watts)
Lichtenstein	German series of AI radars
Magnetron	9·5cm/10cm night fighter radar
Mammut	German early warning radar
'Mandrel'	British jammer to *Freya* radars
Matratzen	Mattress, name for *Lichtenstein* BC radar aerial array
Mattscheib	German device to illuminate bombers flying above cloud
'Meacon'	British device to mask transmissions from German radio beacons
'Monica'	Series of British tail-warning radars
'Moonshine'	Device to produce a false picture on German radar
Morgenstern	Morning star, German aerial array for AI radars to replace *Hirschgeweih*
Naxos	Series of German passive receivers enabling aircraft to home onto British H2S emissions
Neptun	German AI radar in metre waveband
Nürnburg	Modification of *Würzburg* gun-laying radar to overcome Window jamming
'Oboe'	British precision navigation aid for marking or bombing
'Perfectos'	Equipment to enable British fighters to home onto emissions from German airborne radar
PFF	Pathfinder Force (RAF)
Pulse	Very short burst of RF energy
Postklystron	German jammer to counter H2S
Q-Rohr	Q-Tube, visual indicator for *Spanner Anlage* device
Radar	Device for transmitting radio emissions, receiving emissions from a target and giving information on the position of the target
Radome	Streamlined fairing on an aircraft enclosing a radar aerial system constructed on die-electric material transparent to the chosen wavelength
Rüstatz	General German term for auxiliary aircraft equipment
Scanner	Radar aerial and reflector
'Serrate'	British radar receiver enabling fighters to home onto emissions from *Lichtenstein*
Schräge Musik	Slanting or Jazz music, German code name for fixed oblique gun armament of night fighters
SN-2	German early warning radar
Spanner-Anlage	German infra-red sensor
'Spoof'	Diversionary attack to draw off night fighters
'Tinsel'	British jamming by aero-engine noise
UHF	Ultra High Frequency
VHF	Very High Frequency
Wasserman	German early warning radar
Wilde Sau	Wild boar, German name for freelance interceptions by single-engined aircraft
'Window'	British code name for metal foil dropped to confuse enemy radar
Würzburg	German radar guidance for flak or searchlights
Würzlaus	German modification for *Würzburg* to overcome Window jamming
Y aircraft	British bomber equipped with H2S
Zähme Sau	Tame boar, German term for freelance interceptions by twin-engined aircraft under ground control.

Notes sur les planches en couleurs

Page 25: Lieutenant d'équipage dans une tenue de pilote doublé de molleton, officiellement prévue pour des vols au-dessus de la terre, des costumes marrons ou noirs, étant stipulés pour des vols au-dessus de la mer, bien que ce règlement ne fut pas toujours observé. Des symboles de rang, blancs sur bleu foncé apparaissent sur chaque bras.

Page 26 en haut: Dornier Do217G-2 à Lonate Pozzolo, Italie, 1943. Un appareil du NJG 3, on le voit immédiatement avent le transfert au Regia Aeronautica, partiellement repeint. Il a un radar Fu G 202 Lichtenstein et Il n'y a pas de mitrailleurses aux positions ventrales et sur les côtés du carlingue.

Page 26 en bas: Junkers Ju 88G-7b, W. Nr 623211, du 7 Staffel, NJG 5, vus à Dubendorf, Suisse, 1945. Cet avion a les antennes 'Hirschgeweih' au nez et L'antenne au plan de dérive du radar Neptun VR et est camouflagé dans une combinaison de couleurs à base de vert, utilisée par NJG 5 à la fin de la guerre. Le but de cette combinaison était de câcher l'avion par terre pendant les attaques des Alliés. Sur la droite en dessous est l'insigne 'Englandblitz' du chasseur de nuit, avec l'identification II Gruppe du NJG 1.

Page 27: Junkers Ju 88G-7b supposé être du NJGr 10, 1945. Aucun code ni W. Nr n'est indiqués, mais l'avoin a le nez en contre-plaqué et tissus, pour le radar Neptun VR, qui n'était monté que suq quelques avoins avant la fin de la guerre. Le vert prédomine dans les couleurs plutôt que le gris. Endessous est une section de l'aile avec le dessin de camouflage et l'insigne de chasseurs de nuit et des faisceaux de projecteurs.

Pages 28–29: Messerschmitt Bf110G-4d/R 3 du 7 Staffel, NJG4 à Stade, 1944. Ces marques sous l'aile moitié noir rarement illustrées aidaient à les reconnaître avec les projecteurs ou par les équipages d'artilleurs. Elles étaient utilisées aussi sur d'autres avions, y compris le He 219. Les surfaces supérieures sont en gris, tons 75 et 76.

Page 30: Heinkel He219A-O, W. Nr 290123 du 1 Staffel NJG 1 à Sylt-Westerland, été 1945. Un des nombreux avions trouvés sur ce terrain, L'appareil, n'a pas l'air d'avoir eu des codes NJGs 'G9' appliqués, bien que le symboles mystérieux 'VI' apparait sous le carlingue, en commun avec beaucoup de He 219s. La lettre individuelle est soulignée en blanc, la lettre Staffel étant gris clair. Les petites images montrent l'autre côté du fuselage et le dessin du camouflage de la surface supérieure de l'aile.

Page 31: Quelques-uns des déploiements d'antennes portés par des chasseurs de nuit: (A) FuG 202 sur un Ju 88C-6 (B) FuG 212 et les antennes importantes SN-2 sur Bf110G; (C) Fu G218 Neptun sur un Bf110G(D) 'Hireschgeweih' déploiement d'antennes SN-2 sur un He219.

Page 32 à gauche: 'Führerin commandant un Luftnachrichten-Helferinnen Betriebszug, 1944. Le corps auxilaire des femmes du Luftwaffe équipé le Service d'Avertiseement de l'Air et le Service de téléphone et télétype et faisaient partie intégrale de L'Armée des chasseurs de nuit. Cet officier subalterne a le parement aux poignets, la ganse de la casquette et du col d'un officier, l'écusson au bras gauche identifie le vrai rang. L'insigne de métier au-dessus est celui d'un opérateur supérieur de radio qualifié et les aigles Luftwaffe apparaissent sur la casquette, poitrine et épingle de cravate.

Page 32 à droite: Jeunesse Hitlerienne Flakhelfer, 1944. Des garçons âgés de 15 ans et au-dessus, servirent en auxilaires sur des batteries de flak—faisant des tâches diverses et utiles. Des insignes de casquette Hitlerjurgend et brassards sont portés sur une chemise et casquette militaire avec des bretelles HJ gansés en bleu ciel et des distinctions de rang. Un insigne spécial d'un aigle bleu ciel sur noir était porté aussi et ce garçon a l'insigne Luftwaffe Flak pour service exceptionnel.

Farbtafeln

Seite 25: Leutnant, Bordbesatzung im schweren, mit Schafpelz gefutterten Fliegeranzug. Vorschriftsgemäss sollte der Anzug nur über Land getragenwerden, für Einsätze über das Meer sollten schwarze oder braune Fliegeranzüge im gebrauch kommen. Die Vorschriften wurden nicht immer gehalten. Auf beiden Armen erscheinen weiss auf dunkelblauen Dienstgrad-abzeichen.

Seite 26 Oben: Eine Dornier Do217J-2, Lonate Pozzolo, Italien, 1943. Diese Maschine wurde bestimmt, an der Regia Aeronautica übergeben zu werden, deshalb ist sie zum Teil im neuen Anstrich. Sie ist mit dem FuG202 Lichtenstein Radargerät ausgerüstet worden und hat deshalb keine Bewaffnung im Bauch-und Seitenkanzelstellen.

Seite 26 Unten: Eine Junkers Ju88G-7b, W. Nr 623211 vom 7. Staffel, NJG 5, bei Dubendorf in der Schweiz, 1945. Die Maschine hat die Neptun VR Radarantennen (an der Rumpf-spitze des Hirschgeweih', am Schwanzfloss auch eine). Das Tarnfarbenschema ist eine der vielen grünbasierten Variationen, die vom NHG 5 zu Kriesende im Gebrauch war. Zweck dieser Tarnfarben war es, die Flugzeuge Schutz auf dem Boden gegen alliierten Luftangriffe zu Bieten. Rechts unten erscheint das Englandblitz-Abzeichen der Nachtjagdwaffe, auch das Gruppenemblem der II Gruppe, NJG 1.

Seite 27: Eine Junkers Ju88C-7b, vermutlich vom NJGr 10, 1945. Obwohl keine W. Nr oder Erkennungsbuchstaben getragen wurden, der Rumpfspitzenkegel aus Sperrholz und Segelstoff (wie hier) ist für das FuG 218 Neptun VR Radargerät, dass nur aur wenigen Maschinen eingebaut wurde, gedacht. Das Tarnfarbenschema ist wieder hauptsächlich grün, nicht grau. Unten: Flügelteil mit Tarnfarbenschema und dem Nachtjagdwaffenabzeichen, dass am Anfang getragen wurde; die Scheinwerferscheine beachten!

Seiten 28–29: Eine Messerschmitt Bf110G-4d/R3 vom 7. Staffel, NJG 4, Stade, 1944. Das kaum abgebildeten Flügelunter-seitenfarbenschema, halb schwarz, war als Erken-nungsmerkmal für Scheinwerfer- und FLA Kanonenbesatzun-gen gedacht. Es wurder auf anderen Flugzeugen, einschliesslich die He 219, gebraucht. Die Oberteile waren in grauen Farben 75 und 76.

Seite 30: Eine Heinkel He219A-0, W. Nr 290123 vom 1. Staffel NJG 1, Sylt-Westerland, Sommer 1945. Diese Maschine war under anderen die aur diesem Flugplatz aufgefunden waren. Sie scheint die Erkennungschyffre 'G9' vom NJG 1 nicht zu tragen and stattdessen, wie viele andere He 219s auch, das unerklärte Symbol 'VI' unterm Kanzel zu haben. Die Flugzeugerken-nungsbuchstabe ist weiss umrandet worden, die Staffelbuch-stabe is hellgrau. Das kleine Bild zeigt die andere Rumpfseite und das Tarnfarbenschema auf den Flügeloberseiten.

Seite 31 Oben: Einige Funkantennenanlagen, die auf Nach-

tjagdflugzeuge zu sehen waren: (A) FuG 202 auf einer Ju88C-6; (B) FuG212 und die grosse SN-2 Antennen aur einer Bf110G; (C) FuG 218 Neptun auf einer Bf110G; (D) 'Hirschgeweih-Antennen' der SN-2 auf einer He 219.

Seite 32 Links: Führerin eines Luftnachrichten-Helferinnen Betriebszuges, 1944. Der Frauenhilfsdienst der Luftwaffe stellten die Luftangriff-warndienstbesatzung und das Bedienungspersonal für Fernsprech- und Funkdienste. Sie waren der Nachtjagdkampfwaffe völlig untergeordnet. Diese Oberoffizierin hat die Luftwaffenoffizierslitze am Kragen, Mütze und Aufschlag. Der Winkel am linken Arm is das Dienstgradabzeichen; darüber erscheint das Dienstzweigemblem, hier Oberfunkerin. Der Luftwaffenadler wurde an der Mütze, am Krawattenstecknadel und an der Brust.

Seite 32 Rechts: Hitlerjugend-Flakhelfer, 1944. Knaben und junge Männer ab 15. Lebensjahr waren als Hilfsdienstpersonal bei den FLA-Batterien eingesetzt. Hitlerjugend-abzeichen wurden an der Mütze und Bluse getragen. Die schwarzen, hellblauumrandeten HJ Schulterklappen trugen die Dienstgradabzeichen. Das besondere Brustadlerabzeichen war hellblau auf schwarz. Dieser Junge trägt auch das Luftwaffen FLA-abzeichen für Auszeichnung.

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