

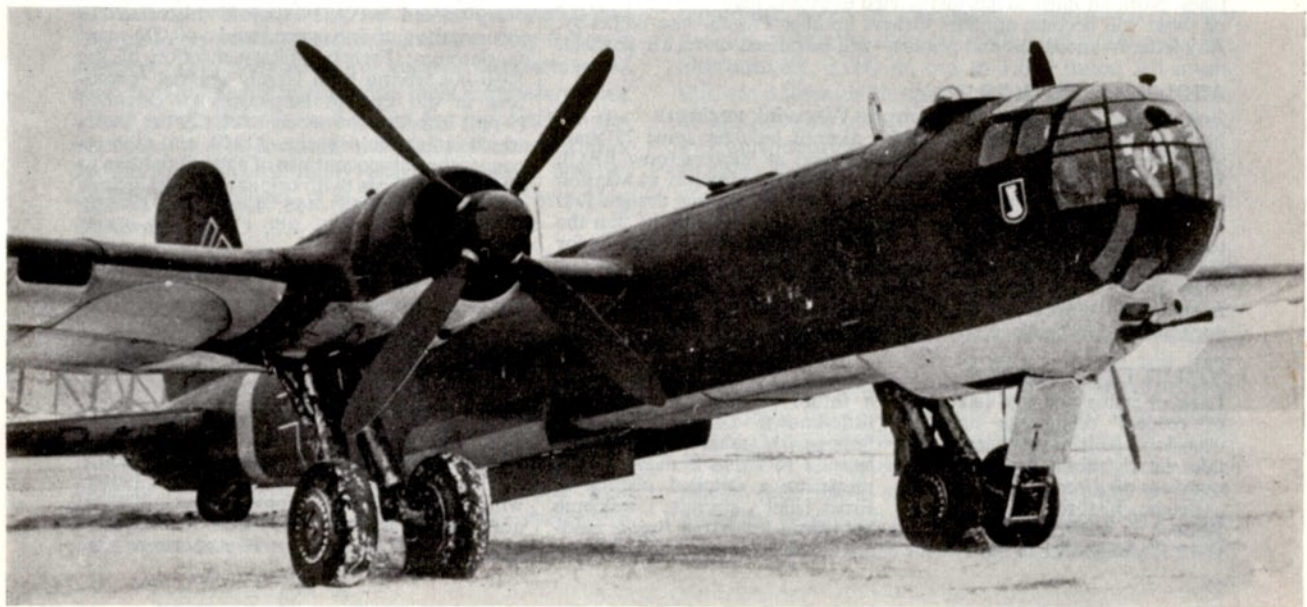
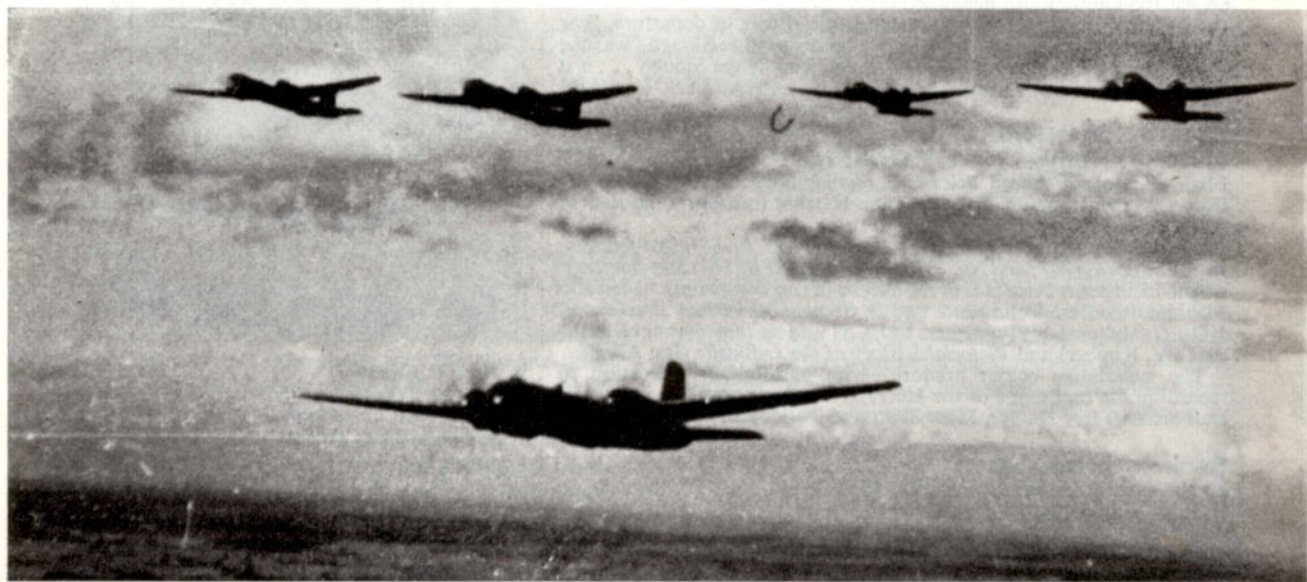
AIRCRAFT PROFILE

234

Heinkel He 177

by Alfred Price

35p





Heinkel He 177s of the anti-ship unit II./K.G. 40 in formation over the sea. This Gruppe was the first to employ the bomber operationally on a large scale. But by the time the He 177 was ready for such operations, in the autumn of 1943, the Allied convoy defences were strong enough to inflict swinging losses. (Photo: Richard C. Seeley)

Heinkel He 177 Greif (Griffon)

by Alfred Price

DURING World War Two, the lack of a long-range bomber force was one of the major deficiencies suffered by the *Luftwaffe*. Popular myth has it that German air planners had, foolishly, ignored this weapon during the years immediately prior to the war. But this was not so. Indeed, they had been as alive to the possibilities of the heavy bomber as anybody else; within three months of the outbreak of war the first prototype of the four-motor bomber intended to equip the German heavy bomber arm, the Heinkel He 177, was flying. Thus in chronology the first flight of the German bomber was after the British Short Stirling but before the Handley Page Halifax; after the American Boeing Flying Fortress but before the Consolidated Liberator. However, the Heinkel-conceived bomber was to become operational long after its contemporaries—and then only in small numbers. That this was so was because the German air staff, far from being unambitious in its requirements for a long-range bomber, had asked for too much in the specification. As a result, the Heinkel company was forced to introduce many untried features into its design. In retrospect, it is clear that there were too many.

If historians are agreed on one thing regarding the He 177, it is that this aircraft had no effect at all on the course of World War Two. Well over 1,000 of these bombers were built, but it is doubtful whether more than 200 of them were ever used on operations. During the latter part of the conflict, Allied aircraft often brought back reconnaissance photographs of parks in Germany littered with He 177s; the subsequent interpretation reports often stated that "... absence of track activity suggests that these aircraft are not being worked on."

When the war ended, the 900 or so He 177s remaining—most of them brand-new and unused—were carted off to the scrapyards. It was an ignominious ending to the saga of the He 177. But, in fact, the notion of a German strategic bomber force—to rival those of the Western Allies—had been killed stone dead nearly a year before the end of the conflict.

DEVELOPMENT

In 1936 the company of *Ernst Heinkel AG* received details of the new *Bomber A* requirement from the *Reichsluftfahrtministerium* (RLM—German Air Ministry). This specification called for an aircraft with a maximum speed of 335 m.p.h., able to carry 4,400 pounds of bombs out to a radius of 1,000 miles or, alternatively, 2,200 lb. out to 1,800 miles. All-in-all, this was a formidable specification, calling as it did for an aircraft able to outrun any fighter and outperform, by a considerable margin, any bomber then in service. In order to meet it Heinkel's chief designer, Siegfried Guenther, had to employ several hitherto untried features.

For example, to power his new bomber Guenther needed a pair of 2,000 h.p. aero-motors. But, at the time, the Germans possessed no aero-engine which developed such power. To overcome this problem—without resorting to four smaller motors and their attendant drag penalty—the Heinkel designer decided to employ the new Daimler Benz DB 606 double engine. This comprised a pair of DB 601 liquid-cooled 12-cylinder inverted-vee inline motors—mounted side-by-side in a single nacelle—driving a single propeller through a connecting gear train and clutch arrangement. Two of the new DB 606s, each of which



The first prototype of the He 177, which made its first flight on November 19, 1939; the flight lasted only twelve minutes, before test pilot Francke had to return with overheating engines. The problem of unsatisfactory engines was to remain with the He 177 throughout its life.

The second prototype of the He 177, pictured at the Heinkel works at Rostock-Marienehe. Note the full-span Fowler flaps, a feature of the early versions of this bomber. This example broke up in mid-air during diving tests. (Photo: via Edgar Petersen)



developed 2,600 h.p. for take-off, were to power the He 177.

In order to refine the aerodynamic cleanliness of his design even further, Guenther decided to dispense with the usual system of drag-producing radiators for the engine coolant. Instead, he planned to employ evaporative-cooling. The DB 601 had been designed to run very hot. In the evaporative-cooling system—pioneered by the Heinkel company—the coolant water was pressurized; thus, it was possible to heat it to about 110° C before steam began to form in the engine. The super-heated water was then ducted away and depressurized, at which point steam formed. Then, the water was separated and returned to the motor. At the same time, the residual steam was fed through pipes in the wing and cooled by the airflow. After resultant condensation had taken place, the water from the wing pipes was also returned to the engine. During flight tests, this evaporative-cooling system worked quite well on a modified Heinkel He 100 single-seat fighter. However, even before the design of the He 177 was finalized, it was clear that such a system would be incapable of dealing with the vast amount of heat generated by the DB 606. So Guenther had to abandon this cooling system for his bomber and revert to the more conventional radiator and its attendant drag.

In his quest for an aerodynamically “clean” design, Guenther’s original intention had been to defend his new bomber with three remotely-controlled gun barbettes and a conventionally-manned tail turret. Compared with the usual form of manned turret, the remotely-controlled barbette traded technical complexity for reduction of size and drag.

Further, it held the advantage that the gunner could be installed in a position where he would have the best possible view, and where he would be less likely to be blinded by the flash from his own guns. But, like the evaporative cooling system, the remotely-controlled gun barbette was not sufficiently developed in 1939. So the designer had to revert to the heavier manned turret and accept the resultant drag penalty.

The next problem came when the Technical Office at the German Air Ministry decided that it required the He 177 to be able to dive-bomb. Certainly there were great advantages to be gained if it could because the contemporary German horizontal bombsight in service gave poor results. Dive-bombing was much more accurate, but the manoeuvre and subsequent pull-out placed a great strain on the airframe. Inevitably, the airframe had to be strengthened to meet the new loads dive-bombing would impose—with a resultant weight penalty.

All these moves combined to push the He 177 design round a vicious circle. In each case the extra weight or drag meant that the bomber flew slower for the same power setting. Consequently, it would use more fuel in covering a given distance and would require more to be carried if the He 177 were to meet its original range specification. So, additional fuel tanks had to be fitted into the wings and the wings had to be further strengthened to take this extra weight. Thus, each move provided a further twist to the weight-drag-speed-range-more weight spiral. In the end, the increase in weight reached such proportions that Guenther had to redesign the main undercarriage. Instead of the originally projected single wheel leg under each engine nacelle, he had to

incorporate a double leg system—the outer leg retracted into the wing outboard of the nacelle and, similarly, the inner leg retracted into the wing inboard of the nacelle.

On November 19, 1939, *Dipl. Ing.* Franke, chief of the RLM Rechlin flight test centre, lifted the prototype He 177 into the air for the first time—being airborne for only twelve minutes. This brief beginning was forced on Franke. He had to return with engines overheating. Also, the test pilot complained of the bomber's poor stability and tendency to aileron flutter.

The second prototype—generally similar to the first—made its first flight soon afterwards. Following Franke's initial flight, the first prototype's tail surfaces were increased in size. But this modification had not been incorporated in the second before it began initial flight trials. During subsequent diving tests, the aircraft developed severe control flutter and broke-up in the air. Test pilot Rickert failed to bale out and was killed. Following this incident, the tail surfaces of the third, fourth and fifth prototypes—which were now nearing completion—also were increased in size.

When the diving trials were resumed, the fourth prototype failed to pull out of a dive and crashed into the Baltic; the cause was put down to a malfunction of the propeller-pitch mechanism. Shortly afterwards, and early in 1941, the fifth prototype suffered a double engine fire while simulating a low-level attack; it crashed into the ground and exploded.

This was an inauspicious start for the new German heavy bomber. Three out of the first five prototypes had crashed during the early test programme. The Heinkel company put in hand a number of design changes to overcome the various failings in their product.

Even so, one problem was to attend the bomber almost throughout its service—that of engine overheating and resultant fires. The causes of this were many and varied. At first, the lubrication to the DB 606 engines was poor; as a result, all-too-often the connecting rod bearings would seize-up, causing the

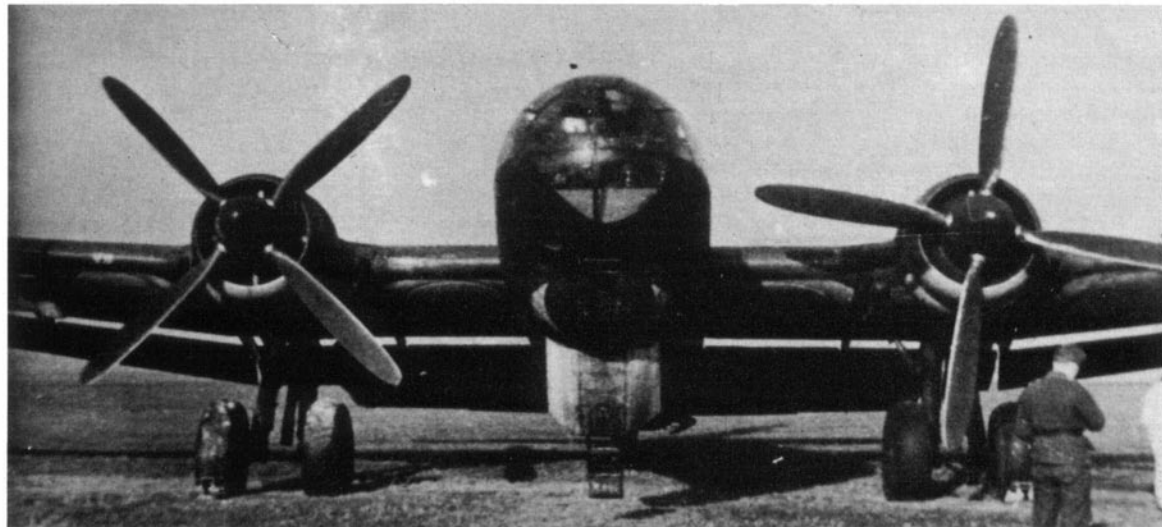


A close-up of the starboard engine nacelle and landing gear of the fourth prototype, taken during trials. (Photo: Hans Redemann)

rods to smash through the crank case which in turn allowed the lubricating oil to spill over the red-hot engine exhausts. Moreover, if the throttles were handled roughly, the fuel-injectors would leak and allow neat *Benzin* (gasoline or petrol) to run down into the bottom of the engine bay. If the aircraft was flying in a high angle-of-attack attitude—for example, when landing or flying at high altitude—sometimes the fuel would drip down onto the engine exhaust pipes. In either case the outcome was the same—fire.

During the flight test programme other, but less lethal, problems arose. Soon, it became clear that whatever the wishes of RLM Technical Office, the He 177 was much too big for a dive-bomber. To dive the He 177, the pilot had to cut his speed right back before he could force the nose down. Almost as soon as he had established the dive, it was time to initiate the pull out. And in spite of the specially strengthened airframe, it was still all too easy to overstress the bomber during the dive-attack manoeuvre. Fortunately, by the time this deficiency became clear, the need for the He 177 to dive had passed. The new *Lotfe Bombenvisier* (tachometric bombsight) now

The eighth prototype, and the final one to be built as such from the outset. Note that the main wheel doors were closed when the undercarriage legs were fully extended, a measure to reduce turbulence and therefore drag during the critical take-off phase of the flight. (Photo: via E. Creek)





The second aircraft in the pre-production batch. Designated the He 177 A-0, this version featured a conventional gun turret immediately aft of the nose cabin. (Photo: Imperial War Museum HU 2861)

about to enter service promised accuracies in horizontal-bombing of the same order of those obtained during dive-bombing attacks. As a result, the dive-brakes were omitted from all aircraft built after the initial pre-production batch.

The initial pre-production run totalled 35 aircraft; and these He 177 A-0-series, in almost every case, were used to explore various aspects of both the "performance envelope" and the bomber's technical features. Then came the first production version, the He 177 A-1. A total of 130 examples of this series left the production line at Warnemünde between March 1942 and June 1943. But, with its teething troubles still uncured, the He 177 was still a long way from being suitable for operational use as a bomber. In the event, almost all the A-1s were relegated to second-line duties; even after 34 had been delivered to the First Gruppe of K.G.40 at Bordeaux/Merignac in the summer of 1942—in a premature attempt to introduce the type into operational service—they were withdrawn shortly afterwards.

The armament of the pre-production He 177 A-0 had comprised a single power-operated gun turret to the rear of the cabin, three flexible mountings in the nose and one at the extreme tail. The He 177 A-1 carried one of the newly-developed remotely-controlled barbettes above the centre fuselage in place of the earlier powered gun turret; the latter mounted a single 13-mm *MG 131* machine-gun was aimed from a sighting position to the rear of the cabin. The flexible gun positions remained unchanged, as did the rear mounting.

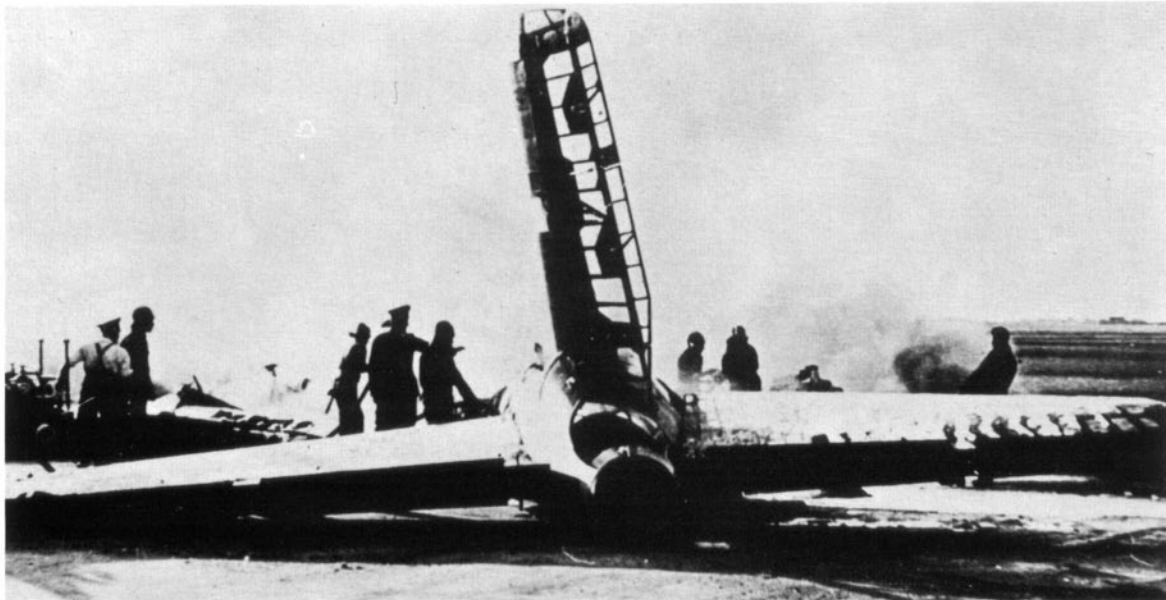
The next production version of the A-series—the He 177 A-3—featured an additional powered manned gun position. The new dorsal turret, amidships, mounted a single 13-mm *MG 131*. Also, the barrette

was enlarged to house two instead of one 13-mm machine-guns. Structurally, the A-3 featured a fuselage extended by 5 feet 3 inches aft of the wing in order to improve stability, and engine nacelles were some 8 inches longer and redesigned to reduce the possible causes of fire.

Late in 1942, *I. Gruppe of Ergänzungs Kampfgeschwader* (Replacement or Reserve Training Bomber *Geschwader*) K.G. 50, based at Brandenburg/Briest, received the first examples of the A-3. During the all-out German effort to supply troops cut-off in the Stalingrad pocket from the air, the He 177s of K.G. 50 were pressed into use in the transport role. But with only makeshift servicing arrangements—and subjected to the full rigours of the Russian winter—the unit was able to achieve little. There was little room for stowing supplies in the bomb-bay, and the He 177 made an inefficient transport aircraft. After a few resupply sorties, the He 177s reverted to the bomber role—but with hardly greater success. The old problem of engine fires still had not been solved completely and several bombers were lost to this cause. When, in February 1943, the Stalingrad defenders finally surrendered, the surviving He 177s returned to Germany.

One hundred and seventy He 177 A-3s were built before production of the sub-series was phased-out in favour of the A-5. The A-4 was a high-altitude project with four separate engines; it did not go into production.

The first He 177 A-5 left the Heinkel factory in February 1943. This sub-type was powered by two DB 610 motors, each comprising a coupled pair of DB 605s. The combination developed a maximum output of 3,100 h.p. at 7,000 feet; an increase which went some way to overcoming the general lack of

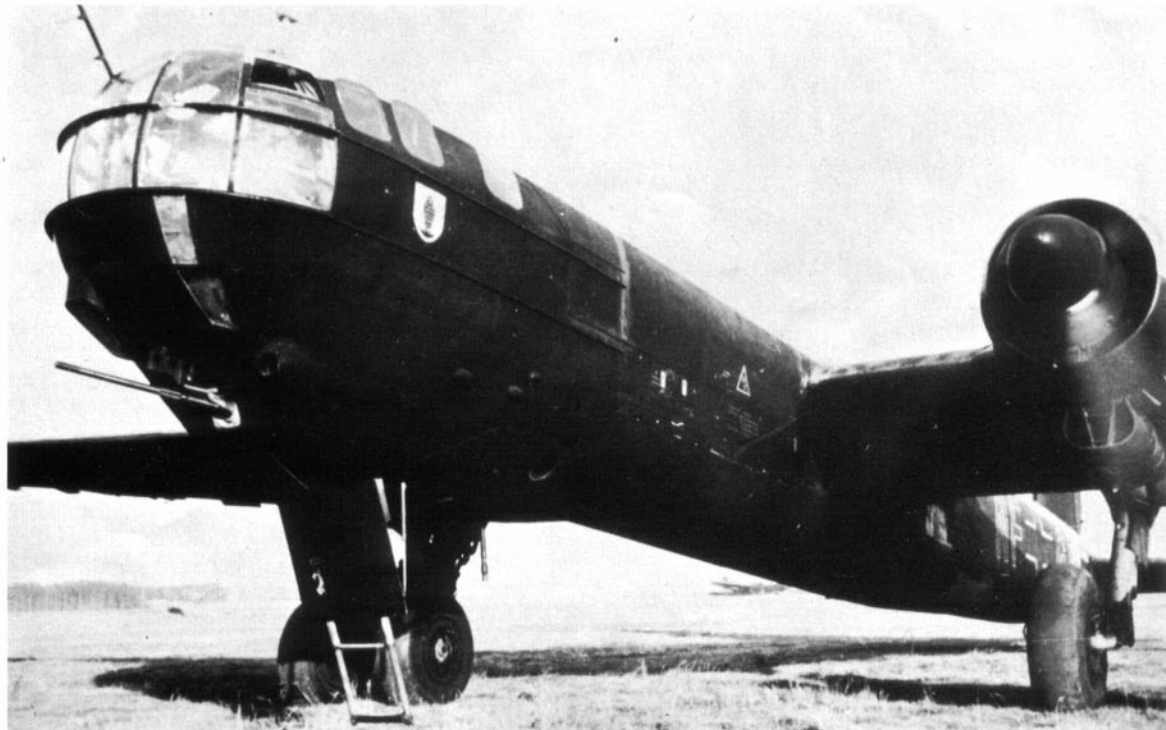


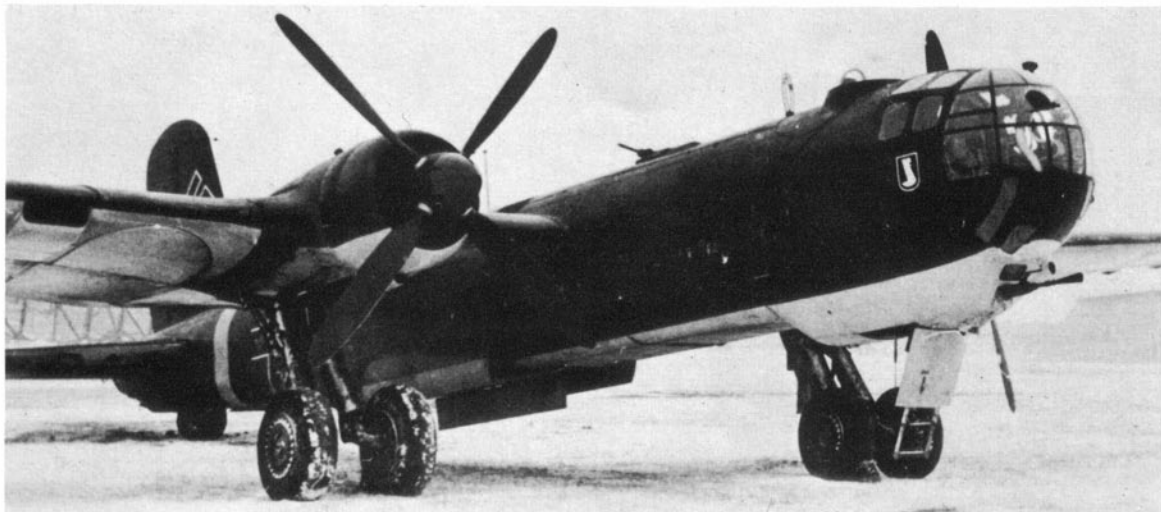
In all, the Heinkel company built thirty-five He 177 A-0s. Many of them were subsequently destroyed in crashes. This example lies in a smouldering heap following an engine fire and crash landing. (Photo: via Hanfried Schliephake)

The sixth prototype, photographed at Bordeaux-Mérignac during the operational trials with Kampfgeschwader 40 held in the summer of 1941, the trials showed up many weaknesses in the design of the He 177.



The Arado company produced 130 examples of the first production version, the He 177 A-1; however, the bomber was still judged unsuitable for general service use, and did not see operational service. This example was photographed while on the strength of Pilot School B16, at Burg near Magdeburg. Note the 20-mm. MG FF cannon in the lower nose position, the window for the Lotfe bombsight on the starboard side of the nose, and the two balloon cable cutters running horizontally round the front of the extreme nose. (Photo: Hans Redemann)





An early He 177A-3, serving with Kampfgeschwader 40 in 1943. Note the method of opening of the bomb doors: the two outer doors opened outwards, the two inner doors opened inwards towards each other. In this picture only the rear bomb bay doors are open; the doors for the separate forward bomb bay are closed. (Photo: Hans Redemann)

power of earlier versions of the He 177. However, many of the problems associated with the earlier coupled engine arrangement remained. During 1943 the plants at Orienburg and Warnemünde turned out a total of 261 examples of the A-5.

That the He 177 still had its faults, the German Air Ministry admitted; but the need was such that at last the bomber was to be issued to front-line units for operations.

IN ACTION OVER THE ATLANTIC

Almost since the beginning of the war, the He 177 had been intended as a replacement for the stop-gap Focke-Wulf FW 200s of the anti-shipping unit *K.G.40*. Now, in the summer of 1943, the task of conversion began in earnest. And the crews worked hard to prepare themselves to use the new anti-shipping weapon, the Henschel Hs 293 glider-bomb. Two Hs 293 glider-bombs could be carried, one under each outer wing section of the He 177* on special external racks.

* There was also provision for the He 177 to carry a third Hs 293, under the fuselage. But it is doubtful whether the He 177 ever went into action carrying three glider-bombs.

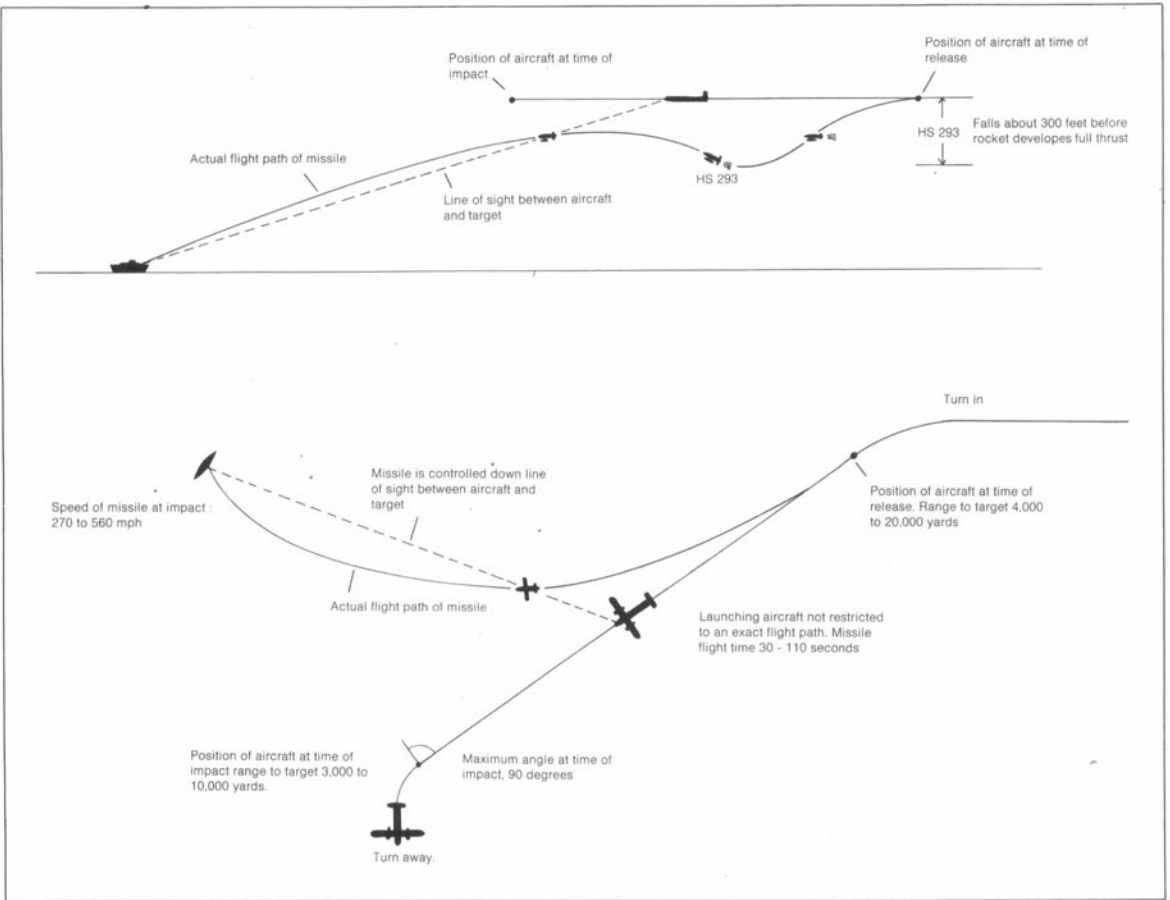
This photograph of an award presentation to *K.G.40* personnel early in the war is of interest because the man second from the left is Hauptmann Mons. Later, with the rank of Major, he led the disastrous first two attacks by He 177s against Allied shipping and was killed on the second on November 26, 1943. The man making the presentation is Oberstleutnant Edgar Petersen, who took part in the He 177 trials programme. (Photo: Edgar Petersen)



The bomb was, in effect, a small powered glider—with a wing span of 10 feet 2 inches—with an 1,100-lb. warhead in the nose section. After release, the liquid-fuel rocket motor under the fuselage accelerated the weapon to its maximum speed of 370 m.p.h. in 12 seconds. Then the rocket motor cut and the glider-bomb coasted on in a shallow dive towards its target. The maximum range of the weapon depended upon its release altitude. Typically, the range was about five miles if the launching aircraft was at 4,500 feet. In the tail of the Hs 293 was a bright flare, ignited to enable the observer in the He 177 to follow its flight path. He operated a small “joy-stick” controller, the movement of which fed the appropriate left-right-up-down signals to the transmitter, which in turn radiated them to the Hs 293. Thus the observer had merely to control the missile’s tracking flare until it appeared to be superimposed over the target, and hold it there until the weapon impacted. It sounds simple enough but, events will show, the glider bomb was not to bring about the end of Allied dominance of the seas. Since the Hs 293 had an impact velocity of only some 450 m.p.h., the glider-bomb had little penetrative capability, and it was mainly intended for use against merchant ships and lightly-armoured warships.

It was on the afternoon of November 21, 1943, that the He 177 flew its first major operation. On that day Major Mons, the commander of the Second Gruppe of Kampfgeschwader 40 (II./K.G.40), led 25 of these bombers against the large convoy *SL139/MKS 30* as it was moving northwards in a position some 420 miles to the north-east of Cape Finisterre, Spain. Each of the He 177s carried two glider-bombs.

Surviving German records of what happened during the attack are sparse. But fortunately the British records of the afternoon’s events go some way to making up for this. The weather was far from ideal for a glider bomb attack, and the patches of low cloud almost certainly interfered with missile guidance in some cases. However, the weather was not the only thing that the crews of II./K.G.40 had against them that day. Many of the He 177s missed the main

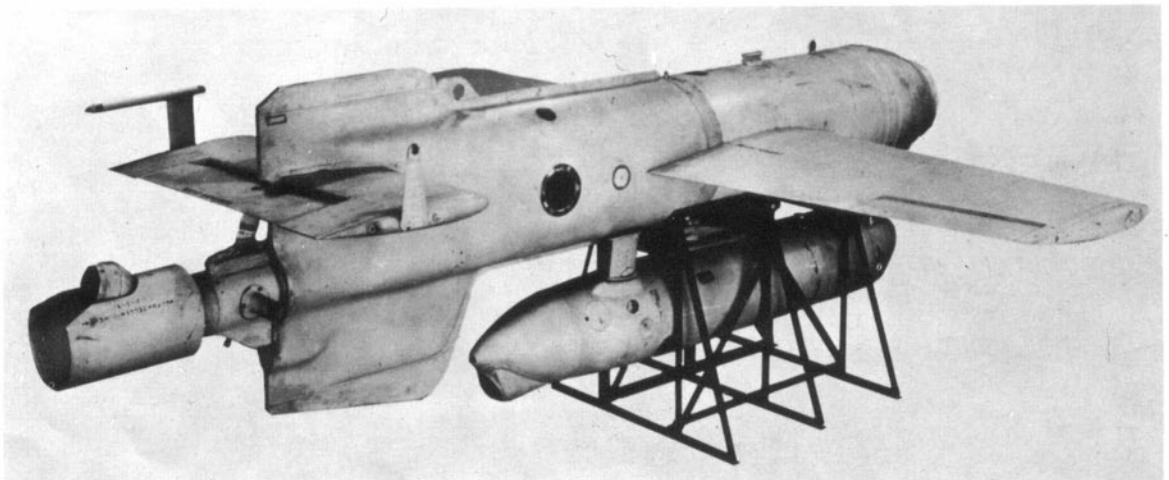


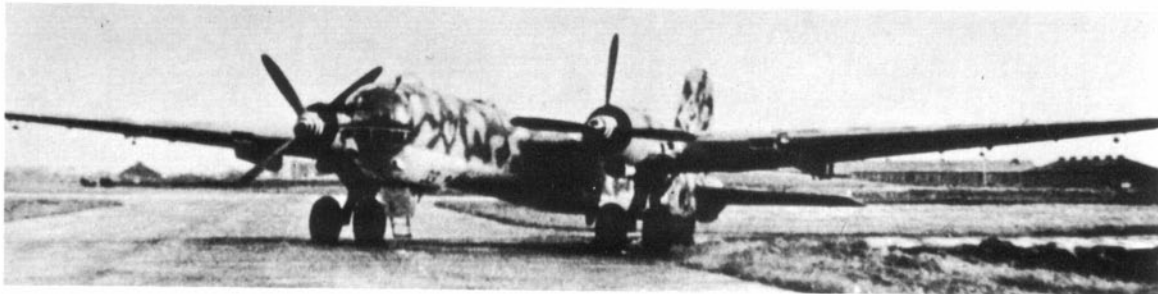
METHOD OF ATTACK WITH HENSCHEL 293 GLIDER-BOMB

The minimum launch range of the Henschel 293 was about 4,000 yards; in making out his report, it would appear that the Master of the Marsa had underestimated this figure. The missile had no rudder, so turns had to be made using first the ailerons to put it into a bank, then the elevators to push the nose on to the desired heading. However, in attempting too tight a turn it was easy to over-bank the glider bomb, in which case the weapon would fall out of control; this appears to have happened to some of the missiles launched at Marsa.

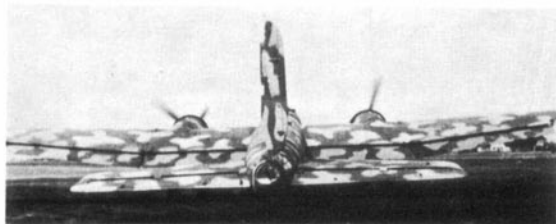
The Hs 293 glider-bomb as carried by the He 177s of K.G.40 during anti-shipping operations. The 1,100-pound warhead was fitted in the nose of the missile, underneath which was the 1,300-pound thrust rocket motor which provided power. On the tips of the tailplane were the posts which supported the aerial, which picked up the radio command signals from the launching aircraft, while at the rear of the missile were the flares to assist tracking.

(Photo: U.S.A.F.)





Three photos showing the wavy grey/black-green camouflage pattern worn by some He 177s of II./K.G.40 during the autumn of 1943 and the early part of 1944. Note also the spiral design on the propeller spinners.



convoy and, instead, concentrated their attentions on two straggling merchantmen, *Marsa* and *Delius*. The Master of the 4,405-ton *Marsa*, Captain T. Buckle; now takes up the story:

"At 15:39, I saw what I thought to be an He 177 approaching from ahead; it flew on a parallel course and when about two degrees abaft the starboard beam, 2,000 yards away from the ship, released a glider bomb which shot 200–300 yards ahead of the parent aircraft, when it was turned at right angles towards the ship. I turned stern-on to it, and the bomb landed about 150 feet astern, exploding in the water and sending up a column of water 30–35 feet high.

"The aircraft then flew round the stern and, again keeping parallel to the ship, released another bomb on the port quarter, nearly a quarter-of-a-mile away. I waited until the bomb was turned inwards, then put my stern on to it again, and after the explosion, which threw up approximately the same amount of water, turned the ship back on to the convoy course. The second bomb came from the starboard wing of the aircraft and seemed to fall a little before shooting ahead.

"I then observed another aircraft approaching from the same direction. It went through exactly the same tactics, releasing a glider bomb off the starboard beam, but further away this time, about 3–4,000 yards. I again turned stern on to it, but this bomb was turned a second time, and I had to swing hard to starboard to avoid it. It exploded off the starboard side, about 300 feet away, after which I resumed the convoy course.

"A second bomb was released from this aircraft when it was about 3,000 yards away, and I swung hard to starboard as soon as it was released. It followed the ship round, landing 250 feet away on the port beam and for the first time during the attack we felt the blast.

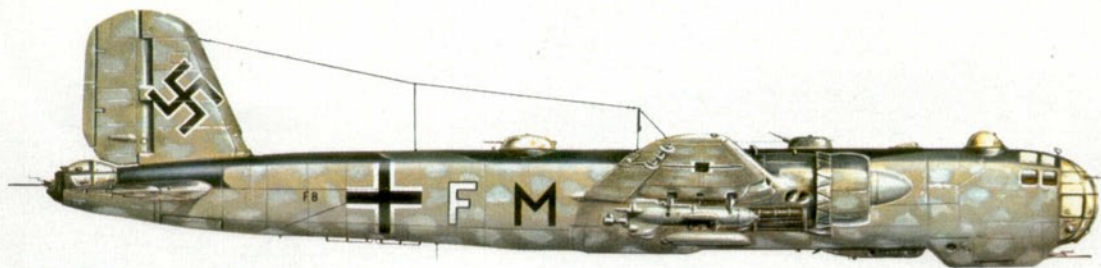
"I again turned the ship on to the convoy course, when a third machine approached from astern on the

port side and, when 4,000 yards abeam, released two bombs on the port quarter. These bombs did not appear to be under control and as soon as they left the aircraft fell straight into the sea with their rocket tubes smoking. I do not think they were jettisoned however, as there was a 45-second interval between the two. We were attacking the aircraft with our 12-pounder and as the bursts seemed to me to be close to the aircraft, this may have caused the bomb aimer to lose control to some extent.

"A fourth aircraft approached from ahead on the starboard side and dropped another two bombs, which were released about 4,000 yards away on the port quarter; the first one did not explode, although I saw smoke coming from the tail. The second exploded violently about 250 feet away on the port beam. For five or six seconds we saw a large flame coming from the port engine and then the aircraft was enveloped in a dense black cloud of smoke. When I last saw the aircraft it was at an angle, which may have been done deliberately to blow the flame away, or it may have been losing height. It went into cloud and I did not see it again."

Three points stand out clearly from this report. First, the captain's extreme coolness and skilful seamanship under what can only be described as very trying conditions. Secondly, the gross unreliability of the early radio-controlled missiles; and, lastly, the fact that the fourth He 177 appeared to burst into flames on its own accord—a phenomenon not entirely new to those who have followed the He 177 story thus far. But now time was running out for *Marsa*. At 16:00, a fifth Heinkel ran in to attack. When abeam the ship's funnel, the crew released their glider-bomb. Captain Buckle's report continued:

"I brought my stern round, but as it travelled round the stern I lost track of it [the Hs 293], consequently I was unable to take any further avoiding action, and it struck the water between the davits of the port lifeboat, exploding in the engine room near the main discharge.



Heinkel 177A-5 of the Second Gruppe of Kampfgeschwader 40, which operated from Bordeaux/Merignac in the anti-shipping rôle during the spring and summer of 1944. Under each wing is a Henschel 293 radio controlled glider bomb.





He 177s of II./K.G.40 being prepared for an attack. Five of the bombers carry glider-bombs, one under each outer wing. The airfield at Bordeaux/Mérignac was frequently the subject of Allied air attack—note the bomb damage to the hangars. (Photo: Franz Selinger)

The detonation did not appear to be particularly loud. The blast, however, was terrific. I was walking from the starboard to the port side of the bridge at the time, endeavouring to trace the bomb's path, when a gunner and the Second and Third Officers were blown in through the door for which I was heading, while two gunners in the port after Oerlikon [a 20-mm. automatic weapon] nest were blown down to the boat deck. They were not hurt, owing to the fact that the deck was swamped by a huge wave, into which they fell.

"The ship was hit near the water line. I could not see the extent of the damage to the shell plating because it was underwater, but the deck was indented for the full length between the two boat davits, and the engine-room flooded so rapidly that I think there must have been a hole in the ship's side. The Second Engineer was shot across the engine room and, by the time he reached the ladder, had to climb up through water. The after port lifeboat, No. 4, was completely destroyed. The ship settled two feet by the stern and remained in this position—she did not list. All the fore-end of No. 4 hold was blown away and the beams and hatches thrown into the air. I think No. 4 bulkhead was started, as I could hear a hissing noise, which may have been water percolating from the engine room into No. 4 hold. The steering gear was out of action, either as a result of damaged castings, or the steam supply failing."

At this stage it was clear that *Marsa* could not be saved; an escort came alongside and took off her crew. The second straggler, the *Delius*, also came under attack from the Heinkels; she too suffered a hit, but was able to reach port under her own steam.

While *Marsa* and *Delius* were engaged in their individual struggles for survival, another equally-remarkable battle was being fought out in the vicinity of the main body of ships. Pilot Officer A. Wilson and his crew, on board Consolidated Liberator 'K' of No. 224 Squadron, Royal Air Force Coastal Command, had been engaged in providing anti-submarine cover. Since their duty was to do every-

thing possible to ensure the 'safe and timely arrival of the convoy', they decided this could include air-to-air combat. As the heavily-laden Heinkels started on their straight-and-level attack runs with the glider-bombs, the British crew was able to cause consternation. The first He 177 they attacked broke away, trailing smoke. The second jettisoned its glider-bombs and made off. Pilot Officer Wilson followed and his front gunner managed to get in a good burst which caused the enemy's starboard engine to smoke. In the event, the German bomber escaped into a patch of low cloud. The Liberator then returned to the convoy, where two more He 177s were engaged.

All-in-all, it had been a remarkable series of combats, the large heavy bombers cavorting across the sky in lumbering imitation of their single-engined counterparts. Wilson's aggressiveness undoubtedly contributed to the fact that the German bombers did not succeed in scoring any hits with their glider-bombs on ships in the main body of the convoy; nor did his Liberator suffer any damage from the return fire.

For II./K.G.40, this was not a distinguished opening to the operational career of their new equipment. Two of the bombers returned early with faulty bombing gear; one crashed some 30 miles from its base, reason unknown; one was lost without trace during the attack; one ran out of fuel during the return flight, though its crew was able to parachute to safety; one made a belly-landing and suffered 45 percent damage; and four more returned with varying degrees of battle damage. *Hauptmann* (Captain) Nuss was credited with hitting and sinking two ships with his glider-bombs, so it would appear that it was this crew that had made the successful attacks on *Marsa* and *Delius*. Three aircraft and two crews lost, and one aircraft seriously damaged, in exchange for one small ship sunk and one damaged. Most disturbing of all was the clear proof that the He 177 still held many technical failings.

Five days later, at dusk on November 26, 1943, II./K.G.40 struck again. This time 21 Heinkels set off

with glider-bombs to attack convoy *KMF 26* as it passed Cape Bougie on the Algerian coast. Almost immediately after take-off, one of the bombers suffered a broken crankshaft in one of its engines; it was burnt out following the subsequent crash landing. Such was the inauspicious start to what was to prove a disastrous operation for the Germans.

When they reached the convoy, the He 177 crews found the concentrated anti-aircraft barrage disconcerting enough. But then came the fighters—Supermarine Spitfires of the French squadron *GC 1/7*, Bell P-39 Airacobras of the U.S.A.A.F. 350th Fighter Group and Bristol Beaufighters of No. 153 Squadron, R.A.F. During the rough-and-tumble which followed, six Heinkels were shot down, including those piloted by *Major Mons* and *Hauptmann Nuss*. In return, the crews of *II./K.G.40* were able to score at least one glider-bomb hit on the troop-carrying liner *Rohna*, which sank. The rapidly approaching darkness and the heavy swell greatly impeded rescue work and more than a thousand American soldiers—more than half of those embarked—perished.

On their return, *II./K.G.40* found their base almost unusable because of the weather. Two more of the He 177s were wrecked in landing—the crews surviving.

Together, the two actions had cost *II./K.G.40* 12 aircraft lost and one seriously damaged and—much more important—eight of its best crews.

Following this blood-letting, *Hauptmann Dochtermann* assumed command of the He 177 unit. By now it was clear that the Allied defences in the

Atlantic and the Mediterranean were far too powerful for *II./K.G.40* to be able to carry out daylight attacks on convoys without suffering prohibitive losses. Thereafter the crews restricted their anti-shipping activities to the less effective but also less costly night attacks—and so kept up a steady pressure on Allied sea traffic passing through the Mediterranean. The He 177s would launch their glider-bombs against ships conveniently silhouetted by flares previously dropped from other aircraft positioned on the far side of the convoy. However, such an operational technique required a high degree of co-ordination between the bomb-carrying and flare-carrying aircraft. So, successes were few.

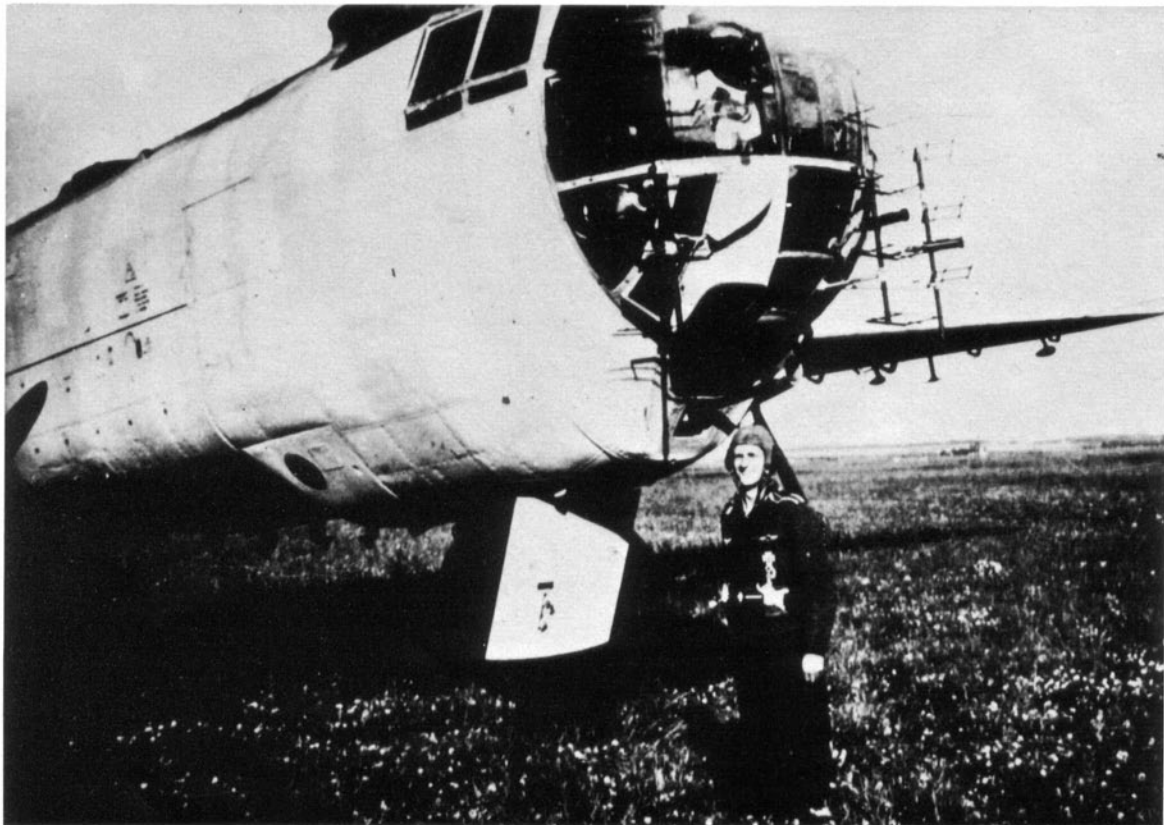
For the anti-shipping unit a new phase of intensive operations began on January 22, 1944, when Allied forces landed at Anzio, just to the south of Rome. The He 177s of *II./K.G.40* operated alongside the glider-bomb carrying Dornier Do 217s of *K.G.100*; but the Allied defences were strong and both units suffered accordingly. Following this *II./K.G.40* resumed its harassing operations against the Mediterranean convoys.

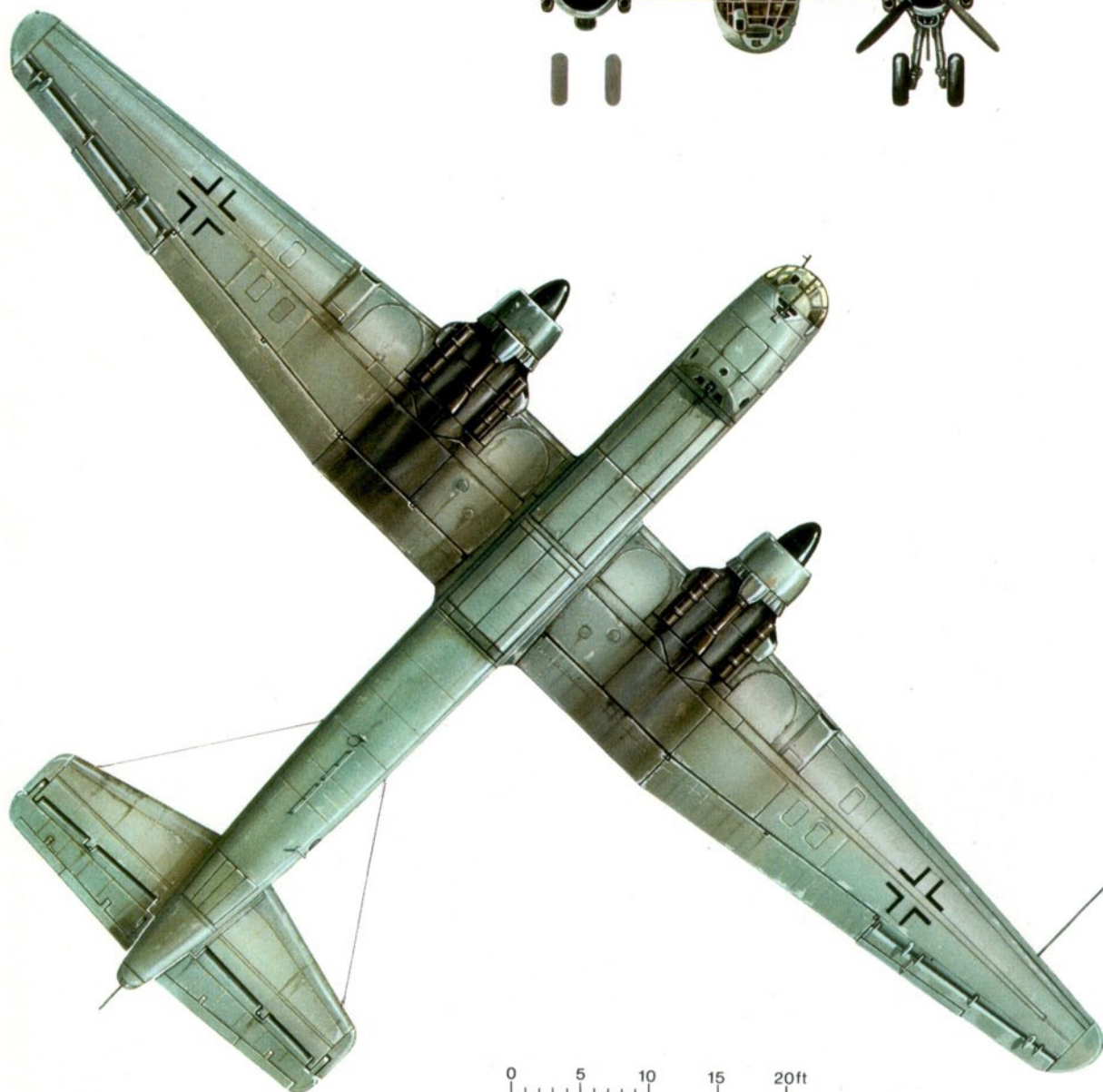
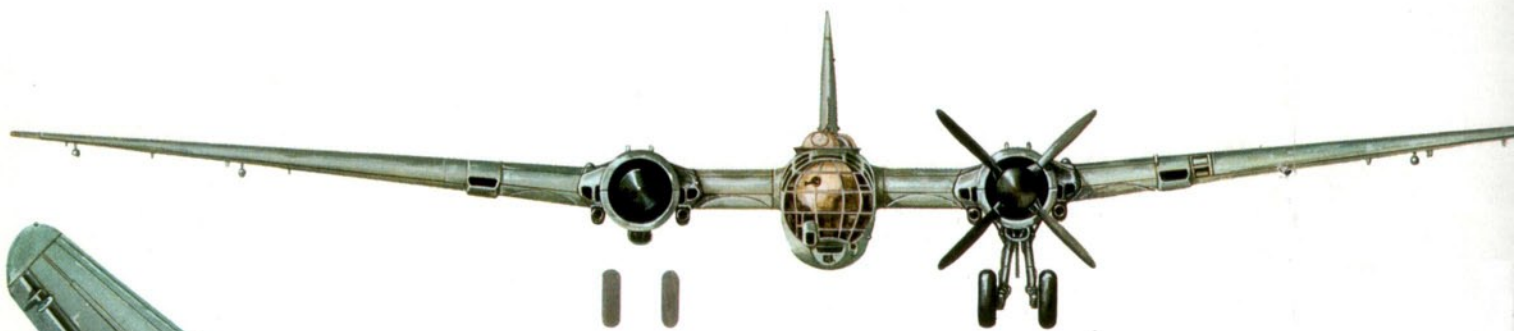
OPERATION STEINBOCK

In December 1943 Göring had sent a signal to his *Luftflotte* commanders in the west and to *General-major Peltz*, his Chief of Staff for bombers, in which he stated:

“To avenge the enemy terror attacks I have decided to intensify the war over the British Isles, by means of

A close-up of the aerials of the FuG 200 Hohentwiel ship-search radar, fitted to an He 177 of II./K.G.40. This set operated in the 550 MHz band, and could detect large ships or convoys at ranges out to 50 miles.



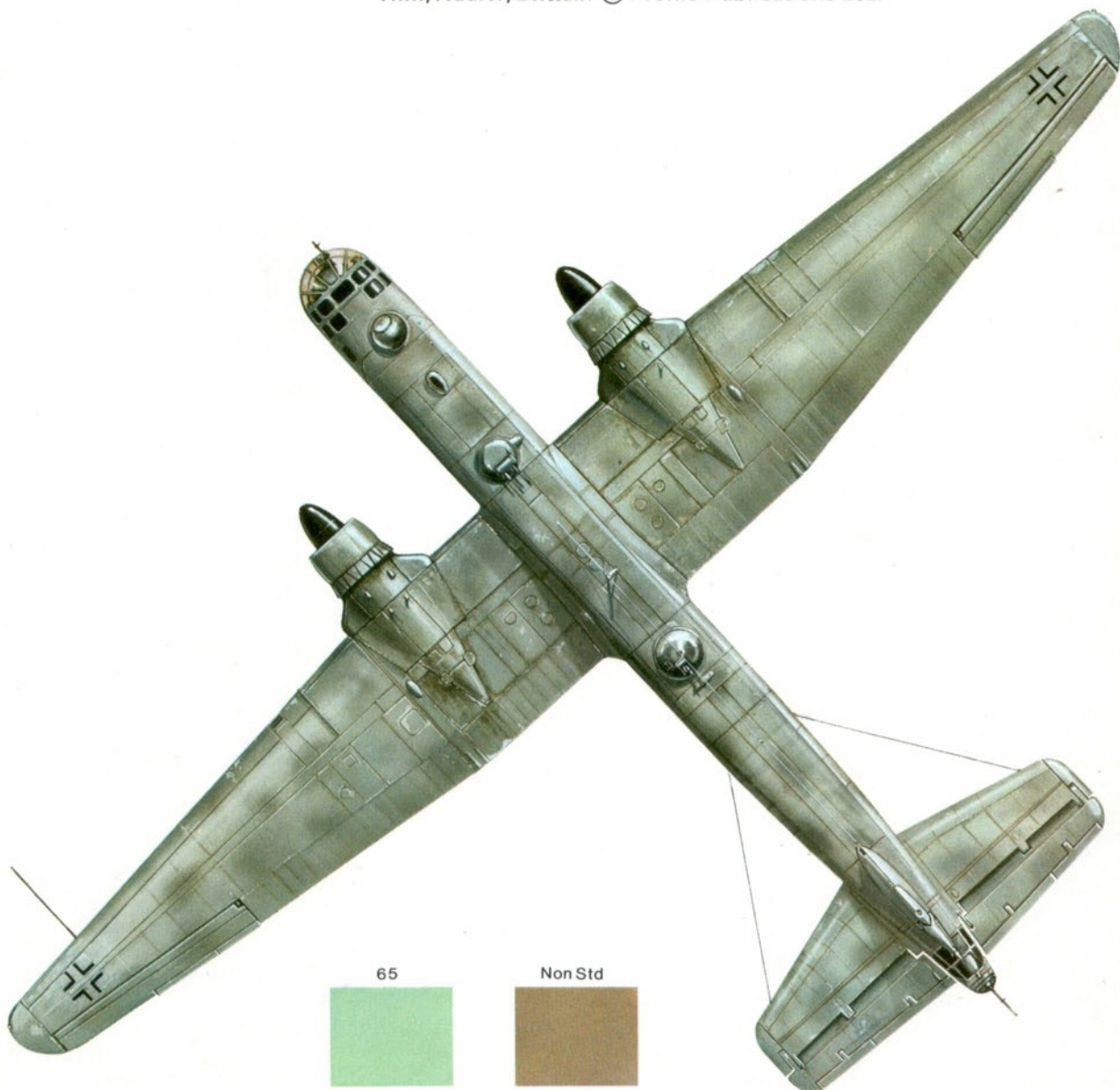


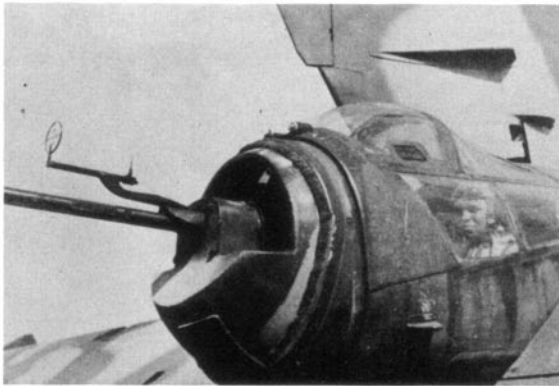
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Heinkel HE 177A-5 flown by Hauptmann Otto von Ballasko, of the *Stab* Staffel of Kampfgeschwader I (Hindenburg), based at Prowehren in East Prussia during the late spring and early summer of 1944.

Trim/Hadler/Brittain © Profile Publications Ltd.



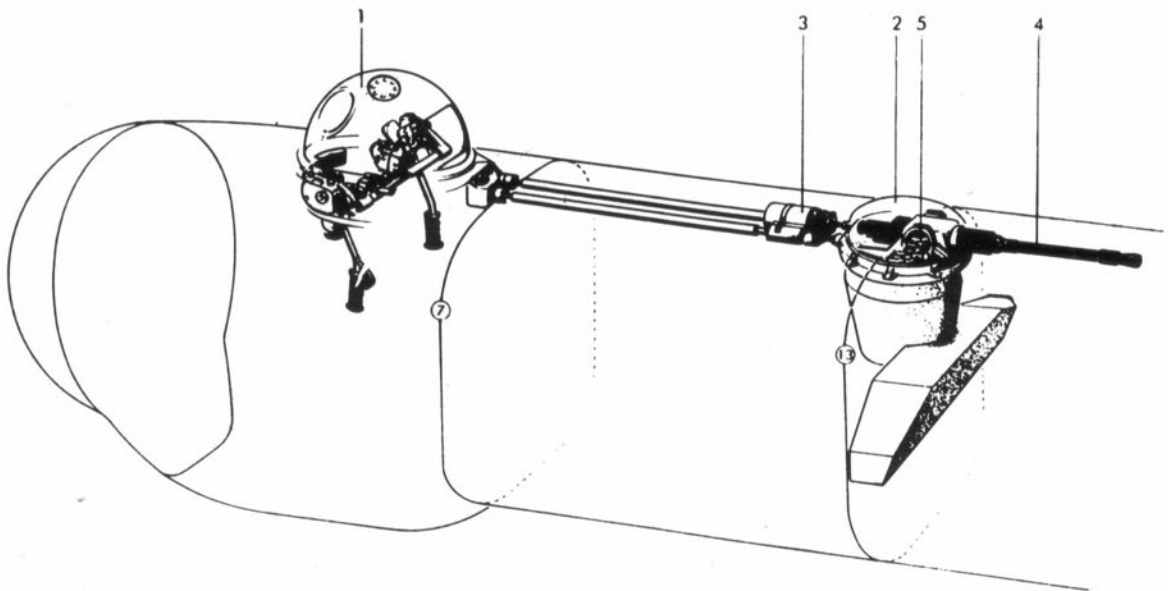


A close-up of the gun position for the rear MG 151 20-mm. cannon. In front of him the gunner enjoyed the protection of an 18-mm. armoured mounting, with armoured glass inserts, while beneath him was a slab of armour 9-mm. thick. Nevertheless it is clear that the view from the position, and the field of fire, were seriously limited.

(Photo: Franz Selinger)



A further view of the rear gun position, showing the entry/escape hatch open; the 20-mm. cannon is not fitted. (Photo: Otto von Ballasko)



The electro-mechanical remotely controlled barbette installation fitted to the He 177; 1—sighting station, with gunsight and remote-control handles; 2—gun barbette, situated approximately 12 feet away from sighting station; 3—main power amplifier (1 1/3 horse power); 4—single MG 131 machine-gun, 13-mm. calibre; 5—ammunition feed. The gun barbettes fitted to later versions of the He 177 carried two 13-mm. guns.

concentrated attacks on cities, especially industrial centres and ports . . . The operations are to be carried out in a manner and frequency dependent upon losses and supply, so that the fighting strength of the units remains absolutely unimpaired. This is in view of the necessity to maintain a permanent defensive capability against the ever-present threat of an attempted enemy landing in the west."

A significant feature of the attacks was to be the widespread dispersal of the units taking part, to prevent observation by Allied reconnaissance aircraft of any concentration which would draw down the wrath of the Allied heavy-bombers. The German bombers were to be dispersed on airfields scattered from Brittany in the west to Germany in the east. A few hours before the raid was to be mounted they were to collect at the forward bases.

Two He 177-equipped units were available for the start of the attack—code named *Operation Steinböck* (Ibex)—the First *Gruppe* of *K.G.40* and the Third *Staffel* of *K.G.100*, together operating from the airfields at Rheine, due west of Osnabrück, and Châteaudun, n.w. of Orleans; and, initially with a combined strength of 46 aircraft.

The first attack of the series was on the night of January 21–22, 1944; the bombers went out in two waves, with about eight hours between each. The two He 177 units put up about a dozen bombers between them for each wave, some of the aircraft flying twice. The total German effort for the night amounted to some 270 sorties.

It was during this first *Steinböck* attack that Flying Officer H. Kemp of No. 151 Squadron, R.A.F., shot down the first He 177 to fall on British soil. He had

turned his de Havilland Mosquito night-fighter towards a searchlight cone when his radar operator, Flight Sergeant J. Maidment, picked up a target on his radar about two miles away in front. Kemp closed-in and caught sight of the "bandit" as it swung into an evasive turn. The Mosquito crew lost contact but regained it shortly afterwards, and Kemp was able to close in and open fire with his four 20-mm. cannon. He scored hits on the port wing, there was a violent explosion, and the bomber went into a steep dive and crashed near Haslemere in Surrey. Of the crew, which belonged to *I./K.G.40*, two were killed and four were made prisoners-of-war.

After the first wave, the He 177s landed back at Châteaudun; and, after the second, they landed at Rheine.

The pace of the German air attacks, and the movement of the various units during the first month of the *Steinbock* operation, can be seen from the changes made by the He 177-equipped units during this period.

Night of January 29–30, 1944: Some 285 aircraft took-off to attack London. He 177s of *I./K.G.40* and *3./K.G.100* took part, taking-off and landing at Rheine. Following this operation, *I./K.G.40* was withdrawn.

Night of February 3–4: some 240 aircraft set out for London; He 177 operations by *3./K.G.100* only. Take-off and landing from Rheine.

During the period from the 4th till the February 13, the Second *Staffel* of *K.G.100* moved up from Lechfeld, due west of Munich, with its He 177s. It joined the Third *Staffel*, and the two units moved their aircraft between Rheine, Châteaudun and Rennes, in Brittany, in preparation for attacks which did not materialize. Henceforth these two units would operate together for attacks on Great Britain. The He 177s finally ended up back at Rheine.

Night of February 20–21: Some 200 aircraft set out for London. *I./K.G.100* put up about 30 He 177s, which took-off from and landed back at Rheine.

Night of February 18–19: Some 200 aircraft set out for London. *I./K.G.100* took-off from Rheine and landed back at Rennes.

February 19 (day): *I./K.G.100* moved from Rennes to Châteaudun, then to Rheine on the following day.

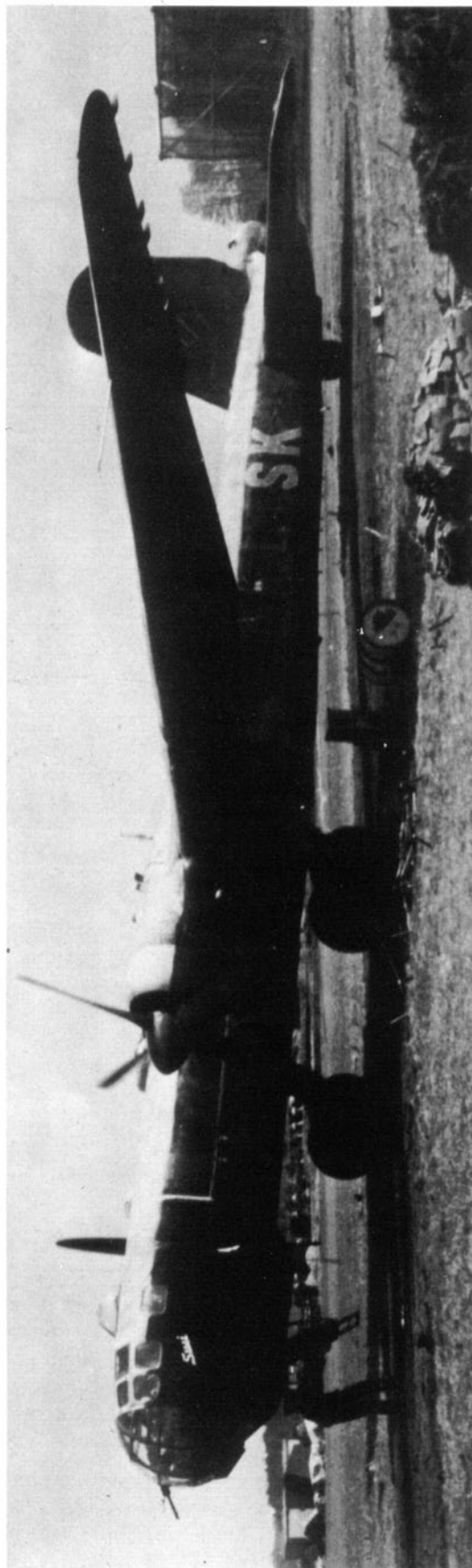
Night of February 20–21: Some 200 aircraft set out for London. He 177s of *I./K.G.100* took-off from and landed at Rheine.

February 21 (day): He 177s moved from Rheine to Châteaudun.

Night of February 20–21: Some 200 aircraft set out for London. Fourteen He 177s involved, operating from Châteaudun.

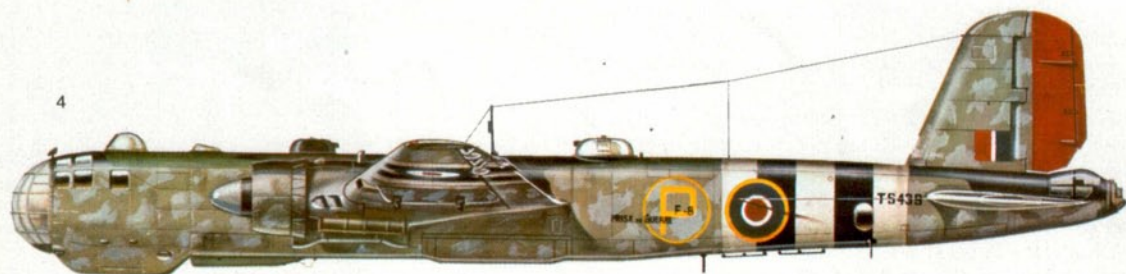
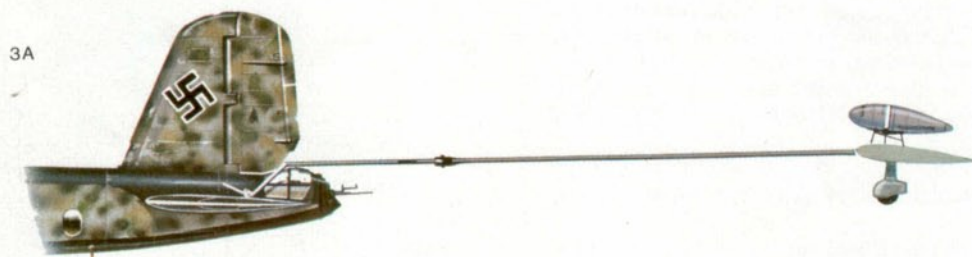
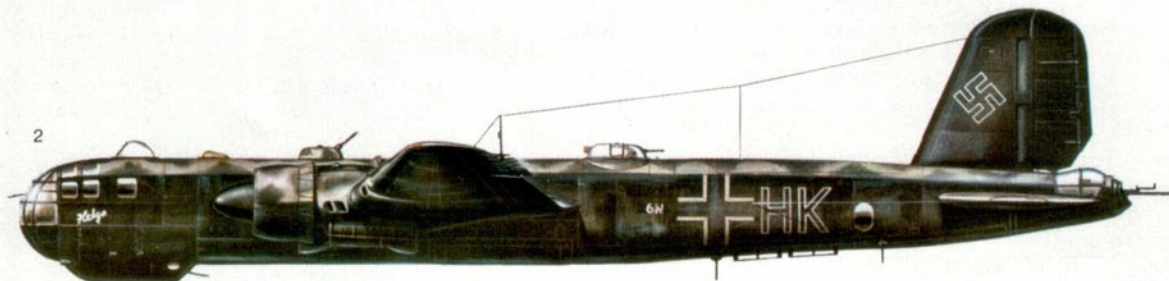
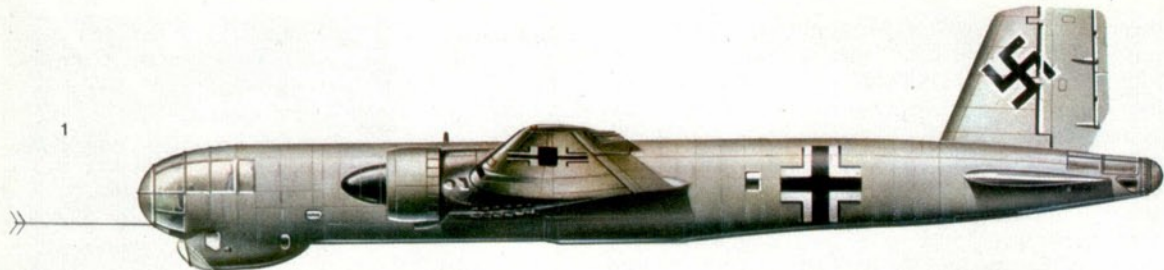
Night of February 23–24: About 160 aircraft set out for London; He 177s operated from Châteaudun.

Night of February 24–25: Some 170 aircraft set out for London, six of which were He 177s of *I./K.G.100*. The target for this attack was government buildings in the Westminster area; it was to be marked by Junkers Ju 88 and Ju 188s flown by crews of the "pathfinder" unit *I./K.G.66*, by means of white parachute flares. The route followed by the He 177s that night was from Châteaudun via a turning-point to the north-west of High Wycombe, Buckinghamshire, marked by red flares, to the target. Afterwards the bombers returned to Châteaudun.



An He 177 A-3 of the Second *Staffel* of the First Gruppe of Kampfgeschwader 100, one of the aircraft which took part in the attacks on Britain during the early part of 1944.

(Photo: Richard Seeley)



Trim/Hadler/Brittain © Profile Publications Ltd.

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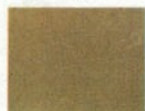
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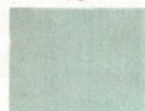
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Key to colour illustrations

1. The first prototype of the Heinkel He 177, which flew on November 19, 1939.
2. He 177 A-3 of the First *Gruppe* of *Kampfgeschwader* 100 which, operating from Châteaudun and Rheine, took part in the air attacks on Great Britain during the early part of 1944.
3. He 177 A-3, employed in trials with a towed fuel tank.
4. He 177 A-5 captured at Toulouse by men of the French Resistance, and brought to England in September 1944; it is seen here in the markings it bore, during trials at Farnborough in the autumn and winter of 1944.

From the beginning of March the focus of the German attack shifted to include raids on Bristol and Hull, as well as four on London.

The final large-scale, manned bomber-attack on the British capital during *Steinbock*—or during World War Two for that matter—came on the night of April 18–19. About 125 bombers were involved, five of them being He 177s.

The *I./K.G.100* tactics and methods of operation now described may be taken as typical of those employed during *Steinbock*.

For this operation *I./K.G.100* operated from Rheine. This airfield was regarded only as a temporary base,

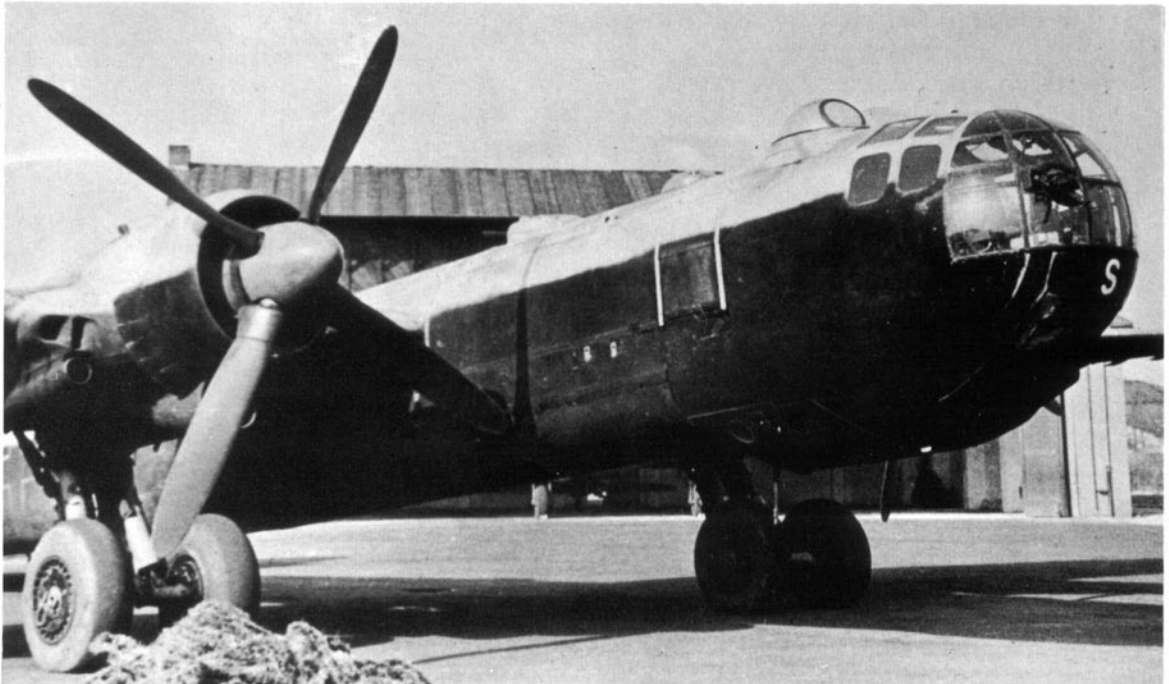
and could offer only limited repair facilities; much of the work of bombing-up the aircraft had to be done by youths of the Reichs Labour Service.

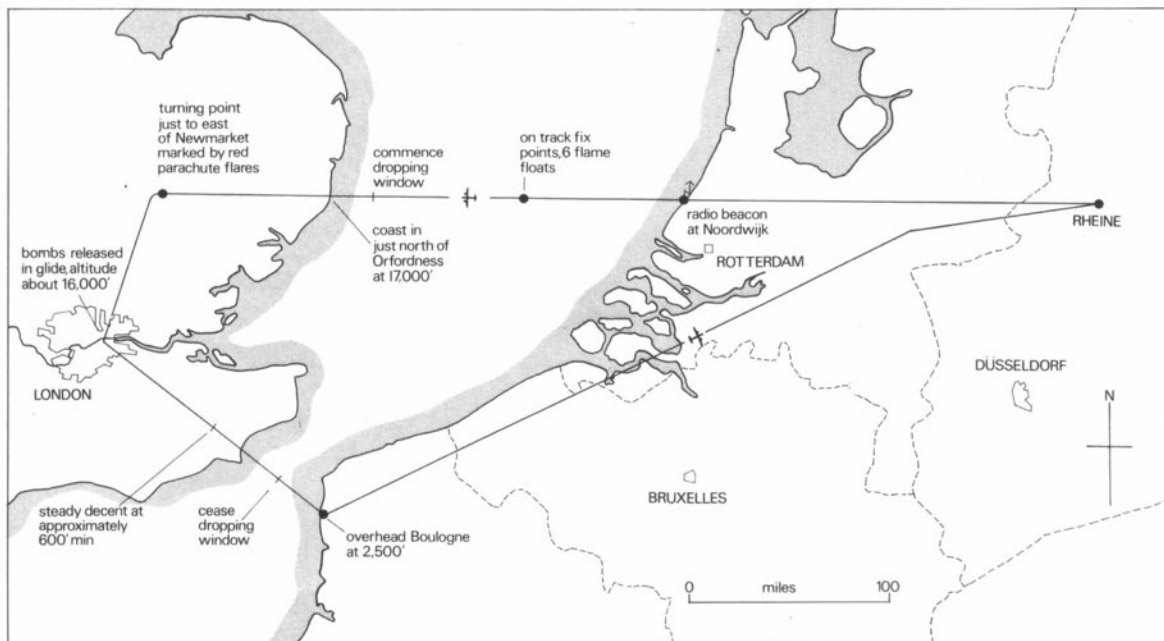
During this raid, the more experienced crews flew aircraft loaded with two 1,800-kg. and two 1,000-kg. bombs; the remainder flew aircraft loaded with four 1,000-kg. bombs. Prior to take-off, the aircraft had been lined-up at the end of the runway in a pre-arranged order. The more heavily-laden bombers went off first, because of their slower rate-of-climb. Each aircraft took-off with its tail light on. The pilot switched-off the light as he got airborne as a signal to the next He 177 pilot that the runway was clear.

After getting airborne, the bombers headed due west for the radio beacon at Noordwijk, north-east of the Hague, the Netherlands, continued over the North Sea past an on-track fix point comprising six flame floats laid by "pathfinder" aircraft, to cross the coast of England at an altitude of about 17,000 feet just to the north of Orfordness. At a position 25 miles before reaching the coast, the wireless-operators had begun releasing bundles of "Window" foil chaff (German code-name for *Radar-Störfolien* was *Düppel*) to confuse the British ground control and night fighter radars. Twice a minute, at regular intervals, the crew members dropped further bundles of *Düppelstreifen*. The bombers continued on the westerly heading to their turning point just to the east of Newmarket, which the "pathfinders" had marked with four red parachute flares. From there, the He 177s turned south-south-west for their target—London. The German crews made frequent altitude and heading changes to make night fighter interception and anti-aircraft gun engagement more difficult. Some of the He 177s carried the *FuG 217 Neptun* tail-warning radar to signal the approach of night-fighters but,

A close-up of the starboard side of the nose of the aircraft shown overleaf.

(Photo: Hans Redemann)





even so, a Mosquito of No. 410 Squadron, Royal Canadian Air Force, succeeded in shooting down one on its track towards the target.

On entering the London area, each He 177 throttled back, putting his aircraft into a gliding descent to take him across the bomb release-point at about 15,500 feet. This served a two-fold purpose: the changing altitude greatly complicated the prediction problem for the British radar-laid anti-aircraft guns, while the throttled-back engines made sound location almost impossible*. At the same time the German wireless operators stepped-up their rate of *Düppelstreifen* release to one bundle every five seconds. At the target itself, "pathfinder" crews had laid down clusters of red parachute flares.

After releasing their bombs the He 177 pilots reopened their throttles, but continued in their descent at approximately 600 feet per minute. By such means, the He 177s were able to keep up speeds of over 350 mph during their withdrawal phase; so this and the changing height made night fighter interception very difficult. The bombers crossed the French coast at Boulogne at an altitude of 2,500 feet, and from there headed back to Rheine via Arnhem.

From the end of April, the German attacks on targets in Britain began to peter out. The units involved were having to conserve their strength to meet the now imminent "threat of an attempted enemy landing in the west."

INVASION

On June 6, 1944, the long-awaited Allied invasion of France took place. That night the glider-bomb-carrying He 177s of *II./K.G.40*—dubbed by Göring "the spearhead of the anti-invasion forces"—were out in force. But so too were the Allied night-fighters.

* However, by this time the sound locator had virtually passed out of use in the British A.A. Command.

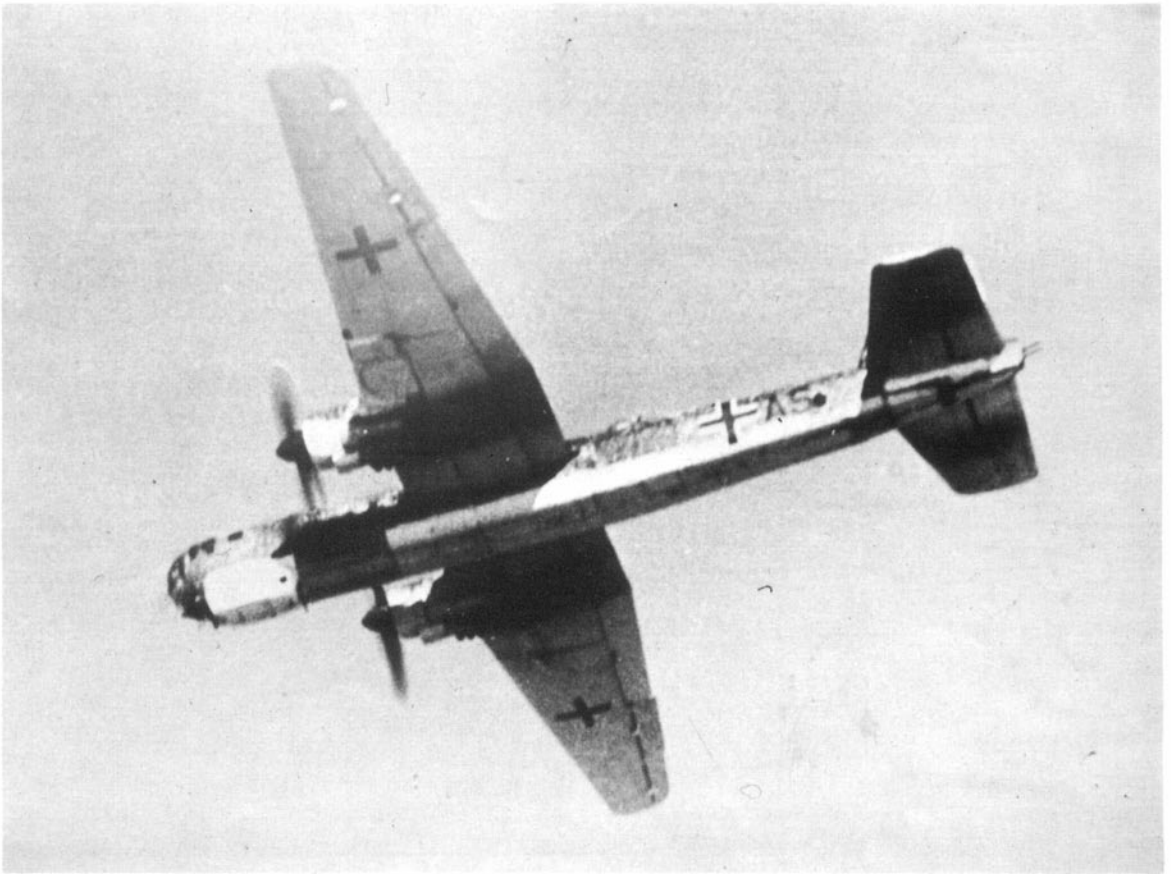
Particularly successful were Flying Officer F. Stevens and his radar-operator, Flying Officer Kellett, flying in a Mosquito of No. 456 Squadron, Royal Australian Air Force. Operating under shipborne radar control, the crew received vectors on to their incoming "bogie"; Kellett soon made contact on his own radar, and guided Stevens into visual contact some 300 yards behind the target. The Australian pilot slid round the side of the enemy bomber to make his identification positive; he soon saw that it was an He 177. Later, he reported:

"It was easily recognized by its large fin with a bite out of it and the protruding bulbous nose—also by its extreme wing span seemingly out of proportion to the length of the fuselage. At this stage, glider-bombs (one under each wing outboard of the engine nacelles) and a large four-pronged aerial array on the nose were seen."

Stevens dropped back to 100 yards and opened fire with a 2-second burst. Only then did the German crew seem to awaken to the mortal threat trailing them; the bomber's rear gunner opened up in return. But to no avail. Already the Heinkel's port engine was burning brightly; after two more accurate bursts from the Mosquito's 20-mm. cannon there was an explosion in the He 177's fuselage, and it spun into the sea and exploded.

About twenty minutes later Stevens and Kellett repeated this performance and shot down a second He 177. During the darkness of June 6-7, the Australian No. 456 Squadron claimed to have destroyed four of these bombers as they tried to get through to the landing area with their glider-bombs.

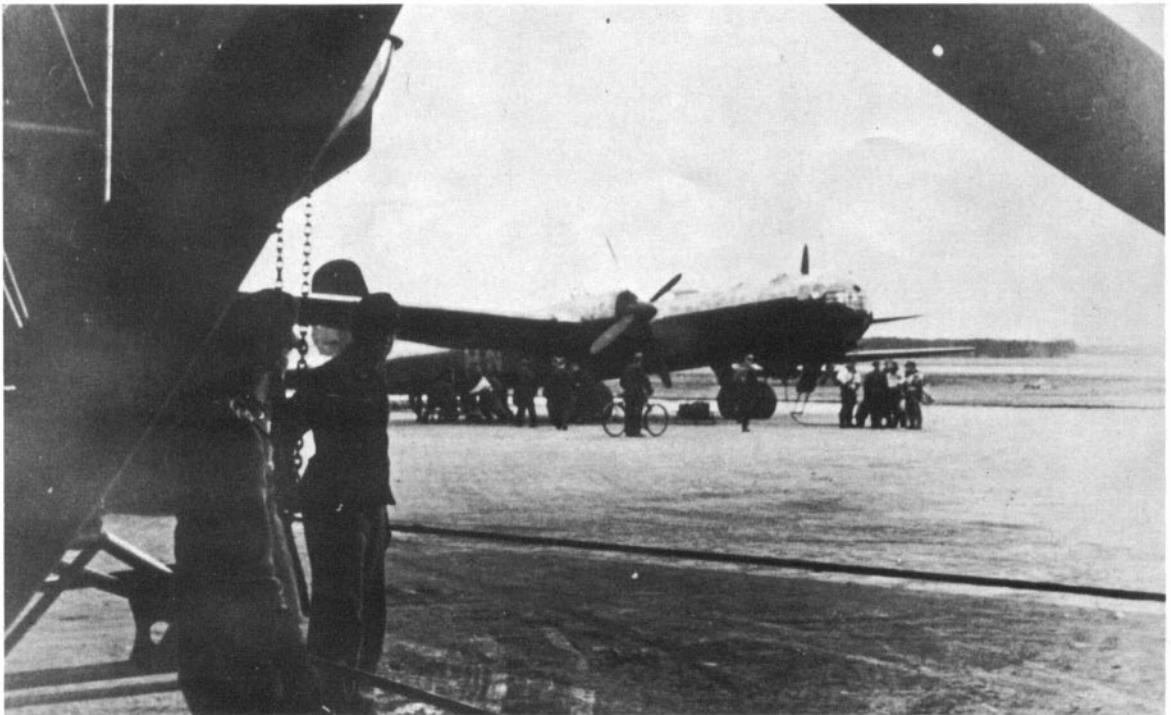
The German anti-shipping aircraft of *Fliegerkorps IX* smashed themselves bravely against the powerful Allied defensive barrier during June 1944. But they were able to achieve little in return for the heavy losses they endured. During the 10 days following the launching of the invasion, they were able to sink only five ships by direct air attack.



An He 177 A-5 of III./K.G.1, pictured flying over the eastern front during the summer of 1944. Note the non-standard two gun rear mounting; probably the weapons are of 13-mm. calibre. (Photo: Horst von Riesen)

An He 177 crew of the First Staffel of K.G.1 pictured in front of their bomber immediately before a sortie.

(Photo: Otto von Ballasko)





During the summer of 1944 Otto von Ballasko flew an He 177 of the Stab (Staff) Flight of Kampfgeschwader 1. He is pictured here in front of a Ju 88 he flew earlier in the war. (Photo: Otto von Ballasko)

Following this failure to influence events, the German bomber force abandoned the idea of attacking the ships themselves; instead it devoted its efforts to mining the narrow seas. During the following weeks the *Luftwaffe* put down some 3,000 mines of various types, included large numbers of the new pressure mines which could be countered only running all ships at "dead slow" while in shallow water. By the end of June the mines had sunk nine warships and 17 auxiliary vessels and merchantmen, as well as causing considerable inconvenience. But it was clear to both sides that such losses were not going to mean much to the greatest invasion armada ever assembled. In mid-July, the Germans withdrew the surviving anti-shiping aircraft and their crews to bases in Norway and Germany.

During his initial operations in the He 177, Hauptmann Otto von Ballasko flew the snow-camouflaged aircraft shown in the five-view to this Profile; later, after the thaw, he flew night-camouflaged He 177s of which this is an example. (Photo: Otto von Ballasko)



OPERATIONS ON THE EASTERN FRONT

Even as the He 177s of *I./K.G.40* and *I./K.G.100* were striking at targets in Britain during the early part of 1944, a full *Geschwader* of these aircraft had been forming in Germany. The unit was *Kampfgeschwader 1 (K.G.1)* under the command of *Oberstleutnant* (Lieutenant Colonel) Horst von Riesen. During May the first of the *Gruppen* became ready for action, and moved to operational airfields in East Prussia centred on Prowehren and Seerappen. Before the end of the month the other two *Gruppen* had also arrived and von Riesen's *Geschwader*, comprising as it did some 90 He 177s, represented the most powerful long-range striking force possessed by either side on the Eastern Front.

K.G.1 went into action as soon as it arrived in East Prussia, striking at Russian supply centres and troop assembly areas. Strategic targets were within easy reach of the heavy bombers, but *K.G.1* made no attempt to hit them: the Russian summer offensive for 1944 could not be long delayed, and the German soldiers needed all the immediate help they could possibly get.

During these attacks, often carried out in daylight at high level, losses were extremely light. The Soviet Air Force, equipped mainly for the low-level interception and ground-attack roles, was able to do little to hinder the high-flying bombers. Individual Soviet pilots did make interceptions but, unaccustomed to engaging such comparatively large targets and disconcerted by the co-ordinated defensive fire, they rarely pressed home their attacks.

On several occasions *K.G.1* made pattern-bombing attacks on Russian targets. During one of the largest of these, von Riesen led his entire *Geschwader* in an 87-aircraft attack on the railway centre at Veliky Luki, some 300 miles to the west of Moscow. The



A rare photograph, showing a quintet of He 177s of K.G.I airborne over the eastern front.

(Photo: via Hanfried Schliephake)

force must have made an impressive sight, as it attacked in formation of three closely-spaced “V” shaped waves, each wave comprising some 30 He 177s. Flying in the leading bomber, von Riesen broadcast the release order over the R/T and all bombers released their bombs simultaneously.

Other attacks were by night, but still the targets were tactical ones close to the front.

During these operations, von Riesen’s crews had little trouble from overheating engines. By now the various modifications had greatly reduced the possibility of this happening. Furthermore the root cause of so many of the fires—over-rough use of the throttles and holding high power settings for too long—was now well known; the K.G.I pilots had been advised of the danger and avoided it. When engine fires did occur, it was usually the result of engine mishandling by inexperienced pilots.

On June 23, 1944, the Russians did launch their offensive on the central front. The German forward

positions were soon overwhelmed and the tank spearheads began to penetrate deeply into the rear. In desperation the He 177s were sent into battle as ground attack aircraft; but losses were high and in no way commensurate with the meagre success achieved.

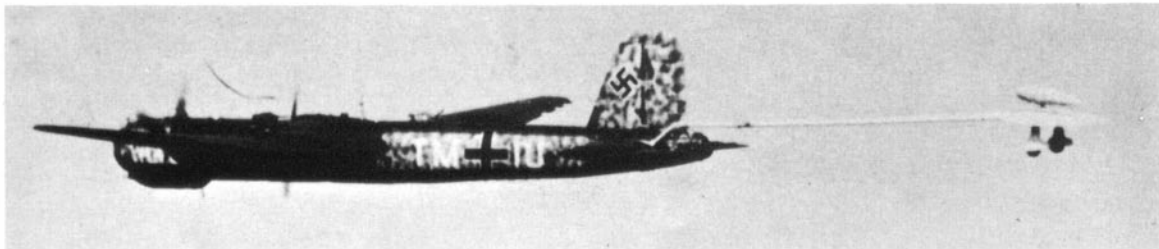
THE FUEL FAMINE

By the summer of 1944, the He 177 was at last in operational service in useful numbers, and able to do useful work provided the defences were not overwhelmingly strong. It was then that fate dealt its final blow to the German long-range bomber. Since May the Allied bomber forces had concentrated their efforts against the German oil industry—with dramatic success. In August 1944, the production of aviation fuel was more than 90 percent down on that in May. Forced to drastically curtail its flying effort, the *Luftwaffe* immediately grounded its heavy bombers; soon afterwards production of the He 177 ceased, after

Throughout its career, the He 177 remained intolerant of fools, and it is probable that more were lost in accidents than while in action against the enemy. In this photograph the starboard motor can be seen behind the trailing edge of the wing, having torn itself right out of its mounting.

(Photo: Hans Redemann)





An He 177A-3 pictured during trials when an auxiliary fuel tank, complete with an undercarriage and wings, was rigidly towed behind an He 177.
(Photo: via Franz Selinger)

565 examples of the A-5 version had been completed. The crews of *K.G.1* flew their bombers back to rear bases in Germany, where they spent the remainder of the war parked out in the open; together with brand-new Heinkels similarly abandoned. They were to boost the scores of ground-strafting Allied pilots during the closing months of the conflict.

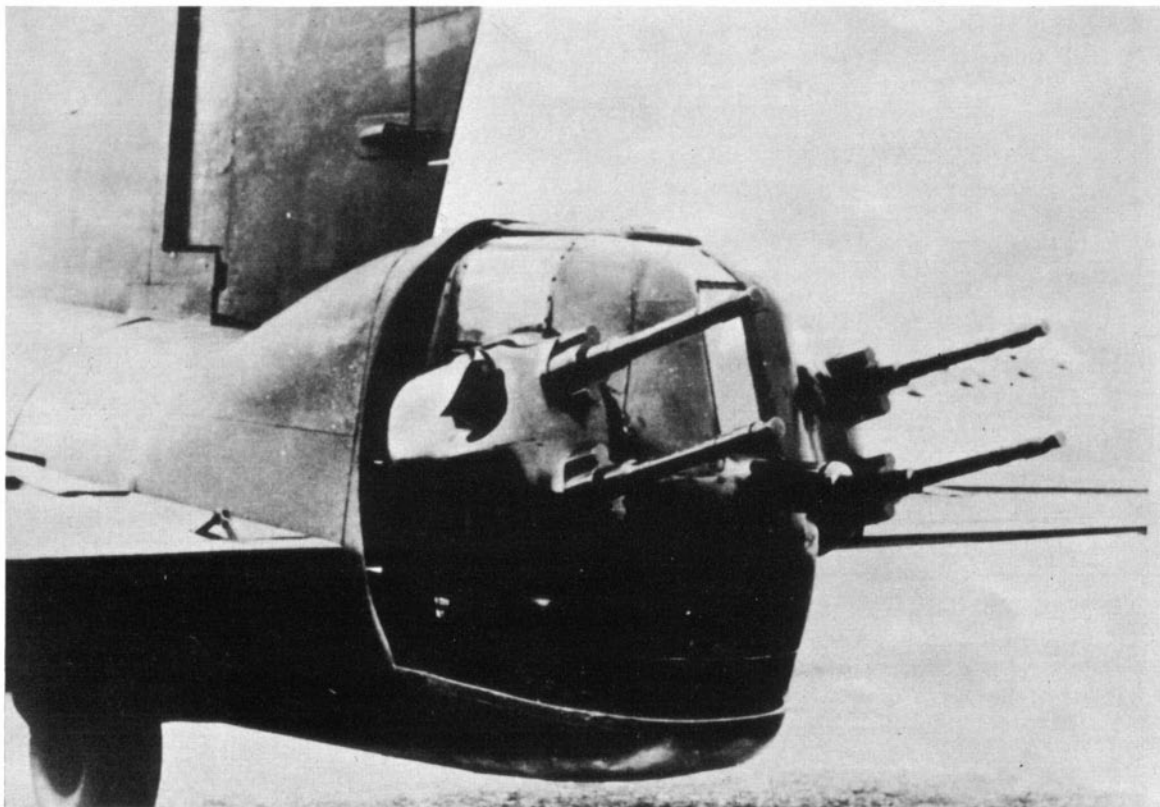
Although the He 177 A-5 was the final version of this aircraft to enter quantity production, improved models were under development. The He 177 A-6 was to have featured, in its intended production form, a redesigned nose section housing a pressure cabin. Also, it was to have carried a powered rear turret fitted with four *MG 81* 7.9-mm. machine-guns. The He 177 A-7 was essentially similar to the A-5, but featured a wing some 15 feet longer and thus had an improved high-altitude performance. Interest in these

versions waned rapidly, following the disbandment of the heavy bomber units.

IN CONCLUSION

So ended the story of the Heinkel He 177 and with it the German hopes for a long-range bomber force to compare with those of the western Allies. Although it was the fuel famine which finally amputated the *Luftwaffe* heavy-bomber arm, even so, it is difficult to see that the He 177 could have achieved very much. This was not one of the great aircraft with the stamp of the Avro Lancaster or the Boeing Flying Fortress. The reason for the success of the latter was that they were built to be flown and maintained by conscripts—they were easy to fly, they forgave fools, and they were simple enough to be kept in action by men with comparatively little training. On the other hand, the

A mock-up turret installation, showing the layout of the four 7.9-mm. *MG 81* machine-guns to have been fitted in production versions of the He 177 A-6.
(Photo: Franz Selinger)



He 177 with its many advanced features would not tolerate fools and was far more complicated than any of its Allied counterparts. Therein lay the seeds of its downfall, which were to sprout and bear a bitter fruit which poisoned its career as an operational bomber.

THE HEINKEL He 177 A-5 DESCRIBED

The fuselage was of stressed-skin construction, with Z-shaped stringers and formers. The nose was detachable, and had a small spherical mounting for the 7.9-mm. *MG 81* machine-gun operated by the bomb-aimer. The nose section housed the pilot, bomb-aimer/2nd pilot/front gunner, the navigator/wireless operator/under gunner and the gunner operating the remotely-controlled dorsal guns. The central control column could be swung to the left or the right, for use by either the pilot or the second pilot. If he wished, the second pilot could collapse his seat, to enable him to use the bombsight. Beneath the navigator's seat was a toilet.

The forward section of the fuselage housed two fuel tanks. Beneath these was the forward bomb bay, beneath which could be fitted an external carrier for an Hs 293 glider-bomb. The rear section of the fuselage housed two fuel tanks, with the second bomb bay underneath. Behind these tanks were two large carbon-dioxide cylinders which fed the engine nacelle fire extinguishers. Two large-bore jettisoning pipes led back from the fuselage fuel tanks and terminated under the elevators. When operated from the pilot's position, a cable would release the covers and uncoil a length of rubber hose on each side; the fuel could then drain out of these pipes under gravity.

The wing, which was of single-spar stressed-skin construction, comprised a centre-section and two main planes. The wingtips were detachable. Each mainplane housed an outboard landing wheel; there was a balloon cable-cutter in each leading-edge. Fowler-type flaps ran along the whole of the trailing-edge, from aileron to wing root. There were two oil radiators in each leading-edge, cooled by ram air from a duct; the supply could be regulated by hydraulically-operated flaps. The faired carriers for glider-bombs or heavy bombs were attached just outboard of the oil radiators. There was one fuel tank in each mainplane, and one on each side of the centre-section.

Each engine nacelle provided an attachment point for two single-wheel oleo legs; the outboard legs retracted outwards, the inboard ones inwards. When the main wheels were down, the undercarriage flaps closed again to seal-off the wheel housings. Like the main undercarriage legs, the tail wheel was retracted hydraulically. The time to retract the undercarriage was between 20–30 seconds—an inordinately long period.

Two Daimler Benz DB 610 "double engines" powered the He 177 A-5. Each of these comprised a pair of DB 605 units mounted side-by-side, connected by a common shaft to a four-blade, fully feathering V.D.M. metal propeller of 14 feet 10 inches diameter. The propeller was fitted with metal cuffs at the blade roots, to assist engine cooling. The propellers rotated in opposite directions; the port ran anti-clockwise and the starboard ran clockwise, as seen from the front.

The He 177 carried extensive armour protection for its crew. The pilot's seat was of armour plate, 9-mm. thick at the back and 6-mm. beneath. The "chin" gun position had 7-mm. and 6-mm. armour and bullet-proof glass; the rear ventral gun position had 9-mm. armour plate. A slab of 10-mm. thick armour plating, with a slot for the *Revi* gunsight, protected the gunner in the remote sighting position. In addition to all this, sections of armour plating were fitted to the fuselage around the forward crew position. The mid-upper rear gunner's position was protected from the rear by 7-mm. armour, which also protected the dinghy compartment; to the rear of this compartment was a large semi-circular section of armour, which extended down the top two-thirds of the fuselage. The tail gunner was protected by an 18-mm. thick armoured gun mounting, a bullet-proof glass screen, and 9-mm. armour underneath the gun. By adjusting his seat, he could either sit or lie prone, but when in the more comfortable sitting position his field of fire was limited.

MAJOR UNITS TO SEE ACTION

I., II., and III. *Gruppen* of *Kampfgeschwader 1* (*Geschwader* identification V4). Based in East Prussia, these units operated over the eastern front during the summer of 1944.

I. *Gruppe* of *Kampfgeschwader 40*. (*Geschwader* identification F8). Flying from bases in France and Germany, this unit operated over Great Britain for a short time during the early part of 1944.

II. *Gruppe* of *Kampfgeschwader 40*. The longest-serving unit operating with the He 177, this *Gruppe* flew the aircraft in the anti-shipping role from airfields in France from the autumn of 1943 to the summer of 1944.

I. *Gruppe* of *Kampfgeschwader 100* (*Geschwader* identification 6N). Flying from airfields in France and Germany, this unit bore the brunt of the He 177 operations over Great Britain during the early part of 1944.

SPECIFICATION: He 177 A-5

Span: 103 ft. 2 in.; length, 66 ft. 11 in.; wing area, 1,098 sq. ft.

Power: Two Daimler Benz DB 610 motors, each comprising two DB 605 engines coupled together by means of a clutch and gearbox arranged to drive a single propeller, the DB 605 was a liquid-cooled 12-cylinder inverted-Vee engine.

Crew (Six): Pilot, co-pilot/nose gunner/bomb-aimer, observer/wireless-operator/ventral gunner, dorsal gunner for remotely-controlled barrette, gunner for manually-operated dorsal turret, and rear gunner.

Weights: Empty, 37,038 lb.; loaded, 68,343 lb.

Maximum speeds: Fully loaded, 270 m.p.h. at 20,000 ft.; lightly loaded, 303 m.p.h. at 20,000 ft.

Economical cruising: 210 m.p.h. at 20,000 ft.

Still-air maximum range (with two Hs 293 missiles): 3,420 miles less reserves.

Defensive armament (six positions): One 20-mm. *MG 151* cannon firing forwards from the lower part of the nose; one hand-held 7.9-mm.

MG 81 firing forwards from the upper part of the nose; a pair of *MG 81s* firing rearwards from the rear of the nose gondola; a pair of 13-mm.

MG 131s in the remotely-controlled dorsal barrette; a single *MG 131*

in the manned dorsal turret; a single 20-mm. *MG 151* in the rear turret.

Bomb load: Up to 13,200 lb.

Radio equipment carried by the He 177 A-5 (anti-shipping role) included:

FuG 10 – High-frequency transmitter-receiver covering the band 6 to 12 MHz.

Peilgeraet 6 – High-frequency direction-finder associated with the *FuG 10*.

FuG 172 – VHF communications and direction-finding equipment working in the band 42.3 to 47.9 MHz.

E B1 2 – Airfield blind-approach equipment.

FuG 101A – Radio altimeter.

FuG 25 – IFF, "Identification-Friend-or-Foe".

FuG 200 Hohentwiel – ASV-Air-to-surface vessel radar. Built by the Lorenz company, the set operated in the 550 MHz band and gave ranges of up to 50 miles on large ships.

FuG 203 – Radio control equipment for the Hs 293 missile; operated on 18 separate frequencies in the band 48 to 50 MHz. The "joy-stick" controller was located to the right of the bombsight in the extreme nose of the aircraft.

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Series Editor: CHARLES W. CAIN



This He 177 of K.G.40 was captured at Toulouse by men of the French Resistance; it is pictured here shortly after its arrival at Farnborough in September 1944, still wearing French markings. During flight trials from Farnborough it carried British markings and the serial number TS 439. It is of interest to note that this aircraft carried a third rack for an Hs 293 glider bomb, immediately aft of the control cabin. It is doubtful whether the He 177 ever went into action carrying three Hs 293s; more probably the aircraft flew with just one of these weapons, mounted on the fuselage rack.

