

Excerpt from:

THE DECISIVE DUEL: SPITFIRE VS. 109

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From Chapter 6 – Adolf Galland Takes the Offensive over Hawkinge, 15 August 1940

That morning, Galland and the Bf 109s of III/JG 26 were flying top cover as a detached escort for forty Ju 87 Stuka dive bombers, heading to attack two RAF forward airfields, just across the Channel, at Hawkinge and Lympne in Kent. Bf 109 units at lower altitude were throttled back as close escort to the slow-flying Stukas. It was a large formation, with the top cover up to a mile above the bombers in what the RAF called a ‘Balbo’ after the 1930s Italian flier famous for leading masses of aircraft. The Luftwaffe, in a Wagnerian reference, called such formations a ‘Valhalla’.

The Bf 109 pilots’ need to stay close to the bombers put them at a disadvantage. Their most fuel-efficient cruising speed was higher than that of the bombers, heavily loaded with fuel and ordnance, so to keep pace the fighters weaved back and forth over the bombers, burning precious fuel. Some Bf 109s cruised with their flaps partially extended in order to reduce speed, a technique still harder on fuel consumption. In the very best conditions, a Bf 109 would have just ten minutes over London for a combat mission that would last for an hour to an hour and a half, and close escort could erode this further. And even on short-range missions over Kent, such as this one, Bf 109 pilots knew that throttling back made them vulnerable to fighter attack.

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Surprise, pilot skill and effective tactics were usually the decisive elements in air combat, but once in close combat, what a fighter pilot needed most from his plane was speed and manoeuvrability. Speed gave the initiative in combat: the ability to pursue and engage an enemy or, conversely, escape when conditions were unfavourable. Manoeuvrability – how rapidly it was possible to change the direction the fighter's nose was pointing, either horizontally or vertically – enabled either attack or escape. A fighter's fixed forward-firing armament could only hit targets it was pointing at. Pointing your guns at the enemy while preventing his from pointing at you was the basic objective of this deadly competition.

The Bf 109's automatic leading-edge slats popped out of the wing when the Bf 109 was flown at slow speed – making a clanging noise so loud that pilots could hear it above the roar of the engine. The slats increased lift and drag but were not for the faint of heart. Oberleutnant Erwin Leykauf said, 'For us, the more experienced pilots, real manoeuvring only started when the slats were out.'¹ Less experienced pilots could put a Bf 109 into a stall and spin when the slats deployed on one wing and not the other in a tight turn. When slats deployed unevenly in tight turns, they would disrupt the airflow, causing the ailerons to 'snatch' enough to shake a Bf 109, spoiling the pilot's aim. Similarly, an experienced pilot could take advantage of the Bf 109E's manual propeller pitch control to maximise performance in combat better than any automatic governor; inexperienced pilots tended to set the pitch before fighting and forget about it.

Even with their advantage of an integrated air defence system in which the pilots were directed by command centres based on information from radar and ground observers, only a third of British fighter sorties managed to contact the enemy. The Bf

109s, once they left the ground, had only their pilots' eyes and their on-board radios. The odds of the Germans catching RAF fighters were even smaller. It bears repeating that their success – and survival – depended on seeing the enemy first. What made the situation survivable was the advantage of numbers. On the offensive, Bf 109s were able to climb to altitude before crossing the British coast. But this had not availed 'Rudi' Rothenfelder four days previously on 11 August. 'Our *Rotte* had been jumped by six Spitfires who had pounced on us out of the sun. I shouted a warning over the radio but my wingman failed to react,' he said. 'A Spitfire bore in on my tail, preparing to attack. I threw the throttle wide open, pulling up the nose of my machine. My adversary shot past me while I flung my machine down into a steep dive, pulling out at 6,000 meters.'²

'When we took off, we were immediately detected by English radar,' Galland later recalled. That morning Galland's III/JG 26 and the heavily escorted Stukas approached the target, Hawkinge airfield, at about 1140. Ten Hurricanes of 501 Squadron and twelve Spitfires of 54 Squadron, led by the quiet and determined Squadron Leader James 'Prof' Leathart – nicknamed for his engineering degree – were ready. The RAF fighters had climbed to altitude and were in position to attack. As the Stukas started dive-bombing the airfield, the RAF fighters dived down to attack them and their Bf 109 close escort. This gave Galland and his top cover the advantage of height. Instinctively, Galland looked around, a sweep of the head to check the location of both his fighters and any additional enemy, while with a finger he flicked his gun's safety switch to 'fire' and gave III/JG 26 the order to attack.³

'*Horrido!*' This was the Luftwaffe's fighter pilots' call, which originated on the hunting field. Someone had seen the enemy. Whoever gave it quickly had to add the

callsign of the formation of aircraft he was talking to – otherwise Luftwaffe planes all over southern England might be looking for a non-existent threat – and the number of enemy planes, type and altitude, with location being given in terms of either a ground reference point or in relation to the spotting aircraft. But the pilot making the radio call was pumping pure adrenaline and excitement often trumped accuracy.

The call over the radio brought the eyes of each pilot to the location reported, but even then it took precious seconds to spot the enemy themselves. Galland had to act immediately; the rest of the top cover Bf 109s would follow. When Galland saw the Spitfires attacking the Stukas, his countermove was to launch the Bf 109 pilots' preferred response: a diving attack. Bf 109s accelerated quickly in a dive.

'The first rule of all air combat is to see the opponent first,' Galland said. If they could seize the initiative, Bf 109 pilots would throw the fight into the vertical, climbing and diving rather than trying to turn horizontally with Spitfires. The Bf 109 had a faster rate of climb. In a dive, the Bf 109's pilot could push the nose down and the DB 601 engine's fuel injector would keep delivering fuel to the engine. The Spitfire's Merlin engine had a conventional float carburettor, so when its pilots shoved the control stick forward, they effectively cut off the flow of fuel to the engine. A Spitfire would have to roll inverted before diving, which gave the Bf 109 a head start when attempting to dive away. However, even with this advantage, many Bf 109 pilots would roll inverted anyway. An inverted aeroplane does not have to 'push' against the lift from its wings. Lift was not keeping the inverted aeroplane up but pushing it down, the way the pilot wanted to go. An inverted pilot would also have a better view of the airspace. Superior diving acceleration gave the Bf 109 an 'escape corridor' in its air battles with the Spitfire.

Galland had hoped to surprise the British fighters. But 'Prof' Leathart had anticipated an attack by the Germans' top cover. Leathart and half of 54 Squadron had followed 501 Squadron's Hurricanes against the Stukas and their Bf 109 close escort. He left two three-Spitfire sections up high to guard against a German diving attack. Galland and Müncheberg led the top cover of III/JG 26 as they dived on these Spitfires, which turned to face the attack. From above, the high-altitude layer of this battle appeared as a microcosm of the Battle of Britain as a whole: six Spitfires turning at bay against several times their number of Bf 109s. At lower altitude, Leathart and five other Spitfires attacked the close escort of Bf 109s, which turned to meet them, interposing themselves between the British fighters and the Stukas.

Head-on attacks were often lethal against the slower German bombers, which had demonstrated an ability to absorb up to 200 .303 bullets and still fly home. The eight .303 machine guns of a Spitfire could shatter the nose of a Heinkel, which had nothing but thin aircraft aluminium and Plexiglas between the crew and the bullets and often only a single 7.92mm machine gun shooting back.

In head-on attacks between fighters, both would be moving so fast that they were in range and then overshoot each other so quickly that few pilots were able to land a killing blow. Although Spitfires and Bf 109s differed in armament, they were alike in that their weapons were fixed and forward firing. To hit, the entire fighter was pointed at the enemy.

Galland and Müncheberg did not hit any of the Spitfires in their initial attack. To shoot down a fighter whose pilot has seen its attacker is very difficult, a feat most fighter pilots never achieve. Experienced Bf 109 pilots would not even try to manoeuvre with a

Spitfire that had seen them. It was wiser to climb or, more often, dive away, disengage, and come back to either re-engage the Spitfire from a blind spot or find a British pilot who had lost mutual support and was alone, or was concentrating so hard on attacking another German aircraft he wouldn't see the proverbial 'Hun in the Sun'.

But Galland was not an average pilot. Keeping his eyes glued to the six Spitfires, the ace realised as he shot past that he had two advantages over his numerically superior opponents. He understood that he and his wingman had the momentum from their diving attack to carry them up into a zoom climb, keeping the fight in the vertical. He also saw that the two sections of three Spitfires had, in meeting his diving attack, now become split into six separate fighters.

Two elements of three Spitfires was something Galland would have been wary of; six separate Spitfires was an opportunity for victory. What made Galland exceptional was his ability not just to fly, but to instantly size up a tactical situation and keep it in his head as he concentrated on shooting down the enemy: what a later generation of fighter pilots would call 'situational awareness'. Galland may have been unaware of the term, but his accounts of the air battles he fought shows that he instinctively used the concept. In the Second World War, 'situational awareness' was provided by visual acuity, experience and messages from others; in any event it was vital for survival, let alone success.⁴ Most Spitfire squadrons in the Battle of Britain took off and fought in 'vics' of three aircraft. Vics would often fracture into three lone Spitfires in combat, as these two sections of 54 Squadron had just done.

Galland's next move was to turn around and renew his attack on the Spitfires he and Müncheberg had just overshot, before they could join up and renew the attack on the

two Bf 109s. The two German fighters turned vertically in an outside loop, and were now back pointing at the scattered Spitfires with the advantage of height regained. Galland had used the Bf 109's performance and his own skill to keep the initiative. Focusing on a Spitfire diving away in a right turn, he launched another diving attack, aiming to get on the tail of this Spitfire.

Galland followed the Spitfire down, keeping the target in his sights. This particular target was likely the Spitfire flown by Sergeant Wojciech Klozinski, a former bomber pilot and flight instructor in the Polish air force. He had joined 54 Squadron two weeks before and had claimed a victory over a Bf 109 since then.

The manoeuvring became more intense. From the ground, it would have been hard to pick out the Spitfire in a diving spiral and the two Bf 109s behind it as being locked in a life and death pursuit. Other fighters from the high battle over Hawkinge were diving down as well, trading off altitude for airspeed, trying to escape attacks and position themselves for a renewed assault. They may have crossed paths with Galland's and Müncheberg's pursuit of Klozinski. Galland could keep his eyes focused on Klozinski. Müncheberg would come to his defence or would warn him to break off the pursuit if another Spitfire came to Klozinski's aid. But at that moment, with Sergeant Klozinski fighting for his life against Galland and Müncheberg, his commanding officer 'Prof' Leathart was in no position to come to his aid. Leathart, along with the other six Spitfires of 54 Squadron, had his hands full with the Stukas and their Bf 109 close escort in a separate, low-altitude battle over Hawkinge airfield. He was in the thick of the fighting but scored no kills.

As their Bf 109s turned tightly to pursue the Spitfire, Galland and Müncheberg felt – and heard – their automatic slats bang open on the leading edge of each wing. The control sticks shook, but the two Bf 109s, diving, traded altitude for airspeed and avoided stalling. They could also lower their flaps to ten degrees, to give their turning aircraft more lift at the expense of more drag, something the Spitfire, whose flaps only opened to the full forty-degree position, could not do. Because of the Bf 109's heavy controls and the high g-force turns, Galland and Müncheberg were using all their strength to manoeuvre, their bodies pressed against the side of the tiny cockpits for leverage. Experienced pilots, they could feel the control stick and rudder pedals responding the way they wanted, as they twisted closer and closer to the Spitfire.

The diving, spiralling pursuit of Klozinski by Galland and Müncheberg put severe stress on the structure of the aircraft and the pilots alike. A successful fighter pilot is usually able to think in all three dimensions, making the best decisions and implementing them near-instantaneously. But success demands great physical strength too. Even a superbly responsive fighter like the Spitfire had heavy control forces at high speeds. Jeffrey Quill, the Supermarine test pilot, flying a Spitfire, had to 'struggle with both hands on the stick at well over 400 miles per hour and sweating and swearing profusely'.⁵ Fighter pilots fought and died sitting down, but were no chairborne warriors.

Tight turns and combat manoeuvres imposed forces of up to eight times normal gravity (8 g) on the aircraft – and their pilots. Each g force multiplied the effective weight of the pilot's own limbs, so that moving the controls quickly became even more tiring. Many pilots were unable to parachute from spinning aircraft; the g forces pinned them to their seats. 'Pulling' g forces in a tight turn led to pilots blacking out, losing peripheral

and then direct vision, before becoming unconscious, as the blood drained away from their head. They would be unable to see the enemy or sustain the tightest turn. Douglas Bader, with his two artificial legs, was said to turn tighter than any other pilot; his blood had less distance to flow. Galland now in effect imitated him, raising his legs and leaning forward to counteract the g-forces that were bringing him to the edge of losing consciousness.

Turning inside its path was one way that an attacker could shoot down an enemy fighter whose pilot was aware he was under attack. Making a turn with a smaller radius than an opposing aircraft allowed the attacking pilot to eventually ‘pull deflection’ – to point the nose of the aircraft ahead of where the enemy fighter was turning, to where it would be a few seconds later when the bullets arrived at the aim point.

A fighter being manoeuvred at its performance limits was always on the verge of stalling and going into a spin, making it first a target and then liable to crash. George Brown had done this over Rotterdam on 13 May. ‘Prof’ Leathart, making a tight turn with a Spitfire on the verge of a stall, felt ‘that lovely feeling of the gluey controls and the target being slowly hauled into the sights’. Leathart was able not only to control his Spitfire, but to use it as an effective gun platform against a manoeuvring target. It required rare skill to keep a fighter shuddering on the brink of a stall while aiming through a reflector gunsight, allowing for the deflection needed to hit a manoeuvring target. As Leathart said, ‘Then thumb down on the trigger again and the smooth shuddering of the machine as the eight-gun blast let go.’⁶ All the while he had to remain aware of other aircraft nearby to ensure no one was about to make him an easy kill.

Galland was as concerned with scoring more kills as the average fighter pilot was about doing his job and staying alive. He stayed with Klozinski in pursuit of the Spitfire as it spiralled down towards the green fields of Kent, looming larger every second, the two Bf 109s twisting their way towards firing position.

Galland claimed that he never had a Spitfire turn inside him in a Bf 109, despite the Spitfire having the smaller turning circle.⁷ His skill as a pilot allowed him to wring every bit of possible performance from his Bf 109, turning just on the brink of a stall. Galland, who had been flying Bf 109s for years, was able to out-turn Klozinski, who had only been flying Spitfires for a few weeks. He managed to turn inside the Spitfire and was now in firing position, with Müncheberg hanging on, turning alongside him, his head spinning around to search for any Spitfires that might be coming to join the fight to even the odds against Galland.

Galland saw the Spitfire's wings inside the illuminated outer circle of his gunsight. Galland's Revi optical reflector gunsight, projected a red dot on a flat transparent panel behind the windscreen, above the instrument panel. Yet any pilot who spent too much time peering through the gunsight was likely to make himself vulnerable. A fighter pilot needed to acquire the target, focus, and shoot quickly without losing overall situational awareness.

Galland was running out of altitude. He had to pull up, but he could not do so suddenly. The Bf 109's ailerons had less effect at high speeds. Galland had to make his first burst count or the Spitfire would be able to run for home at treetop height. The Spitfire was turning tightly. Galland would have none of the advantages of attacking an unsuspecting target from directly to its rear. He had to calculate his aiming point ahead of

the Spitfire by eye and judgement. Galland knew how to judge deflection, to lead the target, to focus on it, aware that his wingman would warn him of any threat. The Bf 109, under his controls, was transformed from a flying machine into a firing platform.

Galland had two triggers, one for synchronised machine guns and one for cannon, on the top of his control stick. Until the guns were armed in flight on each mission, they remained collapsed against the control column. Now, they were ready for his gentle squeeze. This was his first shot of the day, one that had to count. Galland, the expert hunter of birds and aeroplanes, knew skilful aiming required less firing.

Following the red pyrotechnic paths of his tracer ammunition, Galland saw his bullets hit the Spitfire's fuselage, moving forward as the Bf 109 slightly overhauled its target, first hitting near the fuselage roundels and then moving forward to the engine exhausts. The Spitfire went down. Galland saw no need for a second firing pass. Klozinski was wounded. He managed to belly-land his Spitfire and ended the day in hospital. He was not to return to duty, as a ground instructor, for over two years.

Galland's battle with Klozinski had lasted less than two minutes of pure adrenaline-charged action. Now, he and Müncheberg pulled up at about 3000 feet, amidst the Stukas that had finished their dive-bombing attacks on Hawkinge. Galland had so fully concentrated on Klozinski during the spiralling pursuit that it was hard for him to have a sense of the direction of the other battles above, below and around him. But observers on Hawkinge airfield – those who were not taking cover from the Stukas – would have seen a blue sky full of many individual battles, with groups of one, two or three fighters manoeuvring.

To any such observers, the 'high' battle, which pitted only a few RAF fighters against the much larger force of the bulk of III/JG 26 and the rest of the top cover, would have appeared as a large number of specks, with the identity of Spitfire, Hurricane and Bf 109 indistinct as they rolled, twisted and turned. Unless someone had kept their eyes focused on one fighter throughout, they would not have made sense of the manoeuvres. Witnesses remembered the intricate patterns left by the white contrails – the streak of frozen water crystals from engine exhaust, depending on air temperature and winds aloft – that marked the track of each fighter, turning and weaving like strands in a tapestry.

To those same observers, the low battle would have been impossible to ignore. The Stukas attacked the airfield in near-vertical dives, pulling up at low altitude, barely missing the explosions of their own bombs on the target.

By the time Galland was able to take in the situation, the Stukas were heading for home. Gaps in their formation showed three had been shot down by RAF fighters. Nonetheless the Stuka attack on Hawkinge was a victory for Galland and the other escorting Bf 109s, for without their action, the slow, ungainly Stukas would likely have been massacred. And, even more importantly, smoke clouds rising from Hawkinge showed Galland that their bombing had been accurate.

Galland called his fighters on the radio to break off action and rejoin the formation to cover the withdrawal of the Stukas. Once the Stukas were on their way home, he led III/JG 26 back up to 18,000 feet and started looking for RAF fighters on their way home from the battle. He saw a Spitfire heading home and made a diving attack. This may have been Sergeant Nigel Lawrence of 54 Squadron, who had attacked the Stukas at low altitude over Hawkinge. He parachuted from his Spitfire. Pulling up

from this attack, Galland saw another Spitfire, turning to get behind one of his unit's Bf 109s. He was able to turn in behind it and open fire. The Spitfire broke away, apparently damaged but still flying. Galland was too low on fuel to pursue. He led his fighters back across the Channel to their base.

For all its intensity, the air battle over Hawkinge did not lead to mass casualties. Of the dozens and dozens of individual battles that made up the larger action, the vast majority ended with no one being shot down, confirming the larger truth of fighter-to-fighter combat: only when the target was unaware or, as with Galland, the pursuer had the time and the skill to manoeuvre into a position where it did not matter that the target was aware, was it highly lethal. In this hectic fight, the RAF had lost two Spitfires and two Hurricanes; the Germans, in addition to the three Stukas, had lost two Bf 109s. While the Stukas had inflicted considerable destruction on Hawkinge airfield, it was not one of the sector stations at the heart of Fighter Command. The damage did not reduce the RAF's ability to intercept the next wave of raiders that were now crossing the Channel. In fact, the most serious damage the Stukas had inflicted was inadvertent; they had severed the power cables to three British radar stations that ran by the airfield. Yet, as happened throughout the Battle of Britain, the Germans' intelligence left them blind. The Luftwaffe had had no idea about the cables. Unaware that the radar stations had been put out of action, they were unable to take advantage of their success. Galland recalled, 'we learned very soon that English radar was just perfect, but we neglected to attack the system'.⁸

¹ Arman van Ishoven, *Messerschmitt Bf 109 at War* (Shepperton: Ian Allan, 1974), p. 58.

² Mombeeck, *In the Skies of France*, vol. 1, p. 207.

³ Galland's description of this battle is from Baker, *Adolf Galland*, pp. 111–15. It does not mesh with the times and places for his victory claims in Prien et al., *Einsatz am Kanal und Über England, 26.6.40 bis 21.6.41*, Teil 4/I, (Eutin: Struve's, n.d.), p. 336.

⁴ AIR 64/82, Central Fighter Establishment, *Visual Acuity of Fighter Pilots*, Report 76, 5.9.46, p. 31, National Archives (UK).

⁵ Quill, *Spitfire*, p. 175.

⁶ Franks, *Air Battle of Dunkirk*, p. 27.

⁷ J.A.D. Ackroyd and P.J. Lamont, 'A Comparison of Turning Radii for four Battle of Britain Fighter Aircraft', *The Aeronautical Journal* (January 2000), pp. 53–8.

⁸ Personal conversation with Adolf Galland, Washington DC, 16 November 1978.