



LUFTWAFFE COLOURS



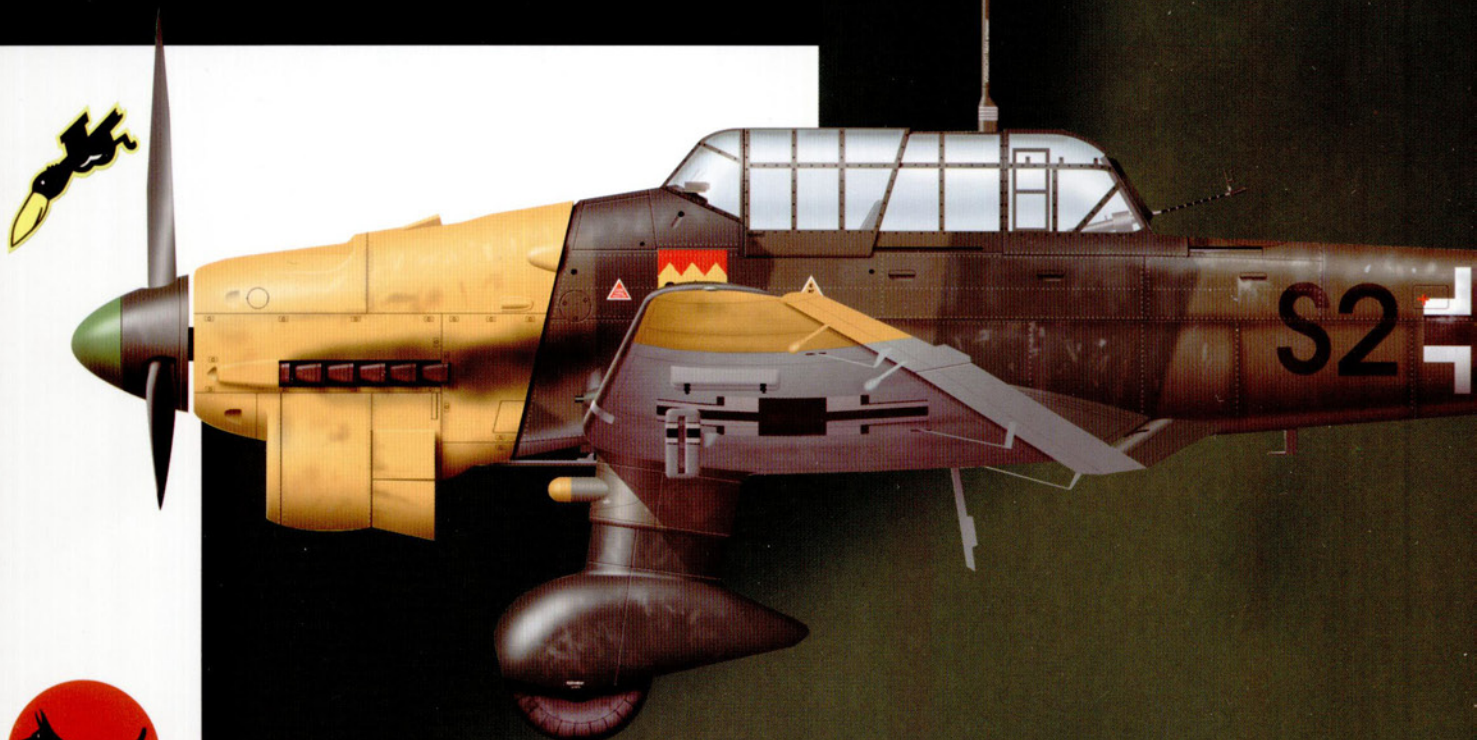
STUKA

Volume One

Peter C Smith

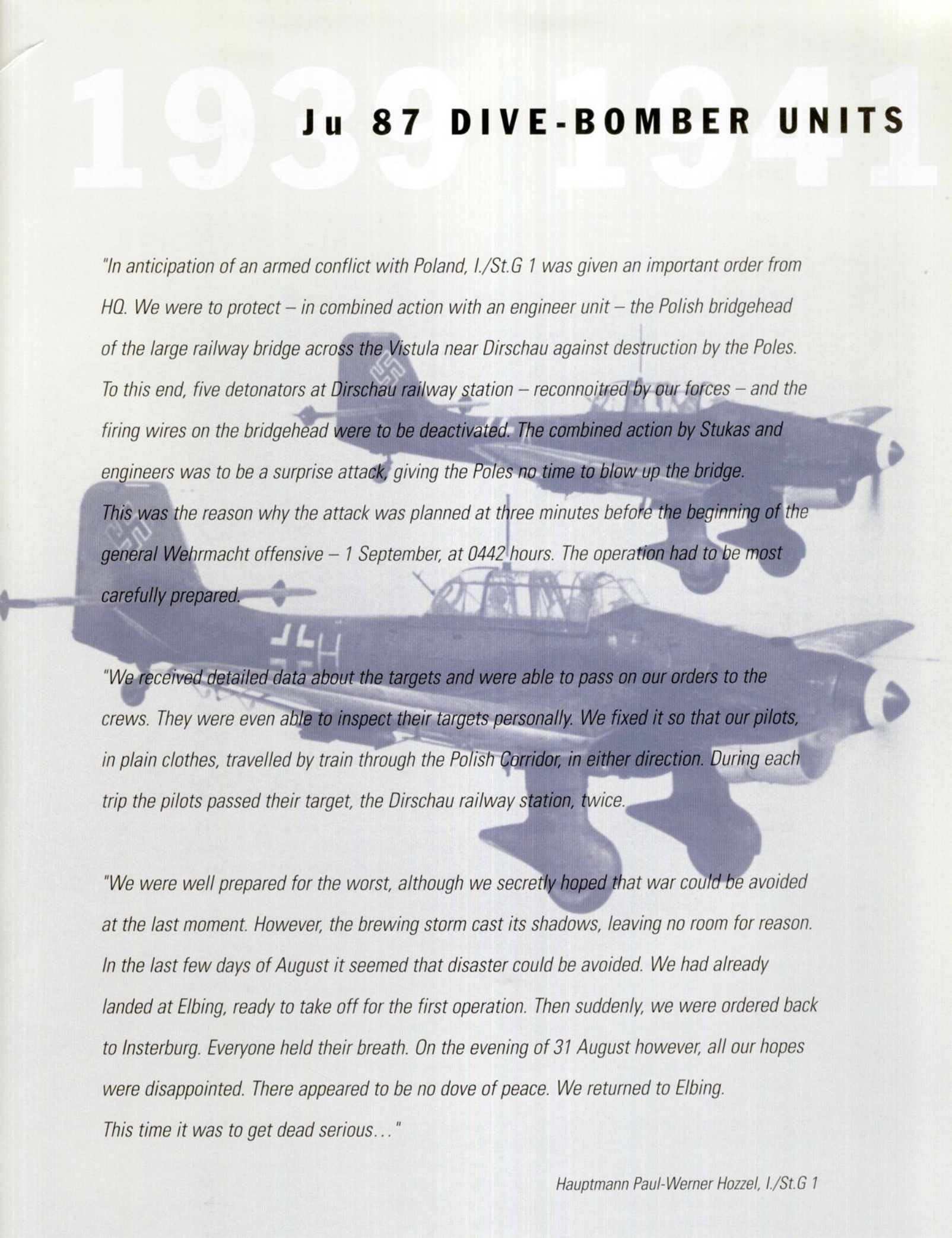


LUFTWAFFE Ju 87 DIVE-BOMBER UNITS 1939-1941



1939 1941

Ju 87 DIVE-BOMBER UNITS



"In anticipation of an armed conflict with Poland, I./St.G 1 was given an important order from HQ. We were to protect – in combined action with an engineer unit – the Polish bridgehead of the large railway bridge across the Vistula near Dirschau against destruction by the Poles. To this end, five detonators at Dirschau railway station – reconnoitred by our forces – and the firing wires on the bridgehead were to be deactivated. The combined action by Stukas and engineers was to be a surprise attack, giving the Poles no time to blow up the bridge. This was the reason why the attack was planned at three minutes before the beginning of the general Wehrmacht offensive – 1 September, at 0442 hours. The operation had to be most carefully prepared.

"We received detailed data about the targets and were able to pass on our orders to the crews. They were even able to inspect their targets personally. We fixed it so that our pilots, in plain clothes, travelled by train through the Polish Corridor, in either direction. During each trip the pilots passed their target, the Dirschau railway station, twice.

"We were well prepared for the worst, although we secretly hoped that war could be avoided at the last moment. However, the brewing storm cast its shadows, leaving no room for reason. In the last few days of August it seemed that disaster could be avoided. We had already landed at Elbing, ready to take off for the first operation. Then suddenly, we were ordered back to Insterburg. Everyone held their breath. On the evening of 31 August however, all our hopes were disappointed. There appeared to be no dove of peace. We returned to Elbing. This time it was to get dead serious..."

The *Luftwaffe* and the Dive-Bomber

Introduction

Among the reams of paper devoted to the history of the Junkers Ju 87 that have appeared in the last half-century or more, very little has been in any way objective or impartial. The whole subject of Nazi Germany and the Second World War is so emotive that it has appeared difficult for many historians to be objective and for them to stand back and analyse the 'Stuka' (*Sturzkampfflugzeug* – dive-bombing aircraft), as the Ju 87 became famously known, simply as a revolutionary instrument of war. There is a curious reluctance, to shake off the myths bestowed by Allied counter-propaganda, so assiduously propagated over sixty years ago when the task was then urgently to de-bunk the very success of this aircraft in changing air/land warfare.

As the most famous Ju 87 pilot of all, Hans-Ulrich Rudel, found in 1945, Western thinking resolved almost entirely around the question of speed, the god to which all else was sacrificed and there was no meeting of minds on the importance and desirability of accuracy of delivery. Another obsession was that with the heavy bomber, which according to the assertions of the likes of Douhet, Trenchard and Mitchell, was supposed to win wars unaided by armies or navies. The champions of this chimera totally dominated RAF and USAAF doctrine to the exclusion of virtually all else and putting it into practice against the German civilian population cost untold millions, compromised the moral ascendancy of the Allies and the lives of 50,000 young British aircrew alone; and still the Soviet, British and American land armies had to fight their way into Germany to end the war; all on the backs of the Allied navies who kept the sea lanes clear and supplied the fuel and food to sustain the advance. There were reasons for this mindset, especially within the RAF, which, having gained its independence in 1918, was determined never, to bow to the slightest hint of any tactic which suggested subservience to its former creators. Air/land co-operation to the British meant the Westland Lysander reconnaissance aircraft. The Germans thought very differently.

As with Günter Schwartzkopff, the hierarchy of the new *Luftwaffe* largely comprised former army officers. They saw their role as aiding the ground forces in every way possible; their commitment was wholehearted and enthusiastic, and remained so. There was to be a particularly strong bond between the *Stukas* and the troops on the ground. *Generalfeldmarschall* Albert Kesselring recorded that the British dread of the *Stukas* equalled the German troops' affection for them. From being the 'Flying Artillery' of 1940, the Ju 87 aircrews, by their continued and unstinting application, earned the epithet 'Flying Infantry' from the men in the foxholes at the front. No such bond and continuity of commitment existed between the PBI and the 'Dogfaces'¹ of the Western allies and their aerial counterparts. This unity of thought and effort was the outward manifestation of German policy, but why was it so different to the West?

Most historians judge the *Luftwaffe's* embracing of the dive-bomber as a mistake; the total and absolute failure of the Fairey Battle and Bristol Blenheim to affect the outcome of the Battle of France and the Low Countries is conveniently ignored, whereas; the Battles of the Ruhr and Berlin presented as great victories despite enormous losses. But in judging the *Luftwaffe's* decisions taken in the 1930s, with the eye of hindsight as to how the war had turned out by 1945, a far too simplistic view is presented. Let us instead look at how the world appeared to Germany in 1933.

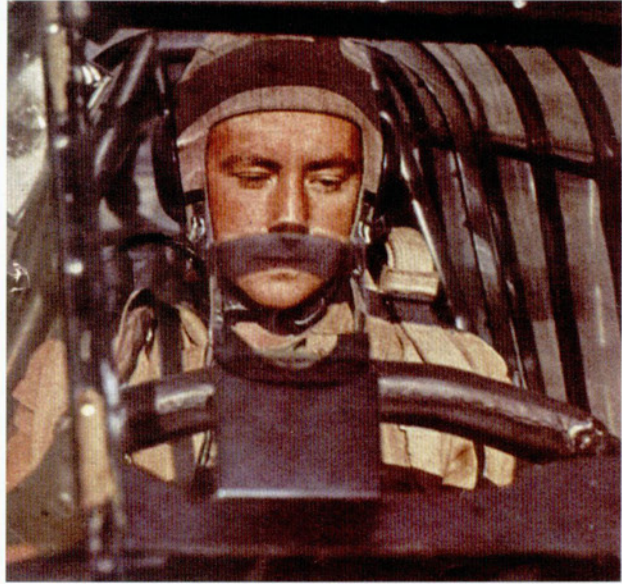


¹. 'Dogface' – US slang (1932) for soldier, esp. infantryman

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1939-1941

The problem for German military strategists had always been the nightmare of the 'Two-Front War'; the German politicians have always sought to lessen the threats from both sides by expedient alliances and to defeat their enemies one-by-one. Bismarck masterfully managed it for years, so that France, Denmark and Austria were all dealt with decisively in their turn. But once *Kaiser Wilhelm II* dismissed such a wise head, such logical progression was abandoned. In consequence, on outbreak of war in 1914 the old dilemma faced the Germans. Hold the Russians while the French and British were defeated, and then turn east. But it was always a question of balance. Adolf Hitler, dismissed as an illiterate opportunist, initially at least, managed the problem with consummate skill, aiding the huge pacifism and lack of will to stand up for themselves of Germany's many opponents, which even included Fascist Italy in the mid-1930s, at the beginning of German re-armament. Thus, step-by-step German borders were secured, then extended – the Saar, Rhineland, Austria, the Sudetenland, the rump of Czechoslovakia, Memel, then Danzig.



This nibbling expansion at the edges of the Reich was consistent with the tactical approach. No potential victim was beyond the range of the German *Luftwaffe*, as it was constituted at the time; there was no need for a long-range bomber that could reach London or Moscow; for the simple reason that they were not then targets. What did face the German Army were formidable static defences: Czechoslovakia, Belgium and France had each developed fortresses along their borders with Germany that appeared formidable. What was needed was not range but precision to crack such defences. In the event the Germans simply outflanked two of them – the Czechs were outflanked politically, the Maginot line was outflanked physically; the Belgian forts the Germans were to tackle head-on; but boldly and originally, and the *Stuka* provided part of the crucial and radical approach to these age-old problems. It was no longer necessary to haul heavy artillery laboriously across previously conquered territory to take on such forts and support the assault troops; instead the *Stuka* could accomplish the task, easily and more accurately.

Aside from such purely military considerations, there was the economic factor. Germany was proceeding vigorously to re-arm herself after the harsh terms of the Treaty of Versailles, using every trick in the book to evade its restrictions in the process. However, the weapons had to be paid for and Germany had been hard hit by the Depression. Although the finances of the Reich were unstintingly devoted to military expenditure, there was not a bottomless bucket of *Reichsmarks* and there were many conflicting demands on the Treasury. Nor was Germany's manpower limitless either. If a two-man precision aircraft could achieve all that the military demanded of it, why build much larger six- or seven-man machines at ten times the cost and less than a quarter of the accuracy?

So a tactical air force was both cost-efficient and fulfilled the combat requirement of the day and it served well enough against an old-fashioned and largely unprepared enemy. Indeed the many critics of the dive-bomber inside the *Luftwaffe*, as well as its supporters, were confounded by its initial achievements in Poland and France. Only the thirty-five kilometres of salt water prevented the dynamic combination of *Panzer* and *Stuka* making the leap, across the English Channel, just as they had across the river Meuse. For combination was the key, and the *Stuka* should never be seen in isolation, but as part of a team. The *Stuka* would paralyse and support, the *Panzer* would overrun and occupy. One arm needed the other in a symbiosis of speed and power designed always to keep the opponent of the back foot and always reacting. The English Channel stopped that crucial momentum, and was the physical barrier that thwarted Hitler's ambitions no less than it had Napoleon or Philip of Spain earlier. Had the winning combination been able to maintain the momentum, then the radar chain, many of the crucial airfields and the naval bases that constituted Britain's first line of defences would have been occupied by German tanks.

But such an insurmountable barrier just did not come into the equation when in the spring of 1941, Germany turned first south to the Balkans, and then east for the final confrontation with her ideologically most profound enemy, Stalin's empire. In both cases, the *Panzer/Stuka* duo was to prove initially as irresistible and effective as ever. By the end of 1941, and the range of this volume, the Ju 87 had fully justified itself as a weapon of war.

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Development of the *Sturzkampfflugzeug*

The Ju 87 did not simply appear in isolation, nor did such a major instrument of German military policy come about merely as a sop to appease a passing whim of Ernst Udet by an indulgent Hermann Göring. Two more enduring myths we can consign to the rubbish bin of the endlessly peddled misconceptions of this aircraft. Certainly the Udet story is true in itself; the Curtiss Hawks were indeed purchased in the early 1930s and brought back to Germany to be paraded by the former First World War fighter ace, who, by 1936 was established by Göring as the Inspector General of Fighters and Dive Bomber Pilots; but dive-bombers and dive-bombing had occupied the attentions of the *Reichsluftfahrtministerium* (RLM) and the Reichswehr its predecessors many years before this occurred.

There had already been a strong aerial support element within the German Army since the early days of the First World War – the *Schutzstaffeln* or *Schusta*, and these had developed by May 1918 into *Schlachtstaffeln* or ground-attack units. Like the equivalent Royal Flying Corps opposite numbers these conducted low-level strafing and light bombing attacks against both massed infantry and, later, individual tanks. Initially using fighter aircraft, gradually more specialised machines were designed with armour protection and enhanced striking power of which the Junkers Ju J1 was state-of-the-art by the end of the war. Junkers also produced the Junkers Ju 10, forty-three of which saw service in the east, but none of these aircraft could undertake dive-bombing.

Contrary to yet another myth, which refuses to die although it was exposed more than thirty years ago, it was *not* the US Marine Corps, let alone the US Navy, which ‘invented’ dive-bombing in the 1920s. The first combat dive-bombing mission was carried out by Second Lieutenant William Henry Brown of Britain’s No.84 Squadron RFC flying an S.E.5a aircraft against German ammunition barges moored at Bernot. Post-war, intensive dive-bombing trials were conducted by the RAF at the Royal Aircraft Establishment’s Orfordness Armament Experimental Station in 1918 with both the S.E.5a and the Sopwith Camel fighter.

The Army Weapons Bureau, secretly established by the Imperial Trade Ministry in 1925 to evaluate aircraft and keep a kernel of the disbanded German Military Aviation Industry in being, had, four years later, contained the Aviation Technical Group (WaPrw 8). Among the projections for a tactical emergency air force to emerge from *Oberstleutnant* Hellmuth Felmy for the period 1927-32, was, for the first time, a requirement for a *Sturzkampfflugzeug*. Meanwhile Ernst Heinkel was designing maritime aircraft where the need for precision in bomb delivery was vital, and had resulted in the custom-built He 50 and He 51 at the initial instigation of the Japanese and then modified for the *Fliegerstab* of the *Reichsverkehrsministerium* at Rechlin. The concept was later taken further with the production of the He 66a dive-bomber for the Chinese air force. Fighter pilots of the embryo *Luftwaffe* followed the precedents set by other nations with naval air arms and practiced a form of light dive-bombing with existing fighter aircraft.

Other nations, including Sweden, were similarly conducting experiments with the dive-bombing concept. Starting in 1931, *Dipl.-Ing.* Karl Plauth, a former German fighter ace, and *Dipl.-Ing.* Hermann

Pohlmann, who had designed a two-seater monoplane fighter under the disguise of the Junkers A 48, tested it, fully stressed with dive-bombing potential as a secondary facet, at *Flygindustri AB*, located at Linhamn, near Malmö, with the Swedish designation K 48. Dive-bombing tests continued in 1933 at the Bofors plant, with *Junkersflugzeugwerk* providing the K 47, the *Fliegerstab* the facilities and the Finnish Air Force the bombs, with test pilot Willi Neuenhofen. These tests continued and gradually the refinements of vertical bombing – dive brakes, the telescopic sight etc – produced good results compared with horizontal bombing. Trials continued at Lipetsk in the Soviet Union. These planned

Ernst Udet, the former First World War fighter ace and stunt pilot, shown here during a visit to the USA. It was in America that he witnessed a demonstration of the Curtiss Hawk II, the export version of the F11C-1 Goshawk.



Oberstleutnant Hellmuth Felmy was an Army officer in the late 1920s. He made the first proposal for the requirement for a Sturzkampfflugzeug. Felmy subsequently joined the Luftwaffe in November 1933 and later saw service in Greece and Iraq.



The Junkers J 1 (factory designation J 4) entered service in the Infanterieflieger units in 1917. The aircrews viewed the aircraft with considerable favour, due to it being immensely strong and also for the armour protection it afforded. The machine was used to fly low over the trenches and supply troops with ammunition and rations as well as low-level machine gunning of enemy trenches.

A production example of the British S.E.5a fighter of 1917-18, s/n B'4897, with a strengthened undercarriage. This type of aircraft was used by the fledgling RAF to conduct dive-bombing trials and a machine flown by 2nd Lt William Brown of No.84 Squadron carried out the first known combat dive-bombing mission.



1939-1941



The American Curtiss Hawk II so impressed Ernst Udet that he persuaded the RLM to purchase two examples for evaluation. Upon their arrival in Germany in December 1933, the machines were extensively tested at the Rechlin Experimental Centre. One of the machines is shown here in German markings.

or proposed results brought about the requirement, in October 1933, that the fighter *Geschwader*, JG 132, familiarise itself with dive-bombing, and the following year it re-equipped, first with the Heinkel He 50 and then with the He 51 and the Henschel Hs 123. JG 132 was followed by two further fighter *Gruppen* in 1934 flying the He 51 and Arado Ar 65 as well as the He 50.

Swedish experiments continued the same year at Frösön and then Malmått with Hawker Hart S 7 aircraft. These aircraft featured the German-built Askania automatic dive-bombing sight and attachments. New dive-bombers appeared in Germany as the momentum gathered, the Fieseler Fi 98 and the Henschel Hs 123, all this well before Udet's Hawks reached the Fatherland. From 1933 onward Pohlmann continually developed the Ju 87 embodying all that had been learnt and the V1 prototype first flew on 17 September 1935. Once trials against the three most likely opponents had been completed, in the Ju 87's favour, expansion followed rapidly. Much has been made of the rejection of the more aerodynamically advanced Heinkel He 118 which featured a retractable undercarriage. But with a maximum dive angle of only forty degrees it was a 'soft' machine; the very ruggedness and strength of the Ju 87 told in its favour. For reliable close-support the *Wehrmacht* wanted as near a continuous overhead presence as possible, to be operated from rough airstrips near to a rapidly moving front. Only the *Stuka* fitted the bill. Also overlooked is, that although the He 118 might *look* a sleeker and advanced aircraft, her maximum speed was almost identical to the Ju 87.

The adoption of the Ju 87 was therefore undertaken to give the *Luftwaffe* a 'heavy dive-bomber', but it was never planned to be more than an intermediate aircraft for the job, a replacement was being designed, the Me 210 A-1, which, under the Concentrated Aircraft Procurement Programme adopted on 7 November 1938, was to re-equip a total of eight (later increased to twelve) *Sturzkampfgeschwader* by 1942.

Even by mid-1936, there was by no mean unanimous approval of the *Sturzkampfbomber* concept in the *Luftwaffe*. While some like *Generalleutnant* Walther Wever, the Chief of Staff, Udet, Schwartzkopff and *Hauptmann* Hans Jeschonnek espoused the cause with enthusiasm, others, like *Oberstleutnant* Maximilian Ritter von Pohl, were, at best luke-warm, and others, like *Oberstleutnant* Dr-Ing Wolfram von Richthofen at the RLM, while not opposing dive bombing so vehemently as some, was dead against the Ju 87 in particular as the correct vehicle to deliver it. There was no such opposition from the Technical Office however, and combat experience gained subsequently by the *Kette* of *Stukas* (initially *Antons* and subsequently *Bertas*) that participated in the Spanish Civil War only



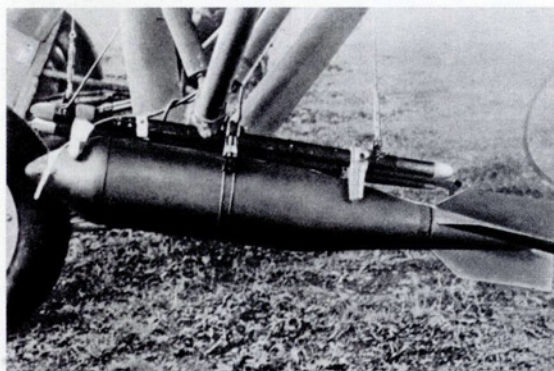
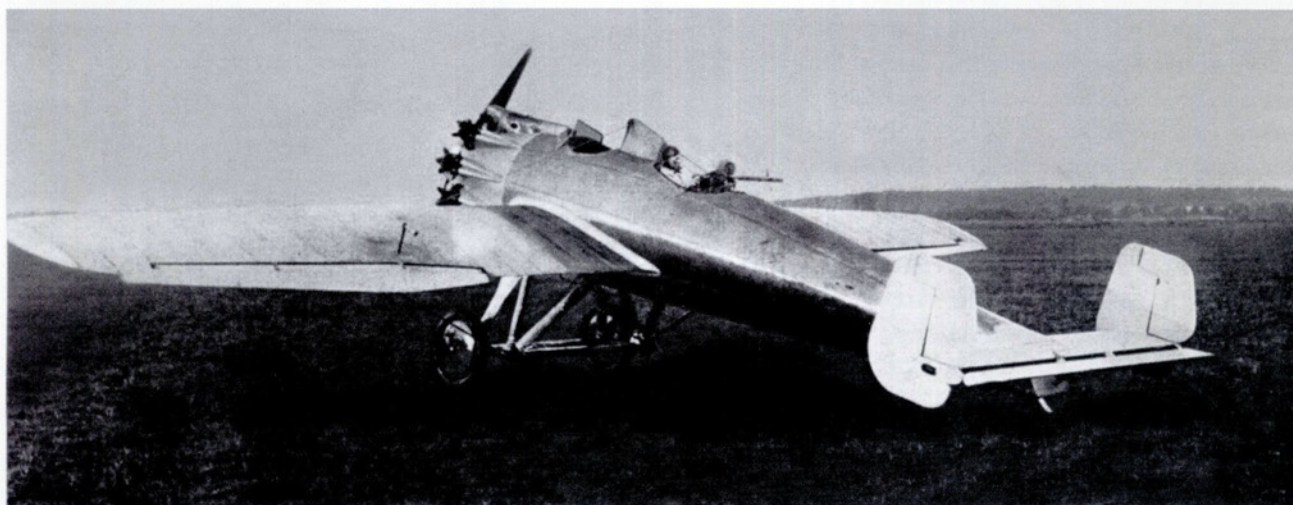
The Heinkel He 50 biplane was used in small numbers by JG 132 shortly after its formation in order to experiment with dive-bombing. Originating from a Japanese specification for a two-seat dive-bomber, it was a particularly strong aircraft able to withstand high diving speeds. It played a key role in Germany's pre-war dive-bombing development. Trials were conducted using cement 'bombs' at Rechlin and Warnemünde. This example, LP+GY, was attached to a training unit based in Czechoslovakia in 1939-40. The aircraft was finished in RLM 02, features a pre-war positioned Hakenkreuz and coloured wheel spats, possibly in black or red.

In 1936, the issue of dive-bombing forced a divergence of opinion within the senior levels of the RLM. Oberst Ernst Udet, Chief of the Luftwaffe's Technical Office, was an enthusiastic proponent of the concept and a firm believer in the development of the Ju 87.

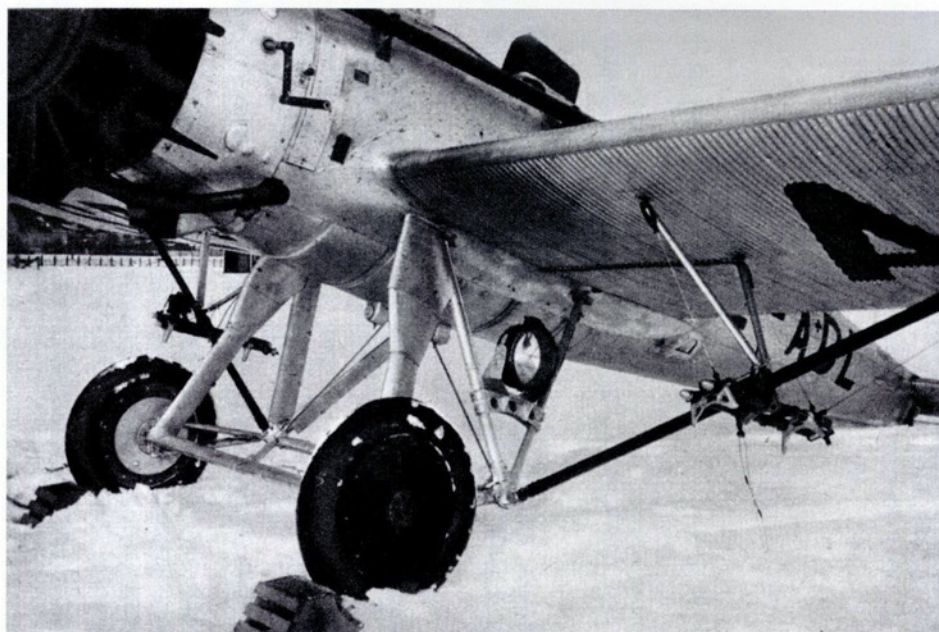


The designer of the Ju 87, Dipl. Ing. Hermann Pohlmann (centre, in suit), with other Junkers employees. Pohlmann joined the Junkers company in 1923 and became its chief designer.

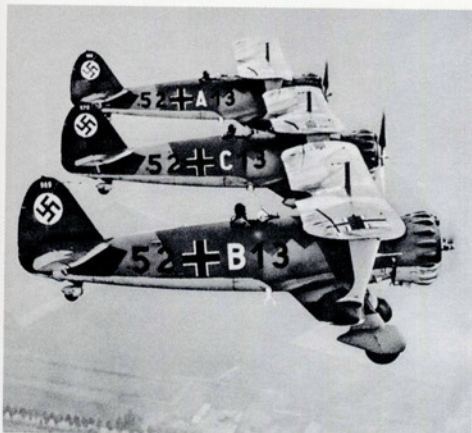
The Swedish-built Junkers K 47, which first flew in 1928, was the direct ancestor of the later Ju 87.



The bomb racks fitted to the K 47 for testing and development purposes.



1939-1941



Arado 81 V3

Although the word 'Stuka' is a contraction of the German word *Sturzkampfflugzeug*, meaning dive-bomber aircraft, and therefore refers to all aircraft capable of performing the dive-bombing role, the term has, by popular usage, come to be synonymous with the Junkers Ju 87.

However, when the first *Stukageschwader* were established in 1935, the Ju 87 was still in the development stage and the dive bomber units were equipped with the He 50 until replaced with the more robust Hs 123 sesquiplane. The Hs 123 was also originally designed as a dive-bomber and is shown here in the pre-war 61/62/63/65 camouflage scheme. It saw pre-war service with a number of dive-bomber units, this *Kette*, flying in neat formation in 1937, comprising aircraft from 2./St.G 165 'Immelmann'. When replaced by the Ju 87, the Hs 123 subsequently equipped 11. (Schlacht)/LG 2, for a long time the Luftwaffe's only dedicated ground-attack unit, and performed valuable service in Poland, France, the Balkans and in Russia. This demonstrated the immense value of dedicated ground-attack aircraft and led to the creation of the later ground-attack units *Schlachtgeschwader 1* and 2.



Blohm und Voss Ha 137 V4

The contract for a Luftwaffe dive-bomber was placed in September 1933 and, apart from Junkers, three other companies, Arado, Blohm und Voss and Heinkel, submitted proposals. Evaluation of the four proposals took place at Rechlin in March 1935 between the Arado 81, here actually represented by the V3, the Blohm und Voss Ha 137 V4 D-IFOE, and the Heinkel He 118 V1 D-AKYM.



Heinkel He 118 V1



Oberstleutnant Wolfram Freiherr von Richthofen (seen here as a Generalmajor), in charge of Luftwaffe testing, firmly resisted further development – at least with the Ju 87.

reinforced their enthusiasm. The Ju 87 was still regarded mainly as a precision instrument for bombing vital targets just behind the front line rather than as a close-support aircraft *per se*, but that was about to change.

Whatever the differences of opinion inside the *Luftwaffe*, it was a well honed and supremely confident dive-bomber force, the largest such force outside of the United States and Japan, that stood ready to initiate the Second World War by opening hostilities against Poland on 1 September 1939.

The Early Prototypes

The first unarmed *Versuchsflugzeug* (experimental aircraft or prototype), the Ju 87 V 1 ('V' for *Versuchsmuster* – Research Variant) had been completed (W.Nr. 4921) in April 1935, but it was not until 17 September 1935 that it made its maiden flight piloted by test pilot Willi Neuenhofen. Already ten weeks late, this machine, with the civilian registration D-UBYR, featured a twin-fin tail, but had the inverted gull-wing configuration and massive 'trousered' fixed undercarriage fairings and was powered by a British Rolls-Royce Kestrel V in-line engine since the planned power plant, the Jumo 10 (later the Jumo 210) was still not ready.

This aircraft performed satisfactorily enough initially, but, on 24 January 1936, while undergoing further tests to ascertain the terminal dynamic pressure in a vertical dive, Neuenhofen lost control and spun in killing himself and test flight engineer, Heinrich Kreft. This tragedy led to some doubts about the stability of the double fin layout and the design was dropped from all subsequent variants. Officially, an enquiry blamed the crash on faulty design on the wing, resulting in lack of strength for the loading imposed.

The V 2, (W.Nr. 4922) with single fin and powered by a 618hp Jumo 210Aa engine (later replaced by a Jumo 210G), drove a metal three-bladed propeller and featured a deeper radiator to cure overheating. This aircraft made its debut flight on 26 May 1936, flown by test pilot Hesselbach. It then took part in the competition

against its rivals, and, despite being the least favoured, finally won the day. The civilian registration, D-UHUU, was later replaced by D-IDQR on modification. It remained as a test machine at Dessau until 1940 when it passed to the German Post Office as an experimental mail carrier.

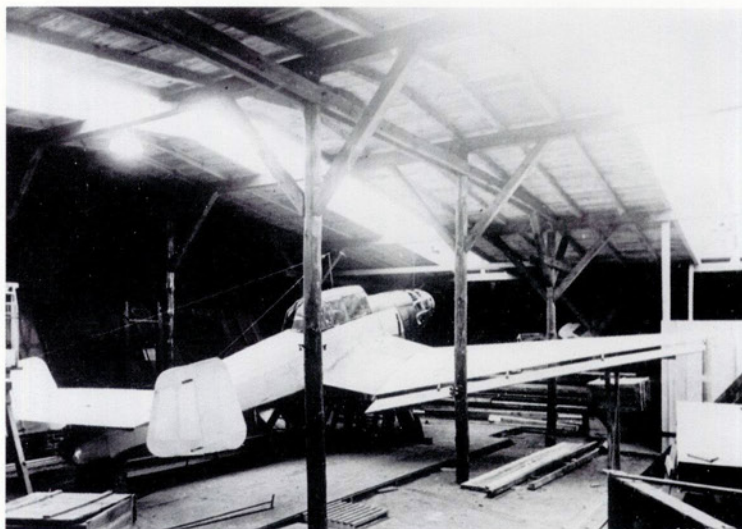
The V 3 (W.Nr. 4923, civilian registration D-UKYQ, later D-IBXF) first flew at Dessau on 27 March 1936 and differed from the V 1 only in having the elevator fitted with balance weights and a slightly changed profile of the undercarriage fairing. It ended its days with the Junkers film studio in 1940.

The first prototype to carry any armament was the V 4 (W.Nr. 4924, D-UBIP), which also had a modified engine cowling to improve the pilot view. The single fixed MG 17 weapon was fitted to the port wing. Other design modifications included a slightly larger fin area and the tail profile was changed. This machine made its maiden flight on 20 June 1936, but the test programme was delayed until it

The Ju 87 V 1 prototype was powered by a Rolls Royce Kestrel V engine, driving a two bladed propellor (the Jumo 210 was not ready) and was distinguished by a twin tail fin arrangement. It was in this aircraft that the Junkers test pilot Willi Neuenhofen and flight test engineer Heinrich Kreft were killed on 24 January 1936 during diving trials.



The Ju 87 V3, carrying the civil code D-UKYQ, was fitted with a Jumo 210 A engine and featured a larger radiator and single fin and rudder unit but no dive brakes as yet.



In September 1934 Junkers built a wooden mock-up of the original concept for the Ju 87 design which had a twin fin and rudder arrangement (reminiscent of the Junkers K 47 of 1928).

1939-1941

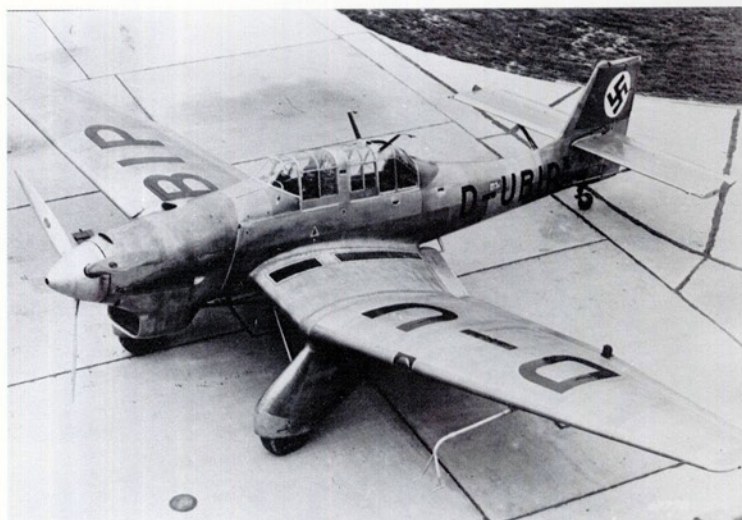
was fitted with the new slatted dive-brakes under the wings that same October. The V-4 was then sent out to Spain to join Versuchs Jagdstaffel 88 of the *Legion Condor* for trials under full combat conditions. It was shipped back home on 15 January 1937 to join its sister, V-5 (W.Nr. 4925) which first flew on 14 August 1936 and which also went to Spain. It served as the model for the first production *Stuka*, the Ju 87 A-0, or 'Anton'.

The Anton

The A-0 variant totalled eleven aircraft; this short run constituting *Werknummern* 087-0001 to 0011, which had the sequential civilian registrations F-IEAA thru D-IEAK and were completed from August 1937 to February 1938.

They featured the new cockpit hatch design, which opened upward, and outward and the rectangular window in the pilot's cockpit floor to aid sighting prior to the dive.² Earlier models had the yoked or ringed control stick, later done away with, and all had a straight leading edge to the wing to facilitate production tooling. They were fitted with radio equipment and re-designed dive brakes. Protracted dive-bombing trials and test flights revealed that the Ju 87 was still vastly under-powered and some machines had the Jumo 210 D engine fitted in an attempt to remedy this. They served as test beds for some years after this, including (prophetically) cold-starting techniques, and the trio that survived beyond 1940 served in training units until the last was destroyed in a collision in 1943.

The first A-1 (W.Nr. 87-0012, civilian registration D-IEAU) was basically the same aircraft with the Jumo 210 D as its standard propulsion unit, but still only carried the single MG 17 machine gun in the starboard wing, the sighting of which was undertaken with the Revi C 12C gun sight, and a single MG 15 in a slit mounting with restricted views. The Askania pull-out apparatus for automatic dive sequence recovery was fitted after testing by the female test pilot Melitta Schiller. The maximum bomb load was a single 250 kg bomb carried on a swinging fork to clear the arc of the propeller when released in a vertical dive. This was not unique to the Ju 87, but was standard dive-bomber equipment at this time. If the second crew member, the radio equipment and the MG 15 were all omitted from a sortie, a 500 kg bomb could be carried into action. Sighting was with the 'Stuvi' (*Sturzkampfviseur*) dive-bombing sight. The maiden flight was made on 26 February 1938, construction being undertaken at Bremen.



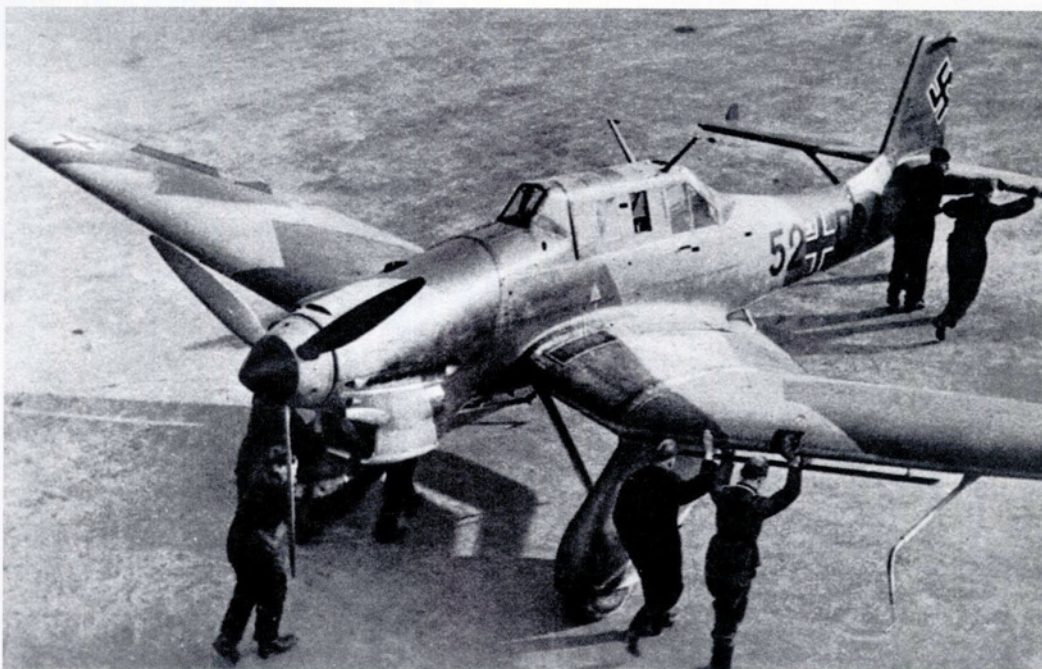
The Ju 87 V 4, D-UBIP, served as the production prototype for the subsequent 'A' series. It was sent to the Erprobungsstelle Rechlin where it was extensively used to conduct dive bombing tests.

Ju 87 A-1, D-IEAU, showing early splinter pattern camouflage and early-style tail Hakenkreuz. The aircraft also carries a small numeral '12' below the horizontal stabiliser, which may denote its delivery number from the production line at Dessau.



² An Australian test pilot who flew a captured *Stuka* could not figure out what use this window was put to!

This Ju 87 A-1 of II./St.G 165 shows an example of the five-character military code system which was employed from the autumn of 1935 to the autumn of 1939. This particular machine is coded 52+D24.



Despite its overall dark appearance, the segments of 63 visible on the starboard wing and immediately behind the canopy confirm that this production Ju 87 A-1 was finished in the 61/62/63/65 scheme. Note also the Swastika banner on the tail.



Junkers Ju 87 A-1 of 4./Stukageschwader 165, Schweinfurt, 1939

This aircraft is finished in camouflage and markings typical of the immediate pre-war period with uppersurfaces in RLM 61, 62 and 63 and undersurfaces in RLM 65. Note the style of Swastika employed on the fin, the earlier red banner and white disc having been replaced in January 1939.

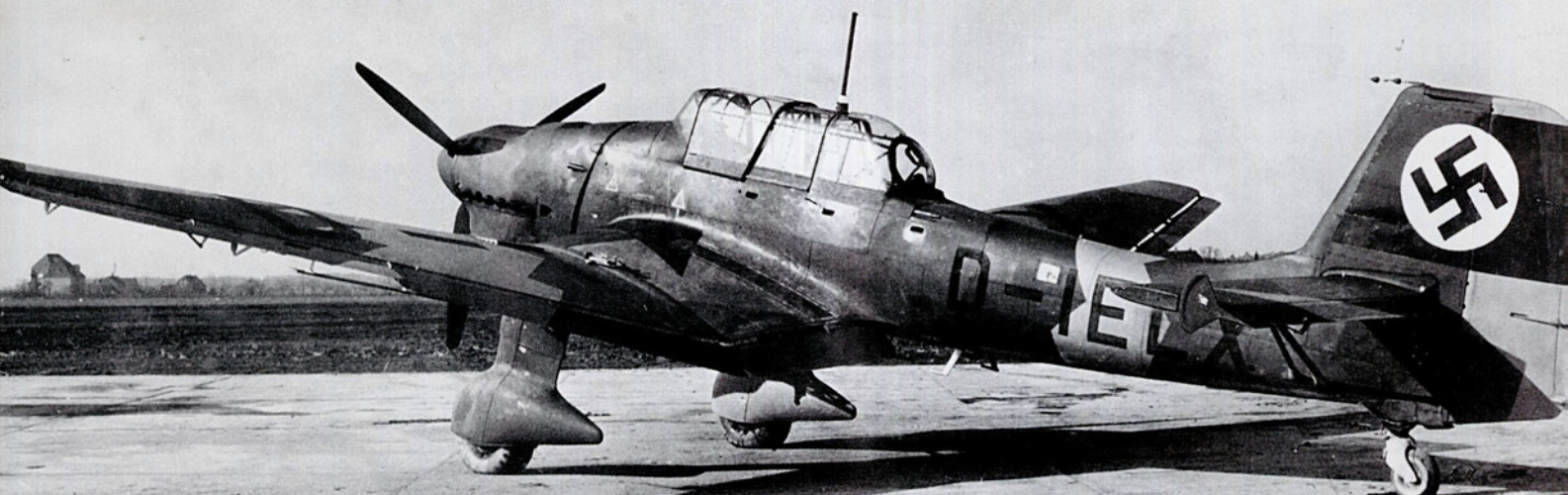
The A-2 (*Werknummern* 087-0420, 0423 and 0427 to 0429) had only slight improvements, mainly radio-telegraphy (*Funktelegraphie* – FT) and *Eigenverständigungs-Anlage* – EiV) intercom equipment. A two-stage supercharger was fitted for the new H-PA-III manually adjustable propeller. The tail fin was modified at the top and these aircraft were later fitted with the 690 hp Jumo 210 DA engine. Test pilot Harder flew five of these between 3 and 7 June 1938. These two variants enabled the formation of four of the planned six *Stukagruppen*, from 15 March 1937 onward: I./St.G 162 based at Schwerin; II./St.G 162 at Lübeck-Blankensee; I.St.G 165 at Kitzingen and III./St.G 165 at Schweinfurt. Only 262 *Antons* were ever built, due to the fact that the successor was already appearing, this being the *Berta*. The rapid replacement of the *Anton* in operational service meant that the bulk of the latter were quickly moved to the new dive-bomber training schools from 1938 onward. The initial *Stuka* schools – *Stukavorschule* 1 and 2 – were established at Bad Aibling and Piacenza in 1941, with other *Stukaschule* (dive-bomber schools) forming up at Kitzingen, Insterburg, Otrokowitz, Graz-Thalerhof, and Wertheim/Main, and later at Foggia³. Two machines were exported to Japan as the Ju 87 K-1 (71-E11 & 12) and were assembled by the Mitsubishi company in January 1938 for evaluation by the Imperial Japanese Army. They were not taken up and one ended its days in a museum in Tokyo before being fire-bombed by the USAAF late in the war. Despite persistent allegations, they had absolutely *no* influence whatsoever on the design or construction of the Aichi D3A1/2 'Val' dive-bomber used so effectively by the Imperial Japanese Navy.

The Berta

The obvious inadequacy, even for an 'interim' dive-bomber, of the *Anton*, had already initiated an improved model from the Junkers team. The basic requirement was for a more powerfully-engined aircraft capable of carrying two crew members, adequate defensive armament and radio equipment and either a single 500 kg bomb or a single 250 kg bomb and up to four wing-carried 50 kg bombs into battle. The basic airframe was to be maintained but weight had to be shed without any loss of strength.

The testing of the various components to bring about the desired end-product resulted in a further number of test machines. The V6 was a modified A-1 (W.Nr. 87-0027, civilian registration D-IDJU) to test the newly developed 30-litre Jumo 211 A1, liquid-cooled inverted V12 engine, which first flew on 14 June 1938. A second machine, the V7 (*Werknummern* 087- 0028, civilian registration D-IDFS) flew on 23 August 1937, with the same power plant, and it was followed by the V8 and V9 prototypes (*Werknummern* 087 4926 and 4927). Little modification was made to much of the *Anton*'s airframe generally, but the nose was radically changed, the cockpit much improved, vertical tail surfaces enlarged and the undercarriage both simplified and strengthened, with oleo compression eliminating

This Ju 87 B-01 W.Nr. 4927, shown here with the civilian registration D-IELX, was one of ten pre-production B-series aircraft.



³. Sven Carlsen and Michael Meyer, *Die Flugzeugführer-Ausbildung der Deutschen Luftwaffe 1935-1945 Band II*

the need for the heavy bracing, and the familiar interchangeable 'spat' replaced the 'trouser' fairing. The oil-cooler saddle tank was moved atop the engine, giving the flat 'notched' profile now so familiar. A deeper chin glycol cooler bath and an air intake for the protruding supercharger also altered the profile and lengthened the *Stuka* by about twenty centimetres.

Internally, under the new rear-sliding, four-piece canopy was redesigned to encompass the new defensive armament of a 7.92 mm MG 15 machine gun mounted on a pivotal ball-and-socket firing through a *Kari* lens-mounting with a loop grip handle which gave a much wider field of fire. The UTV (*Universale Trage Vorrichtung* (Universal Stretching Device, or Aerial Stretcher), R/T and DC/AC converter was moved aft, as was the FuG VIIa radio whose radio mast, which replaced the twin antenna, was positioned atop the canopy and the aerial moved below the cockpit with a trailing winch-operated antenna. Thus a much more all-round aircraft resulted which could to the job required of it. The only down side was a slight reduction in the already limited range, but this was not considered a vital requirement, even for a 'back area' tactical aircraft, operating just further back from the immediate front line environment.

The last pre-production variant, the B-0, quickly followed, but only six such conversions actually seem to have emerged from the original Tempelhof Weser plant. The first (the V-9 civilian registration D-IELX) was first flight-tested as the B-0 on 16 February 1938 at Rechlin, then, with a new civilian registration of WL-IELZ, it was service tested. The two following B-0s (*Werknummern* 4928 and 4929) were used as test-beds for the subsequent *Caesar*. Two converted A-1s (*Werknummern* 087-005 and 087-0309) were re-built as test vehicles for the B-1, while two more V 15 and, later, V 16 (087-0321, civilian registration D-IGDK, and IO279 for the B-2). Two more aircraft, V 17 and V 18, were ordered for conversion, but may not have actually been completed, while the V 19 (W.Nr. 4930) was a standard B-0 *Stuka* again used for carrier trials.

Production of the B-1, with the Jumo 211 A engine and twin forward-firing MG 17s in either wing as standard installation, soon got underway production at Junkers, the first being W.Nr. 0217, while subcontractor Weser built 386, but this number included the *Richard-1* variant in the total. They were also combat tested in Spain.

The B-2 was planned to utilise the 1,217 hp Jumo D engine and a 3.35 metre VS5 laminated wooden propeller. This would also increase the maximum speed to 373 kph, which would increase payload up to 1,000 kg, which, in turn, necessitated a stronger undercarriage. These improved *Stukas* did not appear until December 1939.

Combat – The Spanish Civil War

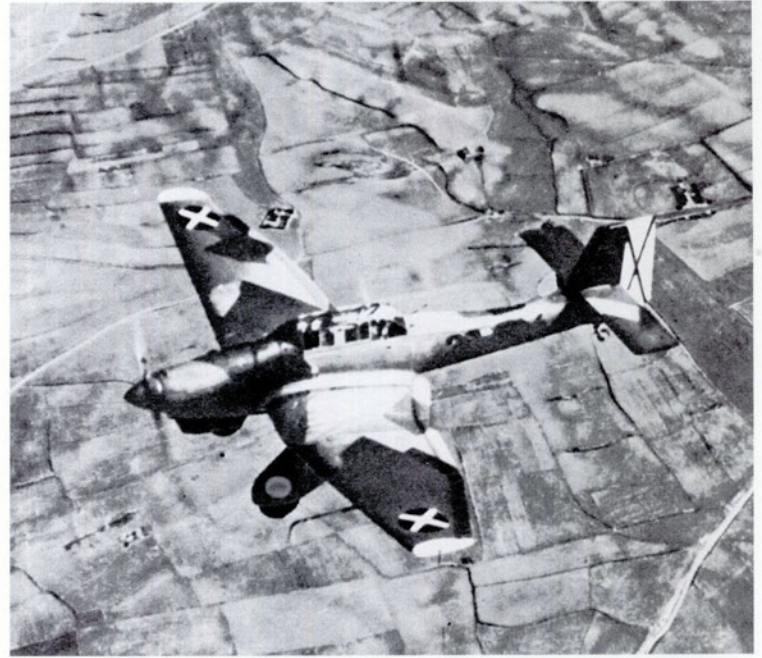
As related earlier, Germany's intervention in the Spanish Civil War between the Nationalist and Republican movements started in August 1936, Hermann Göring admitting that it gave the fledgling *Luftwaffe* a wonderful opportunity to combat-test new equipment and tactics. Personnel were rotated on a regular basis to ensure that they too benefited. The *Stuka*'s involvement began with the V 4 and V 5 in December 1936, as part of the new *Condor Legion* which had been formed in November 1936 under *Generalmajor* Hugo Sperrle, who would shortly have the innovative *Oberstleutnant* Wolfram Freiherr von Richthofen as his Chief of Staff.

The V-4 was shipped from Hamburg to Cadiz and assembled at Tablada airfield. It was given the codes 29-1 and attached to the *Jagdgruppe* (J/88) and later to the experimental detachment within K/88. Initially this aircraft was flown by *Unteroffizier* Hermann Beurer, from Vitoria in late 1936/early 1937 on the Bilbao front. It was used in the dive-bombing, ground-attack and reconnaissance roles under the close scrutiny of von Richthofen. The aircraft's toughness and durability in primitive conditions were about the only things that merited praise. The single rear gun was badly sited for ground- strafing and could not deliver much in the way of firepower; nor was the hand-held camera used by the rear seat man a success, visibility being too restricted; the range was considered inadequate.

The principal role of the aircraft was also criticised. Six combat attacks were flown with the 250 kg bomb, plus some test dives. These were largely rendered ineffective because the promised *Stuvi* A3 sight gear had not been fitted. In addition, the initial target line-up observation window in the pilot's floor rapidly oiled over in flight, rendering it useless for its purpose. In the dive itself the dive brakes performed as planned, holding the aircraft's terminal velocity to 450 kph.

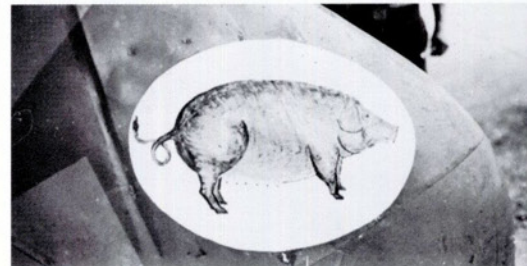
Generalmajor Hugo Sperrle commanded the *Legion Condor* in Spain from November 1936 to October 1937. The son of a Württemberg brewer, he was respected by those who knew him and was among those who developed early *Luftwaffe* close-support doctrine. He also had a reputation as a dogmatic and tough commander. He later commanded *Luftflotte 3* in the West and *Luftwaffen-kommando* West. For his involvement in the bombing of Guernica during the Spanish Civil War, he was tried at Nuremberg for alleged war crimes (Case Number 12) but was acquitted in 1946. He is seen here as a *Generalfeldmarschall* in 1940 during the air campaign against the British Isles.





The Ju 87 As, which had arrived in Spain in December 1937, proved disappointing and were later withdrawn and replaced by the improved Ju 87 B-1. This particular Ju 87 A-1, coded 29●4, originally belonged to St.G 163 and, together with the Ju 87 Bs, was flown by a large number of personnel in order to provide as many crews as possible with combat experience.

The 'little piglet' emblem of the 'Jolanthe Kette'. The small numbers of Ju 87s which were sent to Spain were assigned firstly to 5.J/88, the Legion Condor's fighter component, then, during the latter stages of the Spanish Civil War, to 5.K/88. Initially, the Legion's Stuka element consisted of only some 15 personnel including three pilots and a number of armourers, mechanics, technicians and a driver. 'Jolanthe' is believed to have her origins in a cartoon film featuring a small piglet. This emblem is thought to have been applied only to the port-side wheel spats of the unit's aircraft.



Junkers Ju 87 A-1, 29●4 of Kampfgruppe 88, Legion Condor, Spain 1938

This aircraft was finished in the elaborate pre-war bomber scheme of RLM 61, 62 and 63 on the upper surfaces with RLM 65 undersurfaces. Spanish Nationalist insignia replaced the earlier Luftwaffe markings and the sow or piglet badge of the so-called 'Jolanthe Kette' appeared on the undercarriage fairing.



This Ju 87 A-1 was the only such aircraft to operate with the trials fighter Staffel Versuchs-Jagdstaffel 88, abbreviated as VJ/88, the rest of the Staffel being equipped with the Hs 123. Note the bowler hat and umbrella emblem on the undercarriage fairing which was a display on the pilots' 'civilian' status.

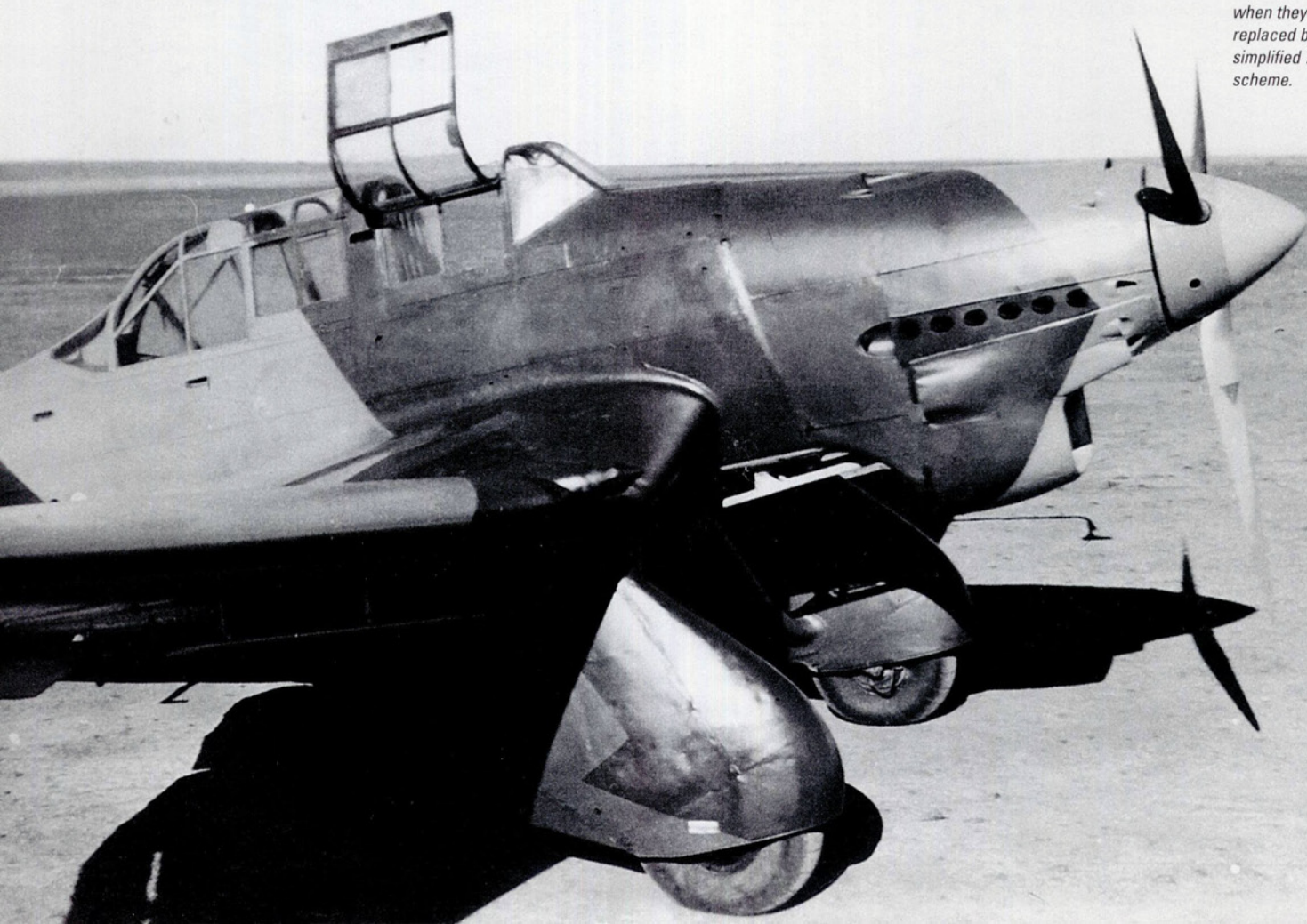
and hat was applied on a white triangle to the undercarriage fairings, but this was frowned on by the authorities as being too irreverent, so they hastily reverted to Schwartzkopff's *Jolanthe* badge of a pink stage pig on a white background instead. The trio of aircraft was later transferred to become 5.K/88, their subsequent operations only confirming the inadequacy of the *Anton* and the need for the *Berta* to be brought into service as quickly as possible.

The arrival of the B-1 with 5.K/88 gave the unit the opportunity to contribute meaningfully to the Nationalist Catalanian offensive from December 1938 to February 1939. An opportunity was taken to demonstrate the accuracy of the dive-bomber when Ju 87s attacked and destroyed a Republican ammunition dump at Mayals on 23 December 1938. They then moved to the Tarragona front and, when altitude bombing had failed to achieve anything, three *Bertas* again destroyed the vital Salvacanete Bridge with ease. Tactical attacks had thus achieved strategic objectives, and with a minimum of force and effort. The same precision-achieved results were obtained, again against bridge targets at Meco

Dives were commenced at around 3,500 metres with bomb release at 1,000 metres. Target approach and exit speeds were, however, severely criticised as being far too slow, being at least 100 kph lower than the minimum required to operate without fighter protection. The V 5 was also shipped to Spain later.

This pair of aircraft was replaced by a *Kette* (unit of three) of Ju 87 A-0s shipped from Hamburg and which remained until replaced by five Ju 87 B-1s in 1938. They received the codes 29●2, 29●3 and 29●4 and initially formed the 5.Staffel of J/88. They were flown by *Unteroffizier* Ernst Bartels, *Oberleutnant* Gerhard Weyert and *Oberleutnant* Hermann Haas. As a play on their 'civilian' status, an emblem of an umbrella

A Ju 87 A-1, coded 29●3 in Spain showing the segmented uppersurface camouflage scheme in RLM 61, 62 and 63 with RLM 65 undersurfaces. These colours remained in use on the Ju 87 until mid-1937 when they were replaced by a simplified 70/71/65 scheme.



The Legion Condor's Kette of Ju 87 A-1s taking off in Spain.



While operating with the Legion Condor in Spain, all German aircraft carried a type code on their fuselages as part of their identification system. The Ju 87s were allocated the type number 29, as shown on the Ju 87 B-1 coded 29●8.

and Fuentiduena de Tajo, as well as road block defences at Los Santos in March 1938, during the advance on Madrid. The vindication of the dive-bomber technique seemed conclusive. Attacks on shipping in the Republican ports of Barcelona, Tarragona and Valencia, also achieved a high success rate according to the Junkers house journal, targets which were to have increasing significance when Great Britain later belatedly took the field against Germany.

The British Air Ministry later summarised the German lessons learned in Spain thus:

*"Richthofen had formed the far-sighted conception of creating a separate tactical air force for participation in land battles; it was to be an adjunct to, and not a substitute for a strategic air force. Not only did Richthofen encounter opposition to his wide plan, but it was only with the greatest difficulty that his ideas on army co-operation, which were to have such an extensive influence on air operations in the war of 1939, were accepted at all. Richthofen, like most of the stronger characters in the Luftwaffe, succeeded in carrying out his ideas without official sanction, and created ground-attack squadrons in the Luftwaffe. This far-seeing move was to prove Richthofen to be right; furthermore it was to pay handsome dividends in the victorious continental campaigns of 1940 and in the rapid German advance to the gates of Moscow in 1941."*⁴

Generalfeldmarschall Kesselring was not so long-winded; he put his philosophy more simply:

*"I instructed my air force and flak generals to consider the wishes of the Army as my orders."*⁵

⁴. 'Air Ministry, *The Rise and Fall of the German Air Force (1933 to 1945)*, A.C.A.S.[I], London, 1948

⁵. Kenneth Macksey, *Kesselring: The Making of the Luftwaffe* (London, 1978)

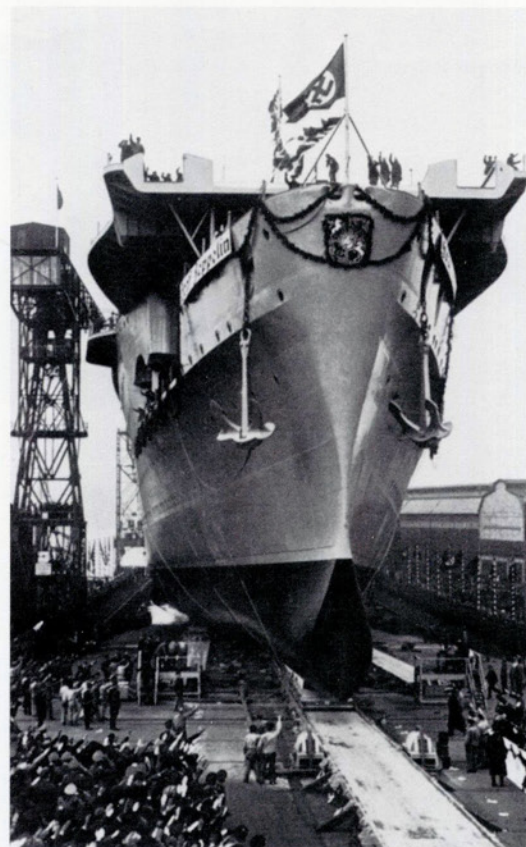
The Caesar

Following the signing of the London Naval Treaty in June 1935, the way was cleared for the German Navy to build aircraft carriers for the first time, to a limit of 47,000 tons. Practically, this enabled two modern carriers of 23,500 tons to be constructed. Germany had never operated aircraft carriers, but much technical expertise was available from her Japanese allies who had ten in service. The first of the two ships, named *Graf Zeppelin*, was launched in 1938 at Kiel. Never fussy about keeping to International Treaties, she was to displace 28,089 tons and to carry an air complement that included thirty Ju 87s adapted for maritime use. Further expansion of the naval air arm was mooted pre-war, but, in the event, delay followed delay and the carrier was destined never to enter service, even though she was 95 per cent completed for sea. Nonetheless, a total of sixteen carrier *Staffeln* were planned to be ready for service by 1942.

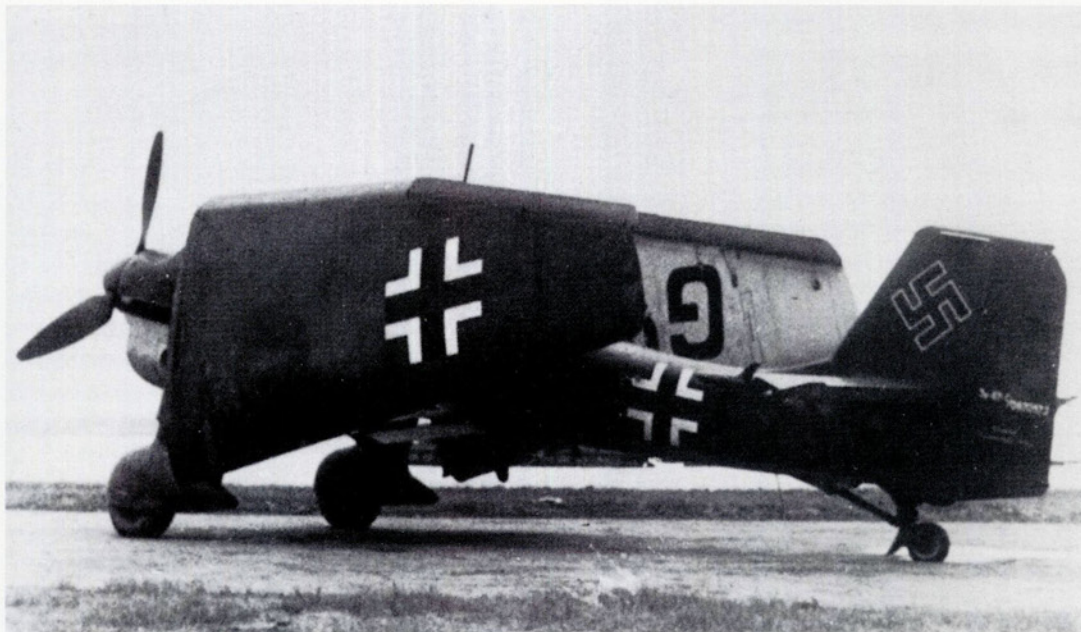
The adaptation of the Ju 87 for naval use did proceed, with the aim of forming the first navalised *Stuka Staffel*, 4.(St)/Trägergruppe 186, with eight (later nine) operational aircraft and four reserve aircraft, which was eventually established at Bug, Rügen Island, and was to be equipped with a new variant, the Ju 87 Tr(C). There, two prototypes, V 10 (with fixed wings) and V 11 (with folding wings) (*Werknummern* 4928 and 4929, civilian registrations D-IHFH and D-ILGM) were adapted for trials at Travemünde. They were powered by the Jumo 211 A. Two further experimental aircraft, former A-1s (*Werknummern* 087 0013 and 5000, civilian registrations D-ILGM and D-IAGR) were assigned to associated propeller tests. Training of specialised aircrews commenced, initially using *Antons*, then B-1s. Practice dives were conducted against moored targets and the radio-controlled target vessel *Hessen*. From April 1939, five B-1s were taken in hand for conversion to carrier *Stukas* which would feature folding wings, strengthened undercarriage for catapult launching, arrestor hooks for deck wire arrested landings, flotation bags, rescue equipment, jettisonable undercarriage for water-borne ditching etc – a complete redesign of the airframe for its intended maritime role.

During the summer of 1939 the few pre-production Ju 87 C-0s were planned to be built at Tempelhof, but all, save one, were completed as C-1s. The first *Caesar* (W.Nr. 0572) did not arrive at Travemünde until 5 April 1941. An initial for order for 120 improved C-1 machines, based on the B-1, was soon cut back to just thirty aircraft, although a second unit, 2./St.G 186, was established at Kiel-Holtenau, in February 1939, under *Oberst* Helmut Mahlke, a former naval officer. It mounted 112

The '*Graf Zeppelin*' was launched 8 December 1938 at Deutsche Werke shipyard in Kiel. It was projected that the ship would be completed by the end of 1940, but this never happened. In April 1940 construction was stopped – together with work on all incomplete major surface ships – following priority being given to the U-boat arm. The already installed guns were used for coastal defenses in Norway and the '*Graf Zeppelin*' was transferred to Gotenhafen. The carrier's planned air complement was to include 30 Ju 87s, but ultimately, the vessel was moved to Stettin in April 1943 where it was scuttled in shallow water on 25 April 1945.

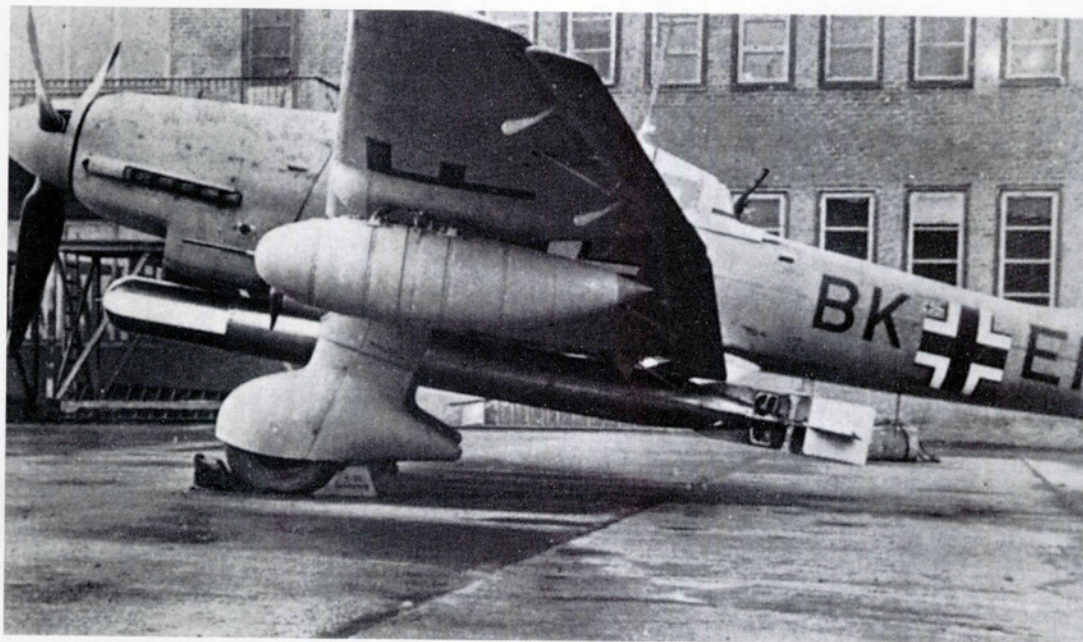


The 'navalised' Ju 87 known as the *Caesar* and originally destined for the *Graf Zeppelin*, Germany's only purpose built aircraft-carrier. As part of the German carrier aviation programme it was proposed to convert various standard aircraft for use aboard ship. Amongst these aircraft types were the planned Bf 109 T and Ju 87 Tr(C), with both these variants having folding wings in order to save space aboard ship. This Ju 87 C-0 was converted from a B-1 airframe and clearly shows how the aircraft would have been stored with its wings folded back in parallel with the fuselage. Note the arrestor hook.



1939-1941

Ju 87 V25, BK+EF, was the prototype for the proposed Ju 87 E and is shown fitted with an LT F5 aerial practice torpedo together with two 500 litre underwing long-range drop tanks. Note this aircraft was also fitted with sirens attached to its undercarriage legs – the so-called ‘Trombones of Jericho’. This machine was transferred to the E-Stelle Travemünde on 16 December 1941 and designated Ju 87 D/Trop.



Clutching his baton, Generalfeldmarschall Erhard Milch, the Generalluftzeugmeister, accompanied by staff officers and engineers, of the E-Stelle Travemünde testing centre in May 1943. They are walking past a prototype aircraft for the series Ju 87 D-4 variant, this one being W.Nr. 2292, which is fitted with an LT F5 aerial practice torpedo.

combat sorties in the Battle of France in 1940. In time most *Caesars* were reconverted B-1s. One machine, W.Nr. 573, was slated for trials aboard the projected Italian aircraft-carrier *Aquila* in March 1943, but that ship was destined for the same fate as *Graf Zeppelin*, and was likewise never to become operational.

In 1941 plans for a new maritime Ju 87, as a torpedo-bomber, and based on the *Dora*, were made, and a prototype V 24 (W.Nr. 0544) was earmarked. Again the project came to naught, but it was resurrected two years later with the D-3 as a land-based torpedo aircraft. Three were converted, trialled and then re-converted. A few D-4s were similarly prepared to be powered by the Jumo 211 J engine in three configurations – dive-bomber, torpedo-bomber, ski-dive-bomber, but nothing came of the projected designs.

Finally, the Ju 87 E was mooted and four prototypes conducted various tests. A total of 250 of these dive/torpedo-bombers were to be built, with deliveries commencing in January 1944. This was reduced to ninety-five, then cancelled outright. Thus ended any attempt at producing a truly ‘naval *Stuka*’.

Ju 87 unit Order of Battle

2 September 1939

Luftwaffe Lehrdivision

IV.(St)Gruppe/LG 1	Ju 87	Barth	39	(36)
	Do 17	Barth	3	(3)

Luftflotte 1

I.Gruppe/St.G 1	Ju 87	Inssterburg	38	(31)
	Do 17	Inssterburg	3	(3)
I.Gruppe/St.G 2	Ju 87	Cottbus	38	(32)
	Do 17	Cottbus	3	(3)
II.Gruppe/St.G 2	Ju 87	Stolp-Reitz	38	(36)
	Do 17	Stolp-Reitz	3	(3)
III.Gruppe/St.G 2	Ju 87	Langensalza	40	(37)
	Do 17	Langensalza	3	(3)
I.(Schlacht)/LG 2	Hs 123	Damm (formerly Tutow)	36	(34)

Luftflotte 2

none

Luftflotte 3

I.Gruppe/St.G 51	Ju 87	Wertheim	40	(34)
	Do 17	Wertheim	3	(3)

Luftflotte 4

I.Gruppe/St.G 76	Ju 87	Graz	39	(32)
	Do 17	Graz	3	(3)
Stab/St.G 77	Ju 87	Breslau	3	(3)
I.Gruppe/St.G 77	Ju 87	Brieg	37	(28)
	Do 17	Brieg	3	(3)
II.Gruppe/St.G 77	Ju 87	Breslau	39	(34)
	Do 17	Breslau	3	(3)

Pictured during the Polish campaign, the pilot of a Ju 87 B-1 of IV.(Stuka)/LG 1 relaxes between sorties on the wing of his machine while ground staff rearm and refuel his machine. The Lehrgeschwader were elite units and were originally formed to formulate battle tactics and demonstrate them to other units.

They were also assigned one special target, the railway bridges across the river Vistula near Danzig. These were known to have been mined by the Polish Army and St.G 1 was assigned the tricky task of trying to destroy various power cables and generating plant to prevent detonation of the explosives at the railway station of Dirschau, as well as a signal box and some diversionary targets, thus enabling a special train with Army engineers to complete the job. This operation was carried out by forty five aircraft of St.G 1, which left their forward base at Elbingen at 0425, with a Kette from 3. Staffel under Oberleutnant Bruno Dilley, leading the way. This meant that the very first bombs dropped in the Second World War would be from the Ju 87.

General der Flieger Alexander Löhr, commander of Luftflotte 4. Löhr was able to deploy four Gruppen of Stukas to support 8., 10. and 14. Armee in the south.

General der Flieger Albert Kesselring in command of Luftflotte 1 which fielded five Stuka Gruppen for the offensive against Poland in support of 3. and 4. Armee in the north.



Paul-Werner Hozzel

Paul-Werner Hozzel was an accomplished Stuka pilot and formation commander. Born the son of a shipbroker in Hamburg on 16 October 1910, Hozzel also worked briefly as a shipbroker before joining a Prussian artillery regiment. He transferred to the new Luftwaffe with the rank of *Oberleutnant* in February 1934, and was initially assigned to a civilian pilots' school in Cottbus. This was followed by a three month training course at the *Jagdfliegerschule Schleissheim* and the *Blindflugschule at Celle*. In the spring of 1937, he was appointed commander of the *Stab* of I./St.G 162 at Anklam and in July of the following year, *Staffelkapitän* of a *Schlachtflieger Staffel* at Tutow equipped with He 45s and Hs123s. In November 1938 he was serving as *Staffelkapitän* of I./St.G 160. By June



1939, Hozzel held the same position with I./St.G 1 at Insterburg, before assuming command of the *Gruppe* on 19 October. He subsequently led the *Gruppe* over Poland, Norway, France, England, the Balkans, Crete and the Mediterranean before being promoted to *Oberstleutnant* in October 1941 and assuming command of St.G 2 '*Immelmann*'. He later led this unit with distinction in Russia, including over Stalingrad. He was awarded the *Ritterkreuz* on 8 May 1940 followed by the *Eichenlaub* on 14 April 1943 for more than 400 missions. He also held command positions with Stuka training schools before taking up his final position as a staff officer with *Luftflotte 1* in the Kurland Peninsula in April 1945.

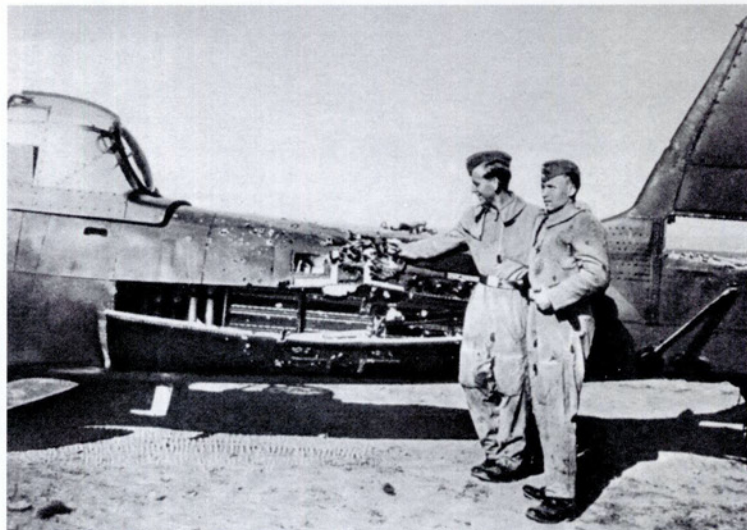
Hauptmann Paul-Werner Hozzel, *Gruppenkommandeur* of I./St.G 1, recalled: "The approach to the Vistula bridge lasted just under 15 minutes. Weather conditions were unfavourable, with a visibility of only one kilometre and a practically closed layer of fog at 50 metres altitude. Much depended on how the weather would develop at the target within the next 15 minutes. The latest weather report from a German observation post on the west bank of the river told us that the target was almost completely covered with a fog layer which had a slight tendency of breaking up. It was therefore doubtful whether we could, after all, make the planned high-altitude attack. Time pressed. We decided to climb through the fog so as to be able to form up the *Gruppe* which, in view of the limited visibility, we could not have done below the clouds. Above the clouds there was sunshine, below us we saw a widespread layer of fluffy clouds extending towards the target area. Through small loopholes in the clouds we could see the ground. We had no choice but to push down again through the openings in the cloud, in successive flight formations, for a low-level attack by the whole *Gruppe*. This would, of course, reduce our bombing accuracy considerably. The mere thought of it did not make me feel too easy. When forcing down, we unfortunately suffered the first loss of one of our crews to a crash-landing. Piercing the clouds on instruments, the aircraft had struck a hill.

"At that moment, we saw the six aircraft which had started immediately behind us and which had been detailed to fly the low-level attack on the railway embankment, disappearing in the haze. Visibility had improved slightly. The *Ketten* could join up behind me. As we flew across the Nogat river near Marienburg, still at low-level, miraculously the weather changed. It cleared up, we gained altitude and caught sight of the bridge. We climbed to an altitude of 2,000 metres and approached our target from east to west, exactly above the Vistula bridge. Below us, half left, our brave *Oberleutnant* Dille, *Staffelkapitän* of 3. *Staffel*, swung on with his two *Ketten* from the south, then hedgehopped in the direction of the railway embankment. While nose-diving we saw him rushing through below us. We observed his six exploding 500 kg bombs tearing up the railway embankment on the Polish bridgehead. Then – while pulling up – we watched the rising, mushroom-shaped explosions from our own bombs which had apparently hit their targets. But the bridge remained intact..."⁶

Fog, mist and poor visibility thwarted many of the sorties planned for the morning of the first day of the assault, but a part of I./St.G 2 managed to hit its assigned target, the hangars at Krakow airfield. Other aircraft from this unit became separated in the poor weather conditions, but, by pure chance, stumble on one of the Polish 'dispersal' airstrips. This sortie saw the first *Stuka* lost to enemy fighters when two Polish PZL P11 fighters intercepted and shot down *Leutnant* Göring's aircraft. In turn the *Stukas* scored their first enemy air-to-air kill when *Leutnant* Frank Neubert destroyed the attacker.

St.G 77 under *Oberst* Schwartzkopff was operating out of Neudorf, near Oppeln, with *Oberstleutnant* Ebehard Baier's two Hs 123-equipped *Schlachtgruppen* from LG 2 ready at Nieder-

⁶ Paul-Werner Hozzel, *Memoirs of a Stuka Pilot*, February 1978



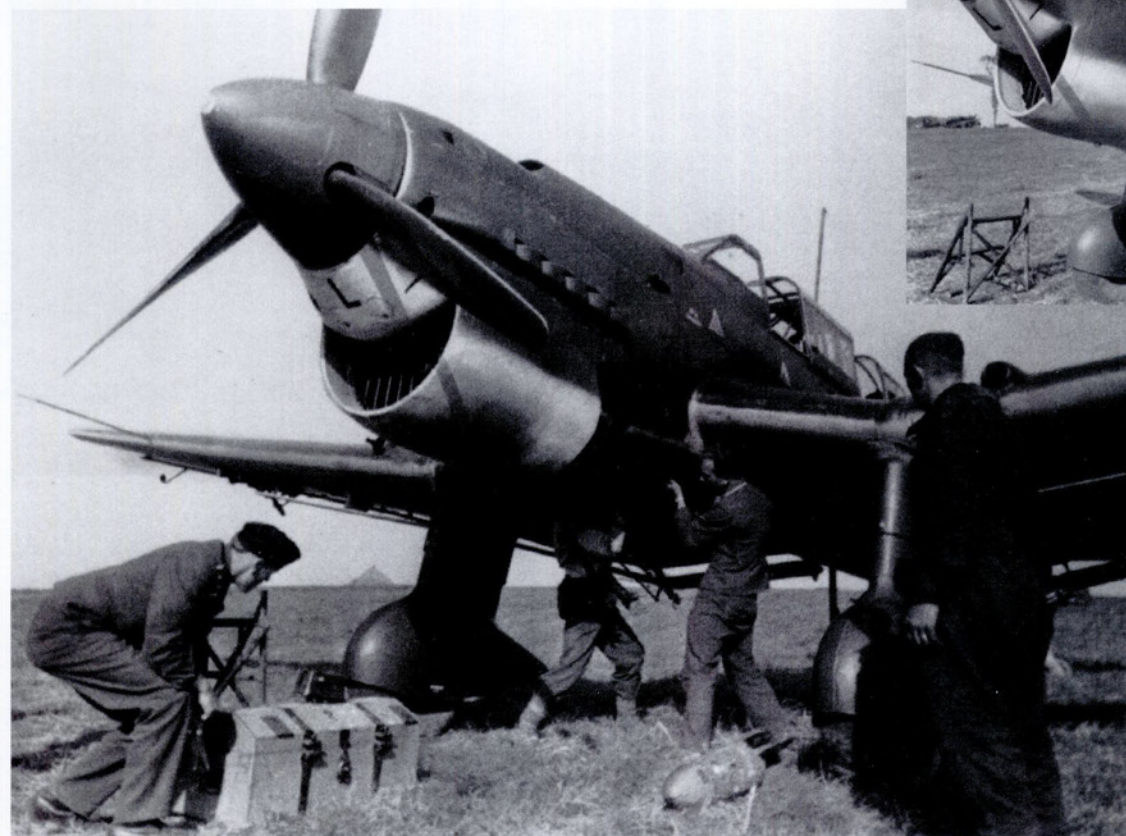
Two views of Flak damage sustained by a Ju 87 B, W.Nr. 0236, during the campaign in Poland in September 1939 and which made a forced landing at Grieslinen in East Prussia, losing its undercarriage in the process. The photograph above shows the starboard side where the shell entered the fuselage and exploded, blowing out a large part of the aircraft's port rear fuselage. The port fuselage has separated along the joint where the upper and lower fuselage shells are joined in the manufacturing process - an unusual method of construction. This particular machine was coded L1+JV and belonged to IV. (Stuka)/Lehrgeschwader 1.



Oblt. Günter Schwartzkopff was one of the very early believers in the dive-bomber concept. He took part in the attack on Poland flying with St.G 77 and later flew in the attack on France. Schwartzkopff and his radio operator were killed during a mission near Sedan when his aircraft was hit by heavy Flak.

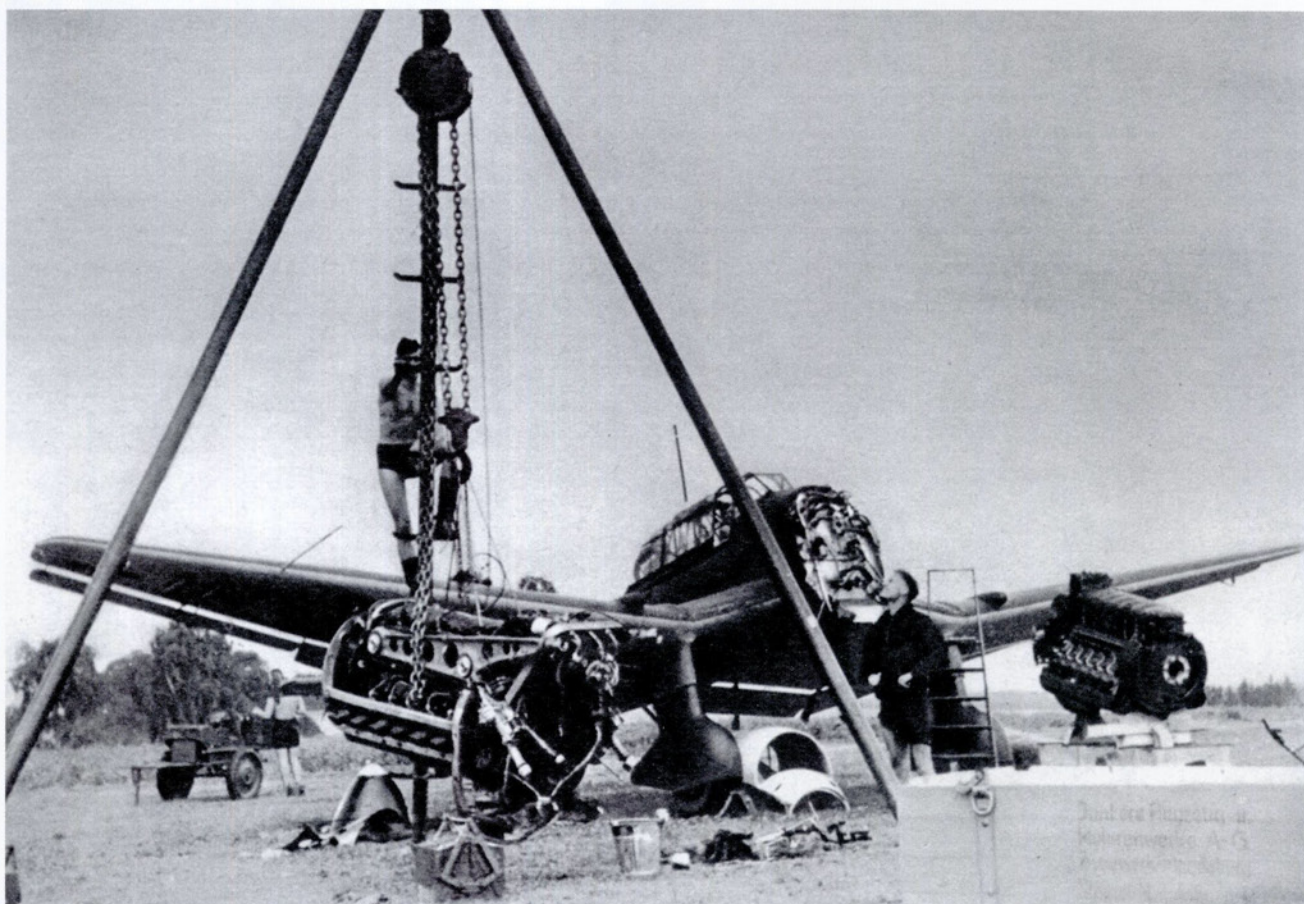


These Ju 87 B-1s above and crews left of I./St.G 1 were photographed during the Polish campaign. The aircraft nearest the camera above is AB+BB, a Stab aircraft, and carried a narrow white band around the fuselage for rapid air-to-air identification. Just visible on the starboard wheel fairing is the Gruppe's diving raven badge. This was later repositioned on the engine cowlings.



A Ju 87 B of an unidentified unit is being prepared to be used as an improvised 'transporter'. Here, ground crew make ready the bomb rack to receive a large wooden heavily padlocked chest in place of the usual bomb load, in order to transport equipment – probably essential tools – to the next forward airfield. Note the 'L' denoting the individual aircraft code painted on the lower cowling just aft of the spinner and the SD 50 fragmentation bomb fitted with whistles lying on the grass just in front of the port undercarriage.

A Ju 87 undergoes an engine change at a forward airfield. The removed Jumo 211 engine can be seen to the left of the photograph hanging in chains from a mobile winch, while the replacement has been brought up and removed from its packing case ready for installation. Field workshops and maintenance teams were vital to the operational success of the Stukas, but it was often a challenge for them to keep up with the speed of the German advance and to accommodate the continual movement to new airfields.



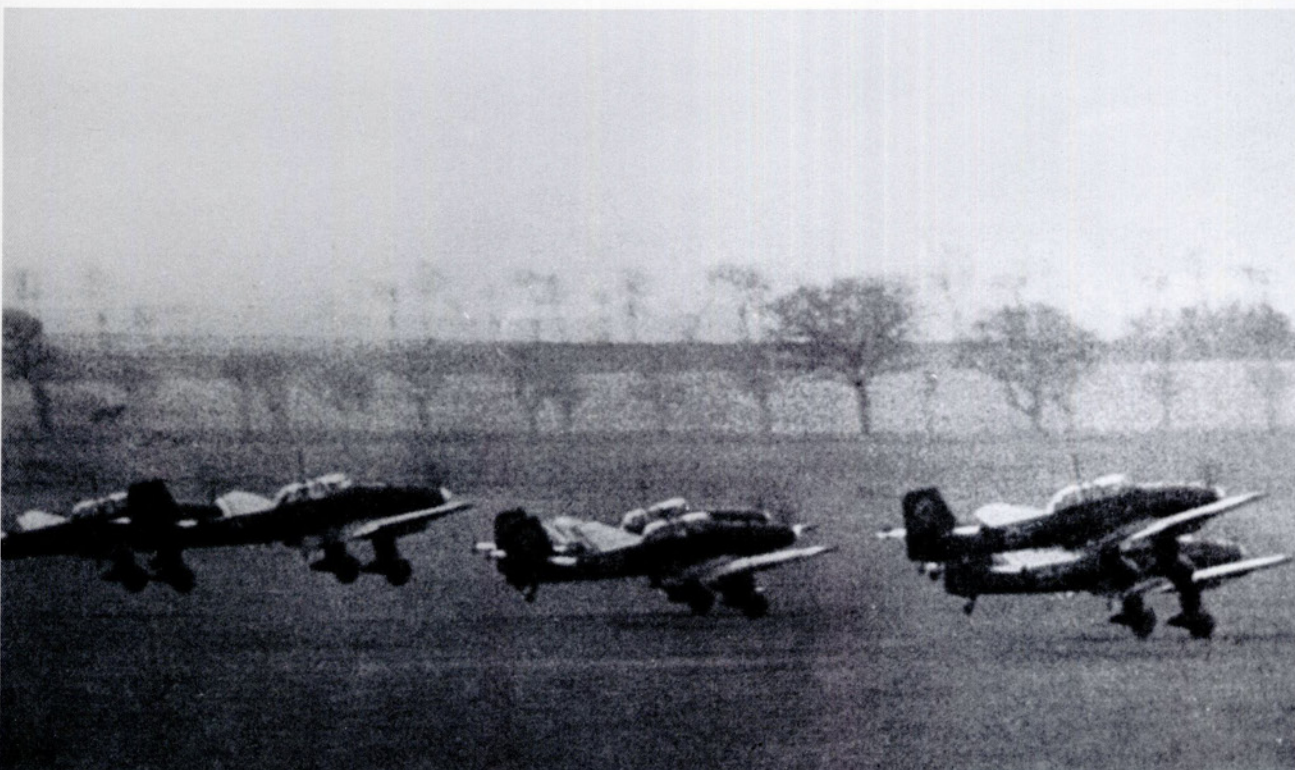


A Ju 87 B filmed in flight while returning from a mission, from the cockpit of another for a propaganda film.

Ellguth. Schwartzkopff had sortied out alone to carry out the planned attack on the forward Polish fixed defences of bunkers and gun emplacements known as *Lublinitz 23*, despite an order to cancel the attack. During this lone mission Schwartzkopff's *Stuka* had run into a Polish attack toward Rutuo with seven divisions supported by one hundred aircraft! He returned and gave warning. Huge concentrations of Polish cavalry were on the move toward Wielun where *Hptm* Sigel's I./St.G 76 had earlier pounded the Polish defence works there. By the afternoon the dive-bombers were in full cry. At 1300 I./St.G 2 led by *Major* Dinort from Nieder-Ellguth, were directed against this concentration, followed a few hours later, by Schwartzkopff with sixty operational *Stukas* of I./St.G 77. Together the dive-bombers, braving the intense anti-aircraft fire, decimated the horse soldiers of Poland; an unequal combat maybe, but the advance was turned into a rout by ninety *Stukas* and Wielun fell to the Germans on day one.

Along the Baltic coast St.G 2's two *Gruppen*, along with IV.(St)/LG 1 and 4.(St.)/Tr.Gr.186 were also

A late autumn scene showing an unidentified Staffel of Ju 87 Bs, lifting off for another mission. Due to constant changes of the army forward positions, the Luftwaffe often utilised makeshift grass-covered airfields. This would change dramatically in the months when heavy rain turned many landing areas into quagmires making take off and landing difficult.



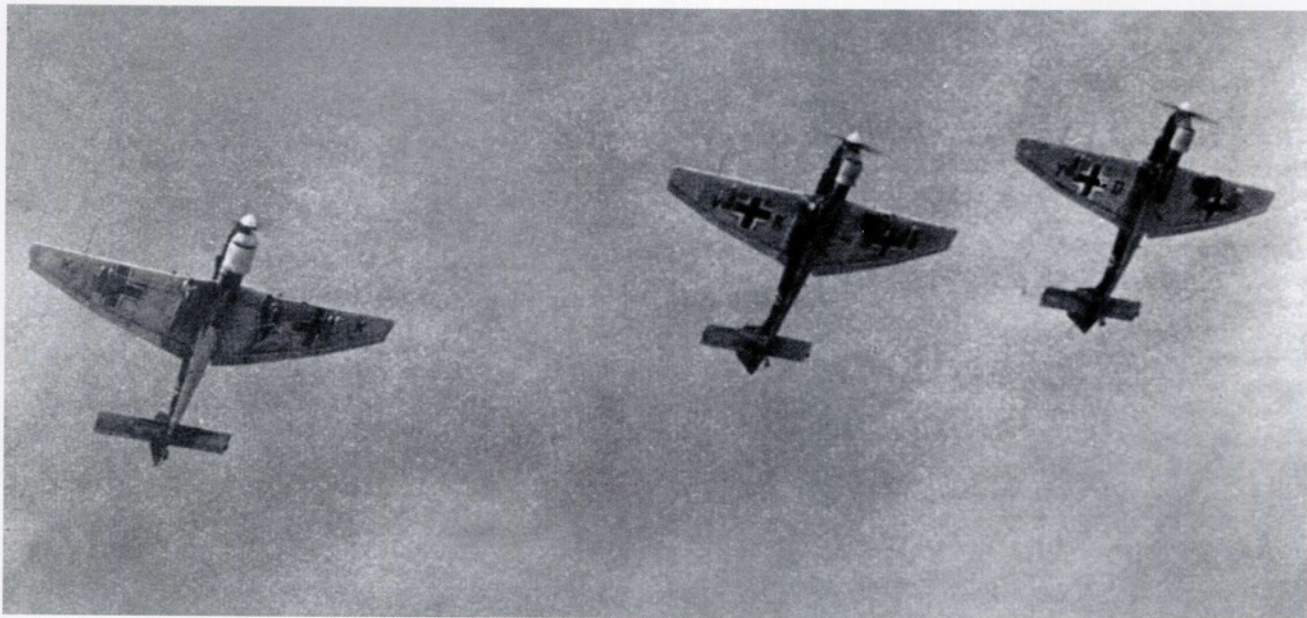
A Ju 87 with dive brakes extended, releasing its bombs. At the beginning of its operational service, a Ju 87 pilot, as he approached the target, would set the bomb release height on a device which would automatically release the bombs and pull the aircraft out of its dive. The pilot would then throttle back the engine to idle and lower the dive brakes. This latter action activated trim tabs on the elevators which pushed down the nose so that the aircraft entered its dive. The pilot then concentrated on keeping the target in his sight until, at the pre-selected bomb release altitude, the bomb was automatically released. At the same time, an automatic pull-out device readjusted the elevator trim tabs so that the nose rose above the horizon. The pilot then resumed control of the aircraft, opened the throttle and closed the dive brakes. Later on, after a series of fatal accidents following the failure of the automatic pull-out device, it was disconnected and the pull-out was achieved manually.



on the offensive, their targets being the Polish Navy and its main base at Danzig. The gunboat *Mazur* was sunk at Oksywie and widespread damage done to dockyard installations. III./St.G 2 then shifted base to Olmütz and then Michalovice in Slovakia to continue their work. Meantime I./St G 1 was flying to the extreme limit of its range to dive-bomb the main Warsaw radio stations at Babice and Mokotow. It also struck at the PZL aircraft plant, penetrating both flak and fighter defences to severely damage the target. The *Stukas* having engaged in aerial combat, found themselves running out of fuel on the return leg, and eight had to make emergency landings, resulting in two being total write-offs.

The 2nd September saw further commitment of the *Stukas* to the Army's advance. St.G 77 made continuous sorties against Polish troops and defence works before Radomsko to clear the way for the armour of 1. *Panzer Division*, while others carried out attacks to order at Działoszyn south-east of Wielun, ahead of the leading elements of XI. *Armee*korps. One of the most opportune, and telling, *Stuka* attacks that day was at Piotrkow, when a reinforcing Polish division was caught by I./St.G 2 and I./St.G 76 while still disembarking from their trains at the station. The carnage was immense and the division shattered without firing a shot. A similar scenario was seen at Radomsko, where St.G 77 became the destroyer of yet more troop trains.

Attacks against Polish naval vessels were resumed on 3 September, the day that Britain, and belatedly, France, finally honoured their obligations to Poland by declaring war. The anti-aircraft defences



A Kette of Ju 87s fly over their airfield fully loaded with 1000 kg bombs under their fuselages before heading out on another mission. Note the variation in the proportions of the underwing crosses and that the machines in the centre and to the right still carry their factory code under the wings.

The pilot of a Ju 87 B-1 of III./St.G 51 passing the wireless operator/gunner his 7.9 mm MG 15. When the Ju 87s encountered determined aerial opposition, this weapon proved inadequate. Note the original Gruppe badge which comprised a silver mailed fist on a yellow shield.

of the naval base were high, but an attack by 4.(St.)/Tr.Gr.186 sank the destroyer *Wicher* and badly damaged the new minelayer *Gryf*, which burned and sank some days later. A similar mass *Stuka* attack mounted against Hela harbour three days later finished off many small warships and damaged a number of vessels with larger displacements, before the Ju 87s were sent to join the final attacks inland.

Here the intensity of the fighting increased as the German *Panzer* spearheads approached the river Vistula and the approaches to Warsaw itself. *Dzialoszyn* fell to XI. *Armee*korps after heavy attacks by both of LG 2's *Stuka*- and *Schlachtgruppen*. The Polish 7th Division surrendered en masse with its backs to the River Pilica on 4 September following similar aerial assault. By the 8th six Polish divisions had been outflanked and surrounded between Radom and Ostrowiec in the *Ilza Pocket*. Attempts at a night breakout to the east failed, and in support of the 3. *Panzer Division*, *Richthofen* concentrated every available *Stuka* unit against this mass of troops. *Schwartzkopff's* St.G 77 had been reinforced by III./St.G 51 at new forward bases at *Kruszyna* and *Tschenstochau* (*Czestochowa*) from where they were hitting Polish artillery positions at *Praga*, just west of Warsaw, which were disputing the main

German advance. To eliminate the pocket in the rear of the German advance this dive-bomber force was pulled from this vital work and unleashed on 9 September against the *Ilza Pocket*. Repeated attacks were made, not only by direct dive attacks, but also with masses of infantry at their mercy, the *Stukas* utilised 100-lb fragmentation bombs to good effect, and when these were expended, went in and strafed. Utter chaos resulted in the encircled masses. The demoralised Poles finally surrendered four days later, but already the *Stukas* had once again turned their attentions further north against a fresh danger.

Thus was demonstrated, early on, the versatility of the *Stuka* in close-support aviation, the flexibility it provided. To move guns and supporting troops to block a new threat many kilometres away would have taken days, whereas the Ju 87s refuelled and moved against the fresh target within hours. Now indeed the Ju 87 earned its first hard-won epithet from the ground troops, the *Stukas* had become the 'Flying Artillery'. Other aircraft types participated, but only the Ju 87 had the strength and ruggedness to operate so close to the front line, in all conditions and from primitive landing strips. Not until the advent of the helicopter 'gunships' of the 1970s has there been another flying machine so attuned to land warfare conditions, and the *Stuka* was able to absorb far more punishment than these ever have.



The threat came for the Army of Poznan, four divisions and two cavalry brigades of the Polish army that had been retreating in parallel to the weak German 8. *Armee*, along the southern bank of the river Vistula into the angle formed by the river Bzura to the south. On the night of 9/10 September this force struck south from its positions around Kutno, against the slender screen of German infantry and broke through at Piatek and Lowicz. The German 10. *Armee* was in danger of being outflanked. Hastily moved up to the forward fields near Radom, the *Stukas* were once more thrown into operations in support of the ground forces. Precision dive-bombing took out most of the bridges across the Bzura over which the Poles had advanced, cutting them off from their supplies, and then they turned their attentions to the men and machines on the ground. It was daylight; no protecting darkness shielded the Poles from the dive-bombers. They were isolated and vulnerable, and great gaps were torn in their columns, which faltered, halted and then withdrew as best they could.

What was it like to be on the receiving end of a mass *Stuka* assault? The Polish commanding officer, General Tadeusz Kutrzeba, gave this graphic description later of the Ju 87 attacks near Witkowice:

"Every movement, every troop concentration, every line of advance came under pulverising bombardment from the air. It was just hell on earth. The bridges were destroyed, the fords blocked, the waiting columns of men decimated."

Some 170,000 lay down their arms and went into captivity, very few escaped. The *Stukas* were immediately turned, yet again, against the Warsaw defences, with the strict proviso that they targeted only public utilities, barracks, ammunition dumps, the citadel, the War Ministry and artillery positions. The Poles were well dug in, with strong fortifications manned by 100,000 troops, and they seemed to be prepared to dispute the city block-by-block. These attacks reached their climax on 25 September when more than two hundred Ju 87s, supplemented by Ju 52 transport aircraft carrying incendiaries, were sent over the western city. The capital was surrendered after two days of such assault.

As the first bombs on Poland had been delivered by the *Stuka*, so were the last. Ju 87s attacked Polish defensive positions at Modlin, which also capitulated. Already the Soviets had stabbed their

neighbour in the back and the Red Army was streaming westward. The Poles fought hard but their cause was now hopeless. '*Blitzkrieg*' was now a proven fact. In less than a month a proud nation had been brought to heel. The role of the *Stuka* in this was predominant and revolutionary. Even the RAF was forced to retrospectively concede that the dive-bomber had been the "...outstanding success". And all this was achieved with a slow, vulnerable, "temporary stand-in" aircraft. Only thirty-one *Stukas* had been lost.



Symbol of defeat: German soldiers inspect a PZL 11c fighter which has been deliberately destroyed by the Polish Air Force in the face of the German onslaught.

Victory over Poland: Adolf Hitler proudly watches his troops as they march past along Warsaw's Ujazdowska Street in a victory parade held in the Polish capital on 5 October 1939.



Norway

Hitler was eager to attack in the West and put the newly acquired skills of his armed forces to use before his potential enemies could adjust. Bad weather continually delayed the German assaults, but he need not have worried; despite many detailed reports giving precise details of the new German *Blitzkrieg* tactics, the Allies took little heed and hunkered down behind the Maginot Line and dug their static defence works along the Franco-Belgium border. The *Stuka* units used the time to re-group, rest and re-organise.

During the bitter winter of 1939-40 the only real fighting was at sea. Both sides threatened the neutrality of Norway and both made plans, which came to fruition almost at the same time in the second week of April. To occupy Norway and Denmark would give the *Luftwaffe* valuable bases with which to attack Great Britain, secure the safety of the vital iron ore supplies and provide the German *Kriegsmarine* with bases, which outflanked the British blockade from the Home Fleet based at Scapa Flow. However, it involved heavy risk, for the *Kriegsmarine* was far outnumbered by the Royal Navy. Hitler went ahead anyway and the scene was set for more Ju 87 operations against warships. Initially, only forty *Stukas* were involved, and even by the end of the campaign this had only been slightly increased, to fifty aircraft.

Apart from the specialised maritime Ju 87s of 4.(St.)/Tr.Gr.186, few, if any, *Stuka* aircrew had undergone any specific anti-shipping training, but the dive-bombers, by their very precision, were to prove the quintessential weapon for destroying ships by aerial bombardment. By contrast, the much-trumpeted heavy bomber was a failure from the first days of the war to the last and no major warship was ever sunk by high-altitude free-falling bombs while underway by any nations air force, despite the predictions of Billy Mitchell and his ilk. The lack of previous experience of the Ju 87's pilots was offset by factors which acted in the *Stuka*'s favour. Firstly, their inherent accuracy; secondly; the steep-sided and narrow Norwegian fjords precluded Allied ships from taking evasive action or using their speed and manoeuvring abilities to evade hits; and finally, the poor provision of anti-aircraft weapons aboard the ships, in particular the lack of fast-firing light cannon such as the Oerlikon or Bofors, or adequate gyroscopic controls to sight them. As the Americans had discovered in the 1920s when the first dive-bombing exercises had burst upon their fleet, "...there was no defence against it!"¹



Although the formation of 4./Tr.Gr.186 was carried out regardless of the non-completion of the 'Graf Zeppelin', the carrier unit then progressed for a while as an operational training unit before undertaking operations in Poland and France as a conventional *Stuka* unit. Here two groundcrew members are turning the starting handle on the Jumo 211 engine of a Ju 87 B which has had its main wheel fairings removed. The aircraft carries the unit badge of an eagle behind a large blue anchor. The narrow ring around the spinner and the large number 17 would appear to be in yellow. The individual number would also have been painted on the undercarriage fairings, the size and placing of which indicated that the machine was being used for training purposes. Note the Do 17 E in the background.

¹ See - Peter C Smith, *Dive Bomber! An Illustrated History* (Ashbourne, 1982) and *Impact!: The Dive Bomber Pilots Speak* (London, 1981)



A groundcrew mechanic has removed the rear side access panel to the Jumo 211 engine of '30' in order to carry out some routine maintenance. The Ju 87 B-1s were fitted with Jumo 211 A fitted with Junkers Ju HPC, 3.4 metre diameter propellers while the Ju 87 B-2 was fitted with Jumo 211 Ds and VS 5, 3.4 metre diameter propellers.



In addition to the seaborne occupation of the principal Norwegian ports, the two vital airfields of Oslo-Fornebu and Stavanger-Sola were to be taken by paratroops so supporting aircraft could quickly move in to provide air protection from Allied retaliation, which, in the event, was slow and hesitant. Only forty

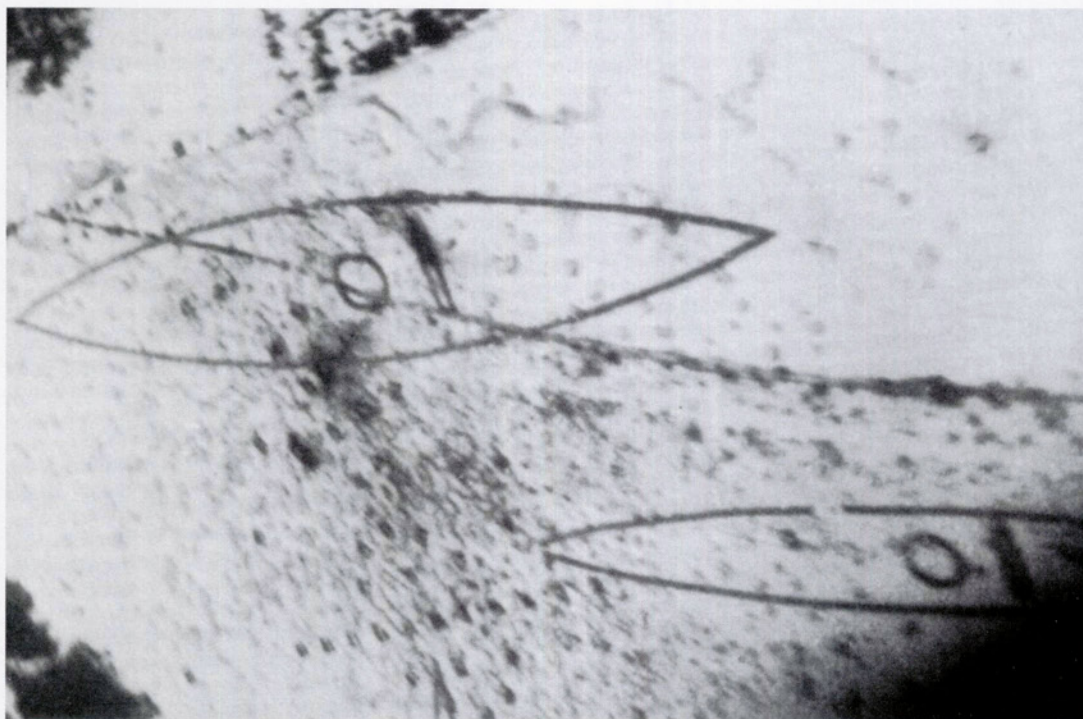
A line-up of Ju 87 Bs of 4./Tr.Gr.186 after the unit had converted to the training role. The individual aircraft numbers that can be identified starting from the front are 18, 31, 14, 30 and 17; the latter has its main wheel fairings removed and is also the only aircraft that does not have its engine running.

Ju 87s were involved in the overall *Luftwaffe* force, but they played a role out of all proportion to their small numbers.

Their first operation was, however, one for which they were well rehearsed and fully able to carry out. Twenty-two *Stukas* from I./St.G 1 under *Hauptmann* Paul-Werner Hozzel were despatched from Kiel-Holtenau at 1059 on 9 April to blast the powerful Norwegian fortresses of Aakershus and Oscarsborg which defended the narrow fiord leading to Oslo itself. These strong forts had caused the only real damage suffered by the German naval task force attempting to force the Dröbak narrows.

As Hozzel recalled: "The units of the X. Fliegerkorps rolled to take-off, Kette behind Kette. Then Kette after Kette took off. When I, with my Stabskette was about to start, the start controlman suddenly raised the red flag, holding the receiver of a telephone in one hand. I locked the fuel lever, unstrapped and rushed to the phone. The Chief of Staff of the Fliegerkorps, Major Martin Harlinghausen, told me 'Attack against the Copenhagen Air Ministry revoked! Denmark has capitulated! Attack against Aakershus near Oslo remains unchanged. Attack with the mass of I./Stuka 1. British naval formation of two cruisers and several destroyers, 200 kilometres west of Stavanger. Our shadow aircraft is close to the enemy; a pathfinder Heinkel will be over Holtenau in 20 minutes and will take your unit up to the target according to radio direction from the shadow. '"

The dive-bombers scored direct hits on both forts without loss, and returned to the newly captured northern Danish airfields of Aarhus-East and West. Here they refuelled and re-armed and were thus ready when the expected sightings of British fleet units off Norway were received. Hozzel's unit was quickly flown up to Sola airfield so as to be ready to attack these warships the next day. *En route* they located the Norwegian torpedo boat *Aeger* that they attacked and so damaged her that she had to be run aground. But it was not an easy flight; Hozzel: "After releasing the pilots of 3. Staffel for Aakershus, I rolled back with the others to our dispersal where I briefed the crews on the new situation. The pathfinder Heinkel arrived. We took off, assembled into cruising formation and gained altitude while steering a northerly course. The pathfinder took the lead. We made eye contact and could also talk to each other via radio.



An aerial photograph showing the practice dive-bombing area at the Stuka Training School at Graz where silhouettes of a battleship and a cruiser have been marked on the ground. Careful study of the ground shows a number of bomb craters both in and outside the targets.

"I estimated the distance to the target to be 1,200 kilometres at a cruising speed of 250 km/h, an approach time of roughly five hours. After the attack above the open sea, we would have to try to gain land again by the shortest route. I had an eye on Stavanger although it was uncertain how the situation would be there at that time. We would, in any case have to fly to the last drop of fuel. I felt sure of that. We cruised northwards at an altitude of 4,000 metres. The weather grew worse. We cruised between two layers of cloud which, on the horizon became a closed, grey mass into which we entered. Radio communication and eye contact with the pathfinder was lost. We were alone in that pea soup with nine Ketten flying behind me. Via radio, I ordered strict adherence to our course and speed. We were descending at two metres per second. The Ketten pilots were to take their orientation from the wings of their Ketten commanders who were skilled in instrument flying. In case of ground visibility, all were to close up to the original course. It was a dangerous situation. I could not afford to remain at that altitude with the unit and keep blind flying. I had to descend and penetrate the clouds. I did not know the height of the cloud layer above ground and whether there was sea or land below us. I just guessed that we were flying over the mountains of southern Norway. This thought was not very comforting! If the clouds reached down to the ground, then Heaven help us. But we were incredibly lucky.

"At an altitude of 800 metres we got ground visibility. To the left and right we saw high mountain slopes shrouded in clouds. We found ourselves over a wide valley in southern Norway. My thirty aircraft were flying behind me. They had adhered strictly to my orders. We thus stayed together and no one was lost. Now we steered a north-westerly course, passed south of Stavanger and flew out to the open sea. We turned west in search of the enemy ships. The further we went from the coast, the worse our visibility became. We encountered low clouds. Finally, we flew at an altitude of 200 metres, at a visibility of one kilometre. If the British formation had come into sight at that moment, we could have just tried to drop our bombs – in low-level flight – into the ships' broadsides. But nothing happened. We had tried our utmost to carry out our task, but now it was high time for the return flight. We had, in fact, been in the air for five hours and still had a distance to cover of 200 kilometres before we would reach the coast.

"It is never a pleasant task for a unit commander to have to break off an operation, however justified it might have been, as it was in our case. I just had to bear it. We reached the coast north of Stavanger, the airfield was south of it. Some of my crews reported that their red fuel warning lamps had lit up. Fuel left for just another ten minutes flight! When we approached, we could see fighting taking place at the northern perimeter of the field. In front of one of the hangars, a Ju 52 was going up in flames. But we had to land. I gave orders to approach the airfield from the north



The smouldering hulk of a sunken German freighter lies in a fjord close to Narvik following the battle between British and German forces there in April and May 1940. Allied ships were extremely vulnerable to Stuka attack off Norway.

cruiser *Suffolk* on the night of 16/17 April, (Operation *Duck*) so serious did the Allies view the presence of the Ju 87s there. Some 202 rounds of 8-inch shell struck the field, but no *Stukas* were lost, and next day they took their revenge, hitting and badly damaging their assailant. The *Suffolk* was so badly damaged that she barely managed to struggle back to Scapa Flow, her quarterdeck awash³.

On 3 May the British destroyer *Gurkha* was screening the Allied fleet, under repeated German air attacks. Her commanding officer, Captain Anthony Buzzard, a well-known gunnery officer, became very frustrated at the inability of his gunners to bring down any of the attackers. He felt conforming to the movement of the whole fleet restricted him so took his ship away from the main formation to gain advantage of wind and weather to see what he could do. It was a fatal error; alone and without the supporting fire from the rest of the squadron, *Gurkha*, whose main armament of eight 4.7-inch guns could not elevate about 40 degrees, was an easy target for the *Stukas* who made their dives at 80 plus degrees. Within a short time she was hit and sunk. This was a lesson that the Royal Navy took many years to absorb; the same separation of ships from the main force was to lead to heavy losses off Crete a year later and in the Aegean two years beyond that. That same day, the 3rd, *Hauptmann Hozzel* "...made an astounding discovery." As he recalled:

"The British, having left Namsos at night, were said to be on the high sea, returning to England under strong protection of escort vessels. It was proposed that we should pursue and attack them. A He 111 shadowing aircraft was close to the enemy, and a He 111 pathfinder would guide us to enemy in the same way it did on our recent operation from Holtenau. A naval patrol aircraft had reported that the formation consisted of one battleship, one cruiser, several destroyers and a number of transports, one of them of 14- or 15,000 tons. The convoy was, by now, about 300 kms away from the Norwegian coast. It would thus take a further two hours before we could attack it. We were given quite a tall order, considering that we had to fly in single-engined land aircraft without radio navigation aids over a total distance of 700 kms across open sea. In case of engine failure,

*so as to avoid landing under enemy fire, then to roll to a stop on the southern perimeter and not to turn around so as to give our aerial gunners a chance to fire. With our twin-barreled machine guns we had considerable firepower. It was, however, not necessary to use them. A German officer ran up to us and told us that we had just witnessed the last phase of fighting for the airfield. And that marked the end of our first operation over Norway..."*²

Initially all units flew the *Berta*, but by 19 April, twelve of the *Stukas* of 3. /St.G 1 were fitted with long-range drop tanks to give them the extra range required to attack the ships out at sea, but these were not at first used operationally. These and the aircraft of 2./St.G.1 remained at Sola, while 1./St.G 1 moved yet again, north to a makeshift landing field, no less than a frozen lake at Jonsvatnet, and then Vaernes, near Trondheim. Again the *Stuka* was proving its usefulness as a forward-area aircraft able to adapt to unexpected conditions. From these bases the Ju 87s divided their attentions between supporting the army moving steadily up the coast against Allied bridgeheads at Aandsnes and Namsos, and later, to relieve besieged German forces at Narvik. The army support missions were frequently interlaced with heavy attacks on Allied ships off-shore.

There were numerous air/sea encounters over the ensuing months until the last Allied soldier withdrew from Norway at the beginning of June. Notable incidents included the bombardment of Sola airfield by the heavy

² Paul-Werner Hozzel, *Memoirs of a Stuka Pilot*, February 1978

³ See- Peter C Smith, *Sitting Duck: A Harsh Lesson Imparted*, article in the *Army & Defence Quarterly Journal*, pps 432 438, Volume 119, No.4, October 1989 (Tavistock, Devon)

a crew could hardly expect to survive. We had, true enough, rubber dinghies on board, but we would hardly be able to make use of them, since with our fixed landing gear, our aircraft would inevitably nose over and sink with the crews at once. However, we didn't allow ourselves to worry about that, and got on with the job in hand. Flying at 4,000 metres we spotted the enemy convoy after 90 minutes and found it as described by the observer aircraft. The pathfinder broke away from us to join the 'shadower'. Both aircraft carried experienced naval officers who would witness and report on the sea battle – away from the AA fire as if they were sitting in a theatre!

"I picked out the most lucrative targets – the battleship, the cruiser and the largest transport. By radio, I allotted the remaining targets to the three Staffeln, diving myself on the battleship with the Stabskette and 1. Staffel.

"Even before we were directly overhead, we met fire as we had never experienced it before. As we dived through that dense barrage of gun fire, we aimed and released the armour-piercing 500 kg bombs at an altitude of 500 metres. Each pilot was guided by the hits scored by the aircraft in front – adjusting his point of aim accordingly. The first six bombs failed to hit their targets, but the seventh hit the forecastle of the second front turret. As I was about to pull up having just reached an altitude of 1,000 metres, a vicious blast threw my aircraft up so hard that my head was flung against the cockpit roof. For a moment, I felt stunned. When looking down again, I saw the battleship had disappeared in a dense cloud of smoke. The cruiser and the transport vessel were sinking. All this happened in a few minutes.

"Meantime, we had lost sight of the He 111s. In the haze of battle they had lost visual contact with us. We flew alone again. We had lost just two crews. We flew at low level above the waves towards the Norwegian coast. Somehow, there was a happy feeling amongst the crews. Pressing the button of the microphone, I heard my men singing a Navy song – 'Wir sind Kameraden auf See' – because we felt so close to the sea. Thus the tension of this strenuous operation dissipated.

"We sighted land north of Namsos, turned south and landed safely on our planked runway at Vaernes. We were received there with great jubilation. This did not restrain Harlinghausen – the 'Fliegerführer Drontheim' – of launching us on a second mission against the convoy. But the enemy eluded us that time and I had to get my Gruppe back safely before nightfall. The following day all pilots and aerial gunners of I./St.G 1 were solemnly awarded the Eisernes Kreuz First Class."⁴

The list of Stuka sinkings steadily grew as the weeks passed; the Polish troopship *Chrobry* on 15 May, the French destroyer *Bison* and the British destroyer *Afridi*, (a sister ship to *Gurkha*) both on 3 May. And these were all ships at sea and fully able to take evasive action. For those stationed inside the narrow fiords with little elbow room, the situation was desperate. One such unfortunate was the sloop HMS *Bittern* on 30 April. Her demise was recorded by an army anti-aircraft gunner stationed ashore protecting Namsos:

"Almost immediately the Stukas came screaming down at Bittern but as her guns and ours opened up, the first bombs fell well wide of the ship. As the main target for the Stukas, there was rarely a moment when she had not been forced to twist, turn and weave back and forth across the fjord in her desperate fight for survival. The Stukas' tactic was to attack in threes, two diving on her from in front and one from astern. She survived numerous near-misses. Together with our Bofors guns we put up an impressive barrage of flak. But further waves appeared and one Stuka coming in from astern scored on her quarterdeck. We saw the flashes and then heard two huge explosions, the second as an ammo locker blew up. We could see that much of the stern had been blown off and as we continued to fire at the Stukas, fire broke out and the rear of the ship was engulfed in thick, black smoke."⁵

Thus both on land, and at sea, the brief Norwegian campaign, marked another vital progression in the Ju 87's development potential.

⁴ Paul-Werner Hozzel, *Memoirs of a Stuka Pilot*, February 1978

⁵ J. E. Connor, *Stukas Galore*, article held in the Regimental Archive, 15th (Isle of Man) Light Anti-Aircraft Regiment RA, Douglas, IOM.

The Maginot Line – an impressive fortification and anti-tank system stretching half the length of the French frontier – an expensive barrier thought to be impenetrable. General Erwin Rommel's Panzers breached it on 16 May 1940. He wrote: "The way to the west is now open..."



The Low Countries and France

On 10 May the Germans opened their offensive in the West. The overall plan was to by-pass the fortifications of the Maginot Line and outflank the Allied armies north of these defences by first striking through neutral Belgium and Holland to lure both the British and French deeper into the trap and secure their own northern flank. Then to sever the communications of the bulk of these Allied armies by an overwhelming and swiftly moving thrust from the Ardennes between Montmedy and Namur and neutral Luxembourg, across their rear towards the coast at the mouth of the Somme. The now tried-and-tested routine of an all-out aerial assault on enemy airfields would be deployed to eliminate the French Air Force and the RAF in Europe, followed by a concentration of virtually all forces – or ‘*Schwerpunkt*’ – against critical points in the enemy line. This effect of smothering bombardment to smooth the passage of the armoured spearheads and enable them to punch their way through the Allied armies, was repeated, but on a far grander scale. The chief requirement for this risky strategy was that continual air bombardment would throw the enemy off balance, while the *Panzer* forces would maintain momentum with the enemy deprived of time to re-group or counter-attack against the narrow extended salient, which would be sealed by conventional follow-up forces.

The aim was to keep the enemy constantly stretched, and it was to be done brilliantly, thanks in large part to *Generalmajor* von Richthofen and the *Stukas* of VIII. *Fliegerkorps*. A total of 318 Ju 87s were initially made available by 10 May to help carry out this audacious campaign, and these were disposed as follows:

Luftflotte 2 (G.d.Fl. Albert Kesselring)

Stab/St.G 2	Ju 87 B	Köln-Ostheim	3	(3)
	Do 17 M	Köln-Ostheim	6	(5)
I.Gruppe/St.G 2	Ju 87 B	Köln-Ostheim	40	(33)
III.Gruppe/St.G 2	Ju 87 B	Nörvenich	38	(27)
I.Gruppe/St.G 76	Ju 87 B	Köln-Ostheim	39	(34)
Stab/St.G 77	Ju 87 B	Köln-Butzweilerhof	4	(3)
	Do 17 M	Köln-Butzweilerhof	6	(5)
I.Gruppe/St.G 77	Ju 87 B	Köln-Butzweilerhof	39	(31)
II.Gruppe/St.G 77	Ju 87 B	Köln-Butzweilerhof	39	(30)
IV.(St.)Gruppe/LG 1	Ju 87 B	Duisberg	39	(37)
II.(S)Gruppe/LG 2	Hs 123	Lauffenberg	49	(38)

1939-1941

Luftflotte 3 (G.d.Fl. Hugo Sperle)

Stab/St.G 1	Ju 87 B	Siegburg	3	(3)
	Do 17 M	Siegburg	6	(5)
II.Gruppe/St.G 2	Ju 87 B	Siegburg	38	(33)
I.(St.)Gruppe/186	Ju 87 B	Hemweiler	39	(36)
III.Gruppe/St.G 51	Ju 87 B	Köln-Wahn	39	(31)

Luftflotte 5

1.Staffel/St.G 1	Ju 87 R	Trondheim	13	(10)
2.Staffel/St.G 1	Ju 87 R	Trondheim	13	(10)
3.Staffel/St.G 1	Ju 87 R	Trondheim	13	(10)

Unit Commanders

Unit	Luftflotte	Commander
IV.(St)/LG1	2	Hptm Kogel
Stab and I./StG 1	3	Oberst Baier
Stab StG 2	2	Major Oskar Dinort
I./StG 2	2	Hptm Hubertus Hitschhold
II./StG 2	3	Major Walter Enneccerus
III./StG 2	2	Major Clemens Graf von Schönborn-Wiesentheid
III./StG 51	1	Major von Klitzing
I./StG 76	2	Hptm Walter Sigel
Stab StG 77	2	Oberst Günter Schwartzkopff
I./StG 77	2	Hptm F-K Frhr. von Dalwigk zu Lichtenfels
II./StG 77	2	Hptm Waldemar Plewig
I.(St)/Tr.G 186	3	Hptm Walter Hagen

A Ju 87 B of 2./St.G 1 showing auxiliary tanks below the wings and the unit badge on the engine cowling. During the invasion of Norway, this was the only Gruppe to be equipped with the extended-range version and, until the airfields at Fornebu and Sola were in German hands in April 1940, it operated from Kiel-Altenau in northern Germany.

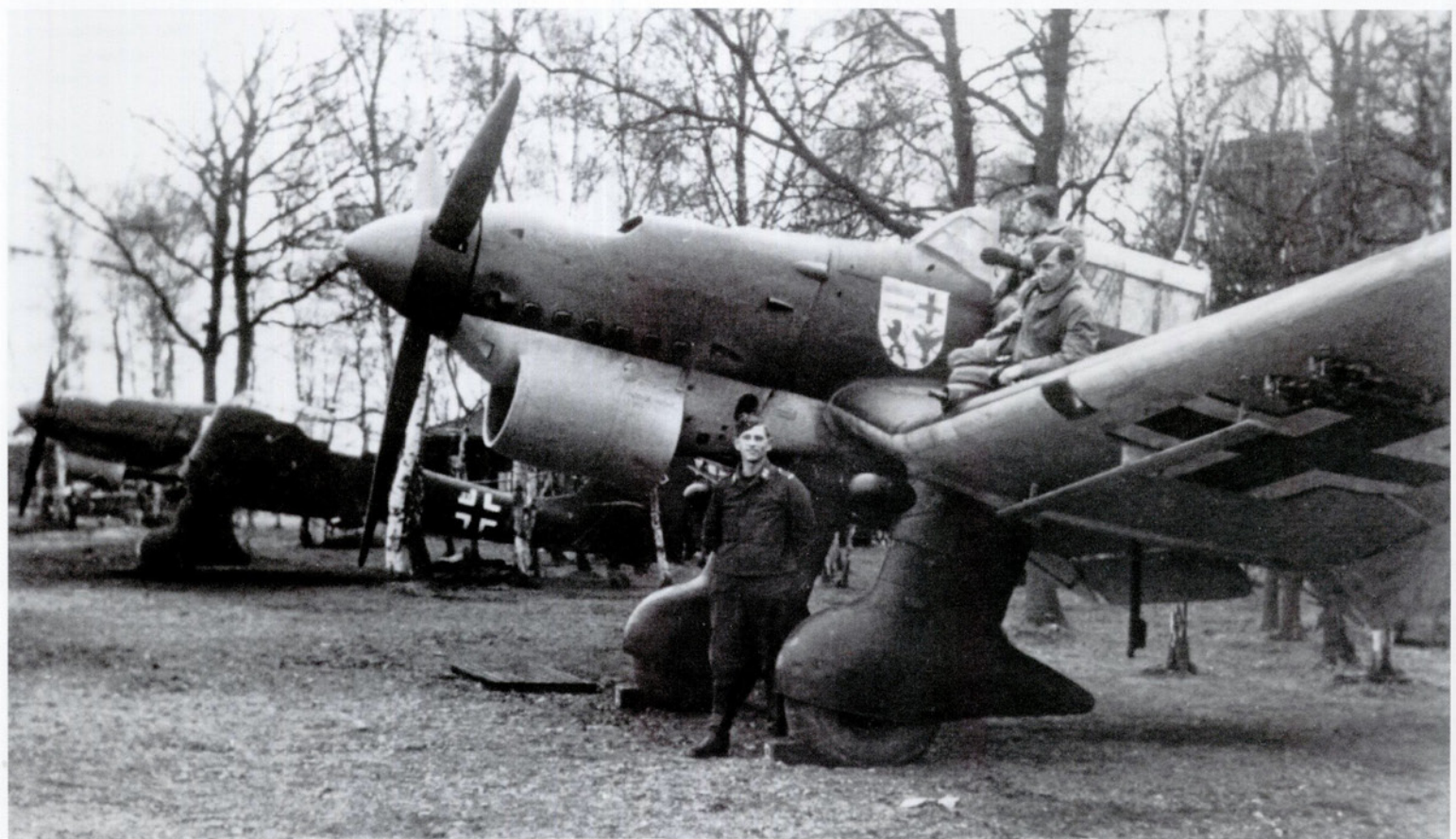
The Allies had been given seven months to prepare for this, but crumbled just as fast as had the Poles. The *Stuka/Panzer* combination was always worth far more than its separate components. The Germans believed in concentration of force, be it tanks in armoured divisions, or the use of all types of aircraft for one specific purpose. The Allies far outnumbered the Germans in both tanks and aircraft, but spread themselves thinly, reacted sluggishly and were always ill-prepared from day one. Much work had been done on the German side to improve, still further, the already close liaison



between the dive-bombers and the ground forces. Speed of reaction was key, in a rapidly altering scenario that changed from hour-to-hour, rather than weekly as the Allies were still inclined to think.

The formation of VIII. *Fliegerkorps* typified the approach; a whole flying formation *exclusively* devoted to close support of the army. To ensure the army got the firepower it requested, and, more importantly, on the precise area it wanted it and at the exact time required, the linkage between *Stuka* and *Panzer* commanders had to be as close as it was possible to make it. Thus, the *Fliegerverbindungsoffizier* ('*Flivo*') came into being – Air Liaison Officers from the *Stuka* units assigned to each particular Army Group. They were pilots with battle experience gained in Spain or Poland, and thus understood what could be provided in a given condition, and how best the Army's needs could be served.

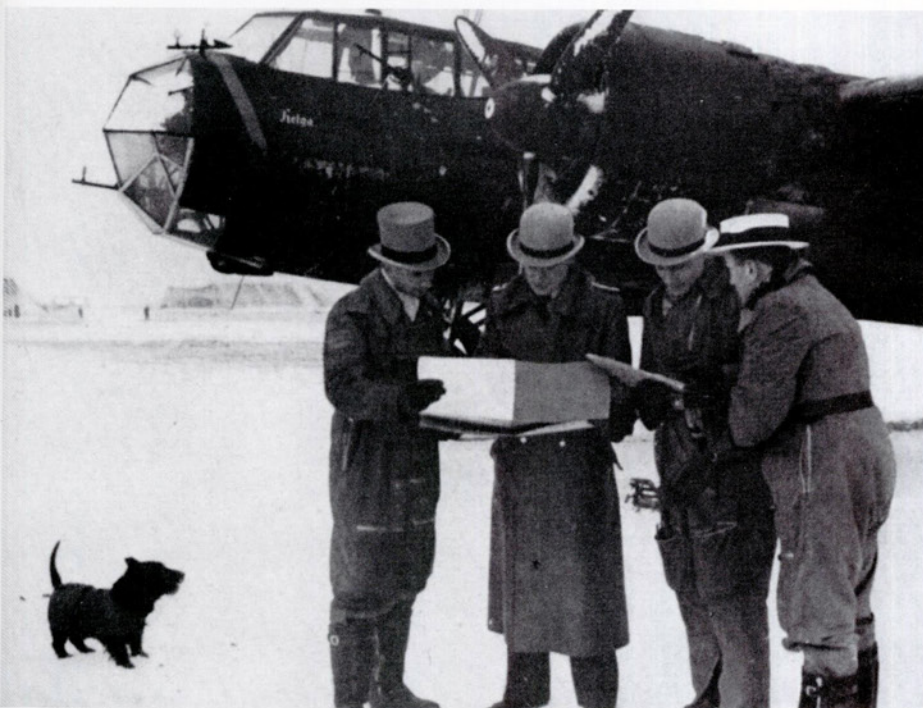
These early production Ju 87 B-1s belonging to the Stab of II./St.G 2 were photographed at their base in Bonn-Hangelar during the spring of 1940. The main aircraft featured is coded T6+BC, with the 'B' painted in green and it also carries the II. Gruppe badge just below the front cockpit. This unit operated independently from the rest of the Geschwader until it was absorbed into St.G 3 on 13 January 1942.



At the sharp end of combat, air guidance teams were embedded with the leading tanks. They had their own radio units and had both an army and *Luftwaffe* officer in charge. Whenever enemy resistance stiffened, or unexpected obstacles and defence works were encountered which might slow down the fast moving armoured thrusts, these specialist teams on the spot could see for themselves the situation and quickly call up the Ju 87s carrying the correct ordnance for the job; then direct them to the target. As in all close air support, the risk of dropping bombs on friendly troops was real, and



Members of 7./St.G 51 above posing with a Ju 87 B marked with the Staffel's distinctive yellow comet and black bull badge below the cockpit. It would seem that, during the French campaign, various Luftwaffe units began adopting distinctive headwear. Thus while some aircrew of KG 2 left adopted boaters, top hats, and bowlers, the flying personnel of 7./St.G 51 chose traditional French berets.



indeed happened. Trust had to be built up that the aircraft would deliver the explosives on the enemy, a few hundred metres from friendly positions, rather than friendly troops. The Allies, who always lacked the precise targeting ability of the *Stuka*, never resolved this problem satisfactorily. By contrast, trust was quickly established between the *Wehrmacht* and the *Stukas*, and the sobriquet, 'Flying Artillery' was freely given, proudly worn and, above all, continually worked upon. The principles are clear enough nowadays, but in 1940 they were revolutionary.

In the north, Günter Schwartzkopff continued to lead the St.G 77 from the front. Their targets included the "impregnable" Belgian fortress of Eben Emael at the junction of the Albert Canal and the Maas river, and considered to be the lynch pin of the Belgian defence lines. Expected to hold up the German advance for weeks, it fell in hours to a small force of German paratroopers assisted by precision attacks by *Stukas* led by *Hauptmann* Waldemar Plewig's II./St.G 77. He told this author that his crews had been training hard since February under conditions of the strictest security, but only at

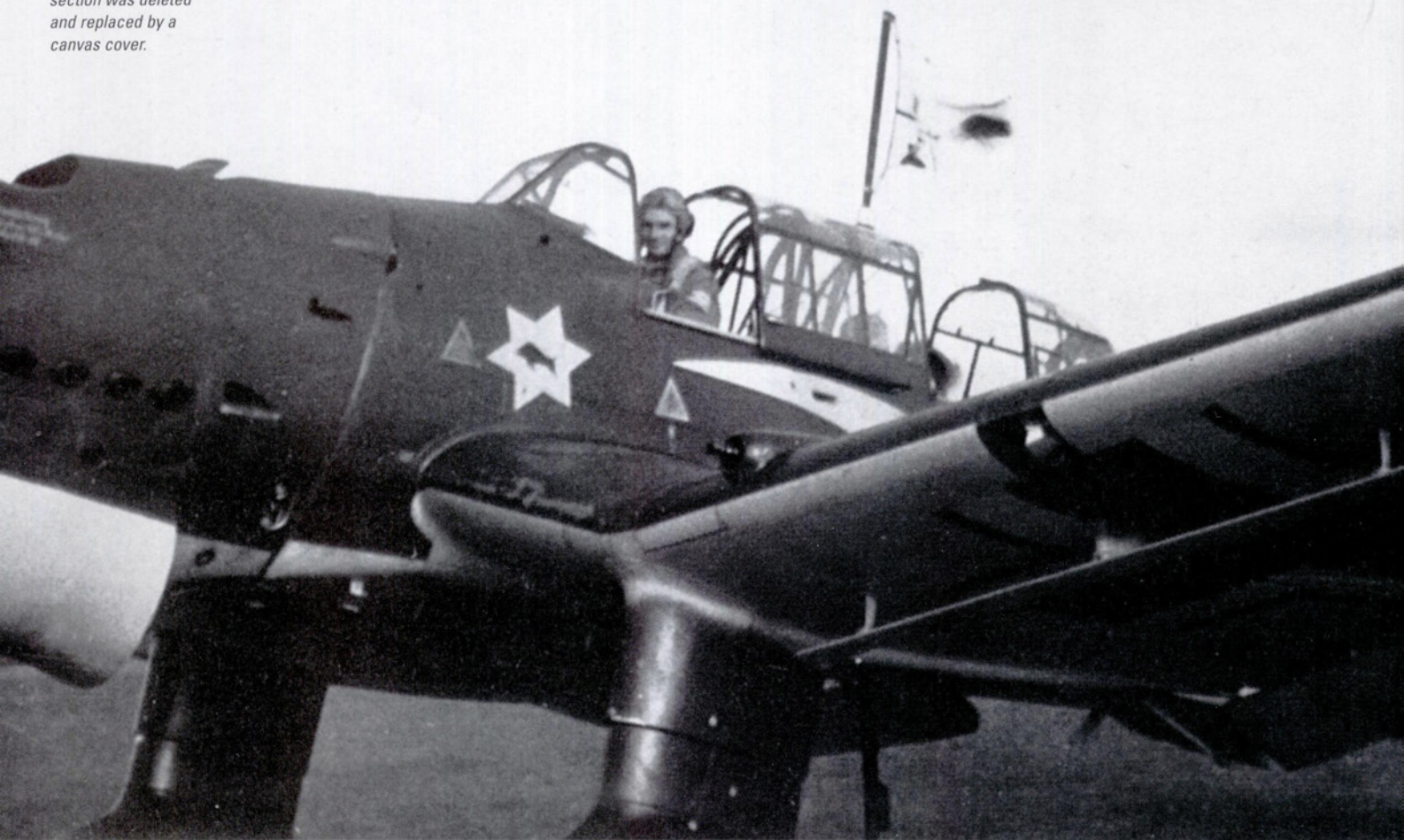
These Do 17 Ms operated with the Stab/St.G 2 at Köln-Ostheim where they were used as observation aircraft to assess damage caused against targets following operations by the unit's Stukas.



0200 on the morning of 10 May was he finally permitted to actually issue the operational command. Indeed just the previous day Schwartzkopff and Plewig were taking examinations from new entry pilots at the training base of Lippstadt! In the event the attack was conducted "... as in a peacetime exercise" and was successful.

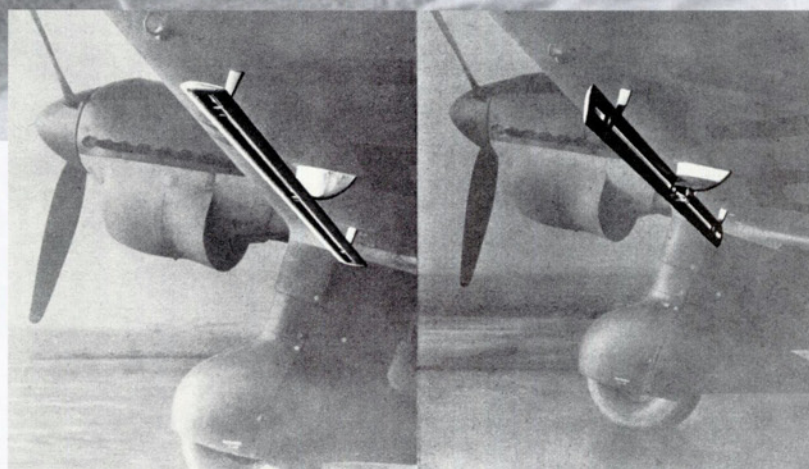
Another view of a Ju 87 B-1 of 7./St.G 51 showing more clearly the black bull superimposed upon the star. Note the hard demarcation between the upper and undersurface colours, indicating that this had been masked off when sprayed. The undercarriage fairings on early models of the Ju 87 were all metal and telescoped when the oleo was compressed or extended. On later versions, the telescopic section was deleted and replaced by a canvas cover.

Holland quickly fell. The best defence of this flat and open land against German tanks lay in its myriad of waterways and canals, crossed by a few bridges, which became strategic prizes to be blown or preserved as the need arose. Three of the most important were two at Dordrecht and one at Moerdijk, which the Germans had to capture intact. St.G 77 were to ensure that they were by attacking defending troops positions and preventing their destruction until the German paratroops arrived, then supporting these lightly armed units by providing heavy firepower. At this stage the *Stukas* were still, operating from their home bases. Schwartzkopff had gone around each *Staffel* prior to take-off, demanding the highest standards and discipline from every aircrew for this vital mission. It was still dark when the *Geschwader* took off from Köln at 0555 and headed west. As they flew over the Kölner Platz in battle formation, all that could be seen were the flames from their exhaust valves. An hour and a half later the Ju 87s returned, with Schwarzkopff, 'the *Stuka* Father' last back, having lingered over the target area as long as possible to observe the results. The bridge still stood and was in German hands. After hastily re-fuelling and re-arming, the *Stukas* were back in the air at 0815 heading for Cygenbilsen against Dutch troops massing there. The third mission that morning took off from Köln at 1100, and they again hit Dutch formations at Vroenhofer. An hour later and the fourth combat sortie



There were various ways in which a Ju 87 pilot could dive onto his target. One involved flying over the objective until it appeared in a small window situated in the cockpit floor. The pilot would then drop the nose until the target appeared in his windscreen. An alternative method, as demonstrated here, was to bank the aircraft onto its back before dropping the nose and centring the target in the windscreen. Pilots commenced their pull-out at 1,500 feet and estimate this height by judgement. When use of the automatic pull-out device was abandoned, an electric horn operated from the altimeter was fitted instead, but this also was not used as crews found the sudden noise was too alarming.

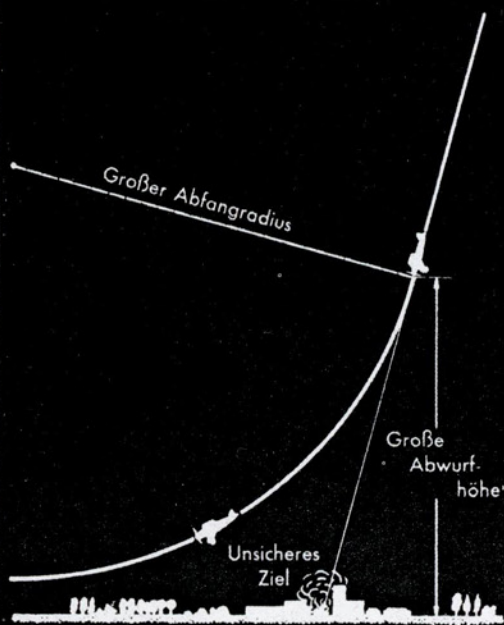
Two photographs from a Ju 87 handbook showing the dive brakes in the retracted and extended positions.



Ohne Sturzflugbremse

Hohe

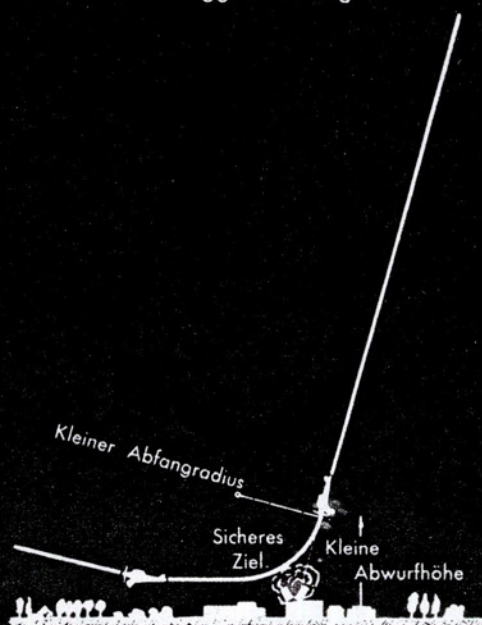
Sturzfluggeschwindigkeit



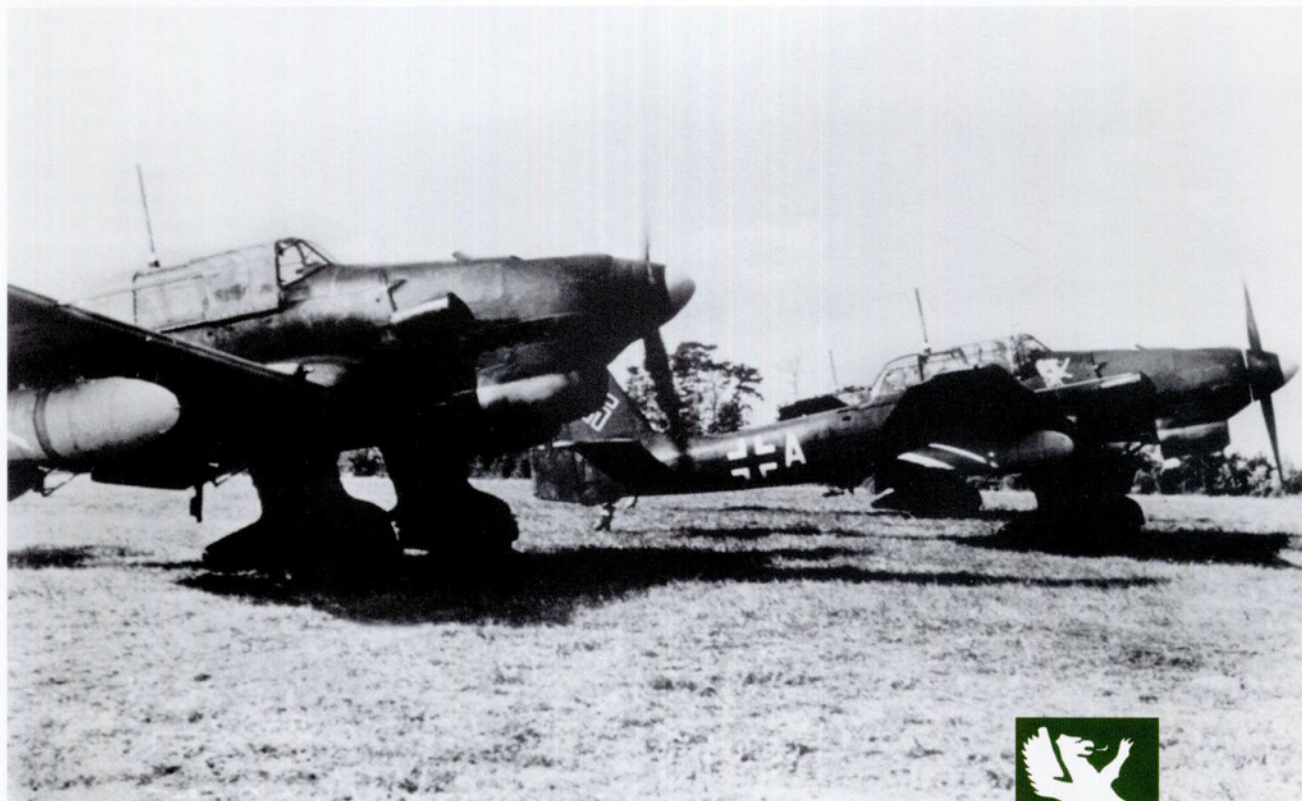
Mit Sturzflugbremse

Geringe

Sturzfluggeschwindigkeit



Dive bombing allowed the aircraft to accurately place bombs on relatively small or moving targets without the need for a sophisticated bombsight. These illustrations, taken from the Ju 87 handbook, show the comparison between attacking with and without the dive brakes extended. In the drawing on the left, the aircraft's greater speed requires the pilot to pull out of his dive at a relatively high altitude and with a corresponding loss in bombing accuracy. Conversely, the illustration on the right shows that by deploying his dive brakes, the speed of the aircraft is reduced, allowing the machine to descend to a lower level before the pilot has to pull out of his dive. Although the pull-out radius is tighter, the aircraft has released its bomb very close to the target, the flight time of the bomb is reduced and accuracy improved.



Ju 87 Rs of 6./St.G 2 at Ouilly-le-Tesson, in France, probably in May or June 1940. The aircraft in the background, coded T6+AP, was flown by the Staffelkapitän of 6. Staffel and, unlike the aircraft in the foreground, carried the Staffel's winged griffin badge just forward of the cockpit.



Junkers Ju 87 R-2 T6+AP flown by the Staffelkapitän of 6./St.G 2 'Immelmann', Summer 1940

This aircraft was finished in the standard bomber splinter scheme of RLM 70 and 71 on undercarriage and upper surfaces with RLM 65 on all undersurfaces. The individual aircraft letter A and the spinner tip were in yellow, the Staffel colour.

was conducted, the dive-bombing of a fortified enemy position at Kesselt, south-west of Maastricht. Nor had the *Geschwader* finished; a fifth, and final, mission was called for and the weary pilots climbed into their cockpits yet again. This time it was a longer journey that faced them, all the way to Antwerp docks where they delivered a devastating attack on shipping and port installations there. With ease the *Stuka* had switched from close-support targets to strategic objectives, in just one day. Next day they delivered an attack against an enemy concentration at Oitschaft Poppel.

The pace and intensity of these operations applied to all *Stuka* units for the following months – five, six even nine combat sorties a day was commonplace. In addition to this, as the advance gathered momentum, the Ju 87s found themselves changing bases every two or three days or so to keep up with the advance. For example, the *Stuka* of I.(St.)/Tr.Gr.186 with thirty-nine aircraft on strength, was initially based at Hennweiler, Hunsrück moving on to Bitburg, Eifel and from there they took as their first target (of the sixty they flew during the offensive) Frescaty airfield near Metz. The first similar rapid shift of base for the *Stab*, II./St.G 77 and I was to Aachen airfield as part of the whole movement of VIII. *Fliegerkorps* to co-operate in the Sickle thrust through Sedan and across the Meuse. First though, the *Stukas* were able to break up counter-attacks by armoured forces near the Belgian fortress of Liège and Gembloux north-west of Namur. This duly accomplished, they turned their attentions to the French defence positions on the south bank of the Meuse, where both artillery positions and anti-aircraft batteries were targeted to great effect.

The greatest loss this day was *Oberst* Günter Schwartzkopff. Göring himself had ordered that the *Geschwader Kommodore* of St.G 77 cease flying operations and return to Berlin immediately to take up a new post as Inspector of *Stuka* forces since he was considered too valuable an asset to risk his life in combat. Schwartzkopff turned a Nelsonic 'blind-eye' to this order as he was determined to lead

Günter Schwartzkopff

'His main work was to create the correctly developed dive-bombing techniques for the Junkers Ju 87 Stuka. He soon found the great possibilities, which were hidden in this new kind of bombing approach. Once he was sure, he devoted all his efforts into developing the Ju 87. Energy and determination helped him and also his ability to lead. There were lots of difficulties in the beginning. Many new Luftwaffe leaders – whom he had to enlighten – were not from former World War comrades. His squadrons were initially fighter units and thus were mostly educated in the role of the hunter and not the ground-attacker, especially when it involved new and unproven technical problems.'

'Diving skill and accuracy were of paramount importance and under his personal leadership were continually improved and bettered. Releasing bombs when diving was scientifically and practically examined and lessons were painstakingly learned from their dedicated experiments.'

Epitaph to Günter Schwartzkopff, former *Geschwader Kommodore* St.G.77

Günter Schwartzkopff was born in Forbach, near Posen, on 5 August 1898. He was one of the original true believers in the concept of the dive-bomber and is known in aviation history as the 'Father of the *Stukas*' or the '*Stuka* Pope'. As a 16-year-old expectant officer he went to the Western Front in 1914 and during the summer of 1915 was wounded in the battle of Verdun. After recovering from his wounds, he transferred in the autumn of that year to the *Luftstreitkräfte* with whom, after flying training, he went on to fly missions over both the Western and Eastern Fronts.

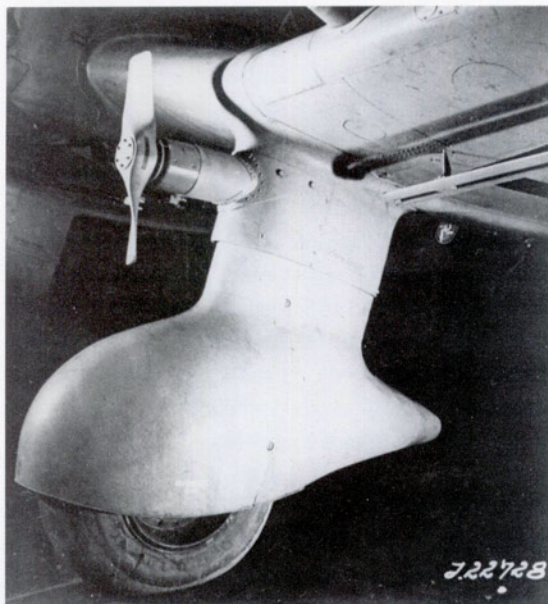


After the First World War he became an Infantry Officer with the *Reichswehr*, and in 1933 he joined the clandestine *Luftwaffe* which at that time was still part of the general *Wehrmacht*. He was promoted to *Hauptmann* and later joined the *Reichsluftfahrtministerium*. Around 1935-36 he was promoted to *Major* and became *Kommandeur der Fliegerschule* at Celle. Another promotion to *Oberstleutnant* followed in 1938 and he then he was appointed *Kommodore* of St.G 165 which later was re-designated St.G 77 in 1939.

He was responsible for the testing of the Ju 87 as a front line tactical weapon and was responsible for naming the programme '*Jolanthe*'. Through his dedication and thoroughness, including testing the Ju 87 in Spain under operational conditions, he has been largely credited with laying the foundations for the introduction of the *Stuka* units as an offensive weapon in the new *Blitzkrieg* war.

At the time of the Polish campaign he flew operational missions with St.G. 77, took part in the push on Warsaw and the assault on Radom and Bzura and also in the pursuit of Polish troops over the Vistula. After this he moved to the Western Front and flew operations over Holland, Belgium and France during the attack on the Low Countries. In April 1940 he was promoted to *Oberst*.

During a combat mission on 14 May 1940 over the Maas near Le Chesne, in the area of Sedan, his Ju 87 was shot down by *Flak* and he was killed. At the time he had been nominated to be promoted to *Generalmajor*.



A close-up factory photograph of the aerodynamically-driven siren mounted to each of the Ju 87's undercarriage legs which became known as the 'Trombones of Jericho'. This device was responsible for generating the Stuka's fearsome scream during its dive, which struck fear in anyone on the ground. This simple device also helped to demoralise ground troops who frequently left their post in order to find cover, even though the bomb, when released, would not be likely to explode anywhere near them.

Federbeinverkleidung on the *Fahrwerk*. We did not get supplied by industry until after. They turned in the wind of the dive and created a noise that became louder with speed. The howling sound distracted and upset not only the enemy but also the crew! It became better when you could turn off the propeller by means of a *Seitenzug* (side-switch) ."⁷

Worried British Air intelligence officers could only watch as a disaster scenario unfolded. On 17 May it was reported that:

"Another dive-bomber unit has been identified as operating in the Liège area, and dive-bombers are being employed south-west of Luxembourg. Frequent requests for dive-bomber support are being made by land forces to attack fortresses in the Liège and Mezières districts, and it is now estimated that about sixty per cent of the dive-bomber force is being employed."⁸

Other Stuka units had been similarly totally committed. St.G 2 *Immelmann* had moved to support 6. Armee on 12 May after good work in Holland, with I./St.G 2 being based at Golzheim, while on the 14th, II./St.G 2 received delivery of the first longer-range Ju 87 Rs while *Hauptmann* Heinrich Brücker took over command of III./St.G 2. In all, two hundred dive-bomber sorties had broken the French defences on the Meuse, and German tanks were across and racing forward finding, to their amazement, nothing much at all behind that thin shield. Army Group A pressed on and on 18 May reached the upper reaches of the River Somme and pressed on to Amiens with the coast at Abbéville within their grasp.

Two Allied attempts were made to cut the slender corridor opened up by the *Panzers*; on 17 May at Montcornet and on 19 May to take the bridges over the Serre River, when the French 4th Armoured Division under Colonel Charles de Gaulle, made its bid from the south. In each case a little progress was made but was brought to an abrupt halt by the intervention of III./St.G 2 and St.G 77. Although direct hits on such targets as tanks were rare, the use of the new fragmentation bombs on these occasions, which stripped the tracks from the tanks and rendered them inoperable, was critical. The remnants of the French armour scattered and took what cover it could behind walls and barns. But the *Stukas* hunted them down and destroyed them before they could regroup and intervene.

On 21 May the British tried their luck, when seventy-four Matilda tanks of the IV and VII Corps launched an assault from their main base at Arras. The dive-bombers of the St.G 2 were called in to deal with them and inflicted heavy losses. The British attack failed and the German spearheads pressed on to reach the mouth of the Somme. The dive bombers were again switched from direct support and bombed Allied airfields such as Vaux, as well as rail junctions and rolling stock along the line of the rivers Oise and Aisne, preventing any similar attacks being organised from the south. St.G 77, for example, moved from its previous forward base at St.Trond to Rocroi from where it struck

his young aircrew into battle against the French. During an operation that afternoon mounted against the flak positions at Le Chesne, his aircraft was hit on the way down in its dive and failed to recover. Schwartzkopff was replaced by *Major* Clemens Graf von Schönborn-Wiesentheid formerly *Kommandeur* of III./St.G 2 that same evening and operations continued. Part of the effectiveness of the Ju 87 was in its effect on the morale of the enemy. The French General, Edouard Ruby, noted in dismay how, French artillerymen simply "... stopped firing and went to ground, the infantry cowered in the trenches, dazed by the crash of the bombs and the shriek of the dive-bombers."⁶ Anything that could enhance this effect was welcome.

Friedrich Lang, a pilot with I./St.G 2, recalled how the notorious 'Trombones of Jericho' came about.

"We started the war without sirens in our *Gruppe* in 1939. In April 1940 we were with the I./St.G 2 at Köln-Ostheim airfield. There we had a home-made whistle and siren, but they did not work very well until the small special-shaped wooden propeller was fitted to the

⁶. General Edmond Ruby, *Sedan' terre d'épreuve*, Paris 1959.

⁷. Oberst Friedrich Lang to the Author.

⁸. Air Ministry, Summary of Air Intelligence, No. 302 (AIR 22 9/04811).

at Merville airfield north of Béthune as the *Panzers* swung north to Boulogne, Gravelines and Calais. The HQ of the British Expeditionary (BEF) Force at Arras was now threatened and dive-bombing attacks were made north of that town and at Le Chesne.

As the BEF sought to evacuate the Channel coast ports one after the other, the Ju 87s once more started to hunt naval targets just off the coast in the lithe shapes of British and French destroyers which were supporting the British 20th Guards Brigade holding the outskirts of Calais. Once the evacuation of Calais port was authorised, several of these warships entered the harbour to embark troops. This concentration of shipping in the harbour area was set upon by sixty *Stukas* at 1730 that afternoon, and the French destroyer *Orange* was sunk, while the *Frondeur* and the British *Whitshed* were both damaged. Next day the French *Chacal* went down, but by then the *Panzers* had entered Calais. Here the British ordered the garrison to fight to the end. Again British destroyers closed the coast to offer fire support and again the *Stukas* subjected them to heavy and prolonged assault, sinking the *Wessex* and damaging the *Vimiera* and Polish *Burza* on 23 May. Throughout the next two days furious dive-bombing continued against the last British troops holding out in the town's Citadel, St.G 77 attacked at 0930 on the 26th, followed by St.G 2 later that morning and so it continued all day. One British eyewitness later described what this was like for the defenders:

*"The dive-bombers came. From ten o'clock, or a little before, there was almost incessant low-level bombing till some time in the afternoon, and the damage it did was enormous. The bombers came in nearly continuous relay to attack the inner town, the Citadel, and the docks. For a long time there were always three squadrons of the enemy overhead: one squadron bombing, another circling and waiting to attack, the third returning for more bomb-loads."*⁹

Calais fell at 1645, and with it 20,000 British and French soldiers went into captivity. What remained of the BEF with its remaining French allies was gradually squeezed into a smaller and smaller perimeter around the port of Dunkirk and along the wide, flat beaches towards the Belgian frontier. Here a *third* of a million men waited patiently for the Royal Navy to rescue them, which, as the *Panzers* were held back, it did quite magnificently. However, it was at a cost for, bad weather interruptions aside (the *Stukas* were grounded briefly by poor visibility on both the 29 and 31 May), the dive-bombers were committed fully. The mass of men on the beaches, the stationary warships and smaller vessels offshore, the Dunkirk mole itself – all were repeatedly attacked over the course of a grim week.

Göring made the boastful promise to Hitler that his *Luftwaffe* could finish the job unaided, and the *Panzers* were halted. But of course it was not just the *Panzers* that needed replenishment; VIII. *Fliegerkorps* had likewise been in non-stop action for the same period, yet *General der Flieger* Kesselring, commander of *Luftflotte 1*, was told that the job was his. He later recalled his feelings at this news:

"I was all the more surprised when my Command – perhaps as a reward for our late achievements? – was given the task of annihilating the remains of the British Expeditionary Force almost without assistance from the army."

For one thing this was not a practical task. Working from fresh bases in the St.Quentin area, the Ju 87s could only just reach the Channel coast, so St.G 2 moved up yet closer, to Guise. Yet precision attacks hit and destroyed the vital lock gates blocking off the inner harbour.

The Royal Navy committed forty destroyers and a host of smaller vessels to Operation *Dynamo* – the evacuation, and they took grievous losses – six destroyers were sunk and twenty-three were damaged, mainly by *Stuka* attack, and of the 693 lesser vessels sent over, no fewer than 230 were sunk and many others damaged. Nonetheless, the total of army personnel rescued in terrible conditions was 338,266. The *Stukas* would have achieved more had they concentrated more on the ships and less on the beaches, as David Divine rightly pointed out: "... a bomb dropped in the soft sand of the dunes of La Panne might kill five men; one bomb dropped on a crowded destroyer might bring death to 500."¹⁰ However the achievements of the Ju 87 were considerable and Britain could ill afford to lose so many ships. Admiral Bertram Ramsey wrote bitterly in his final report on the operation: "*Full air protection was expected, but instead, for hours on end the ships off-shore were subjected to a murderous hail of bombs and machine-gun bullets.*"

⁹ Eric Linklater; *The Defence of Calais*, London 1941.

¹⁰ David Divine, *The Nine Days of Dunkirk*, London, 1959.



A common scene on the beaches of Dunkirk in June 1940 following the evacuation of the British Expeditionary Force. Vast numbers of vehicles and quantities of equipment had been abandoned. The *Stuka* units had taken a heavy toll sinking or severely damaging many of the evacuation ships. At midnight on the 4th, the day the last British ship left, Hitler ordered that bells throughout the Reich should rung for three days to signal the victorious end to what he deemed to be "the greatest battle in world history."

Germans were free to turn south once more to finish off the demoralised French. The *Stuka* crews and support teams were not allowed much time to recuperate. I./St.G 77 for example worked from Crupilly on the eve of the attack and on 5 June made three attacks on French troop concentrations around Nestle. By dawn on the 7th the dive-bombers were pounding away at the French near Noyon, at Morcuil, south of Amiens, and to the north of Beauvais, clearing the north bank of the Seine.

On 9 June the final German attack opened all along the 650 kilometre front from Abbeville to Sedan. Sweeping south Paris soon fell on 14th. The *Panzers* moved swiftly with the Ju 87s which again changed bases rapidly to keep up with the momentum of the armour. As they crossed the rivers Loire, Marne and Seine. Even the Maginot Line fortifications were on the *Stukas* target list at long last; having been outflanked they were taken from the rear. One neutral eyewitness gave this view of the *Blitzkrieg* at work:

"You have to see the German army in action to believe it. Here are some of the things, so far as I could see, that make it good: It has absolute air superiority. It seems incredible, but at the front I did not see a single Allied plane during the day-time. *Stuka* dive-bombers are softening the Allied defence positions, making them ripe for an easy attack. Also, they're wrecking Allied communications in the rear, bombing roads filled with trucks, tanks and guns, wiping out strategic railroad stations and junctions."¹¹

St.G 77 shifted base to Contescourt for two days, then it moved on to Maast. By 13 June it was attacking targets west and south of Troyes, between the Seine and the Yvonne rivers. Outflanking the Forêt d'Othe, its next targets were yet further south-west, near Auxerre, where the French had dug in and fought hard. Another swift shift of airfield to Courgivaux and sorties were made against the now broken enemy columns south of the river Loire and as far east as Dijon. The *Geschwader* moved once more, to Auxerre airfield on 18 June and from there gave support to the Loire crossing by hitting targets near Bourses, a rail bottleneck on the road south to Montluçon and Vichy. Meanwhile the French Government, under the defeatist and collaborationist General Pétain, sued for peace and all fighting finally ceased on 24 June. The end in France saw a general shift back north, with the *Stukas* concentrating along the Channel Coast for the next phase, carrying the war to England.



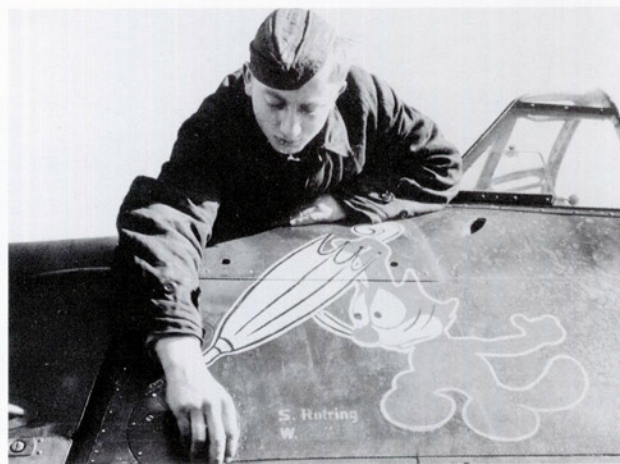
As French airfields fell to advancing German forces, the Luftwaffe quickly occupied them, taking control of facilities and fuel. This photograph, taken from an overflying He 111 shows several destroyed French aircraft and minor bomb damage, together with Bf 109 Es and He 111s as well as a Ju 52 transporter already 'in residence'.

¹¹ William L Shirer, *Berlin Diary; the Journal of a Foreign Correspondent 1934-1941*. (New York, 1942).

The Channel Battles

With no experience of major amphibious operations, the Germans tended to regard the crossing of the English Channel as a much tougher river forcing, as at the Meuse. And with no Navy as such left after the heavy losses off Norway, it was left to the *Luftwaffe* to not only protect the invasion convoys from intervention by the still powerful Royal Navy, but to provide the covering artillery support to get the troops ashore – two very different tasks with the same limited force. Moreover, just as the RAF had been handicapped by having to fly protection at long range over Dunkirk, and had largely failed, now the boot was on the other foot, and the *Stukas* would be operating over a very hostile environment, into the teeth of the enemy's aerial defences at long range¹². This was without the factors of the radar chain, which gave advance warning, so no surprise attacks were possible, plus the issue of morale, with the RAF fighting over home territory.

Nonetheless, as the dive-bombers moved into their new bases, confidence was high. A force of 280 dive-bombers were assembled under von Richthofen's VIII. *Fliegerkorps* south of the Seine, with St.G 2 based at airfields near Falaise, St.G 1 near Cherbourg and St.G 77 at Flers, La Ferté and Maltot in Normandy, with newly-forming I./St.G 3 (formerly I./St.G 76) further back near Vannes, and with II./St.G 1 (joined by the 7./St.G 51 which became 4./St.G 1) and IV.(*Stuka*)/LG 1 in the Pas de Calais area, under *Luftflotte 2*. The first task of these *Stukagruppen* was to operate as part of *Oberst Johannes Fink's*, who, acting as '*Kanalkampfführer*', led a special force drawn mainly from units belonging to II. *Fliegerkorps* tasked with closing the English Channel to shipping and clearing the defensive British destroyer flotillas from their anti-invasion bases of Dover, Portsmouth and Portland, thus drawing in RAF fighter units to be destroyed piecemeal. Although the *Stukas* were to act partly as bait, their role was mainly to conduct a limited offensive.



A mechanic leans across the cowling of a Ju 87 of 6./St.G 2 to close the oil-filler cap. In the summer of 1940, 6./St.G 2 replaced its griffin badge with one depicting a 'Felix the Cat' with an umbrella, representative of Neville Chamberlain at Munich. The opening just beneath the canopy rim close to the mechanic's elbow is the flare pistol port.

Junkers Ju 87 unit disposition – 1 July 1940

Unit	Commander	Base	Strength
Stab St.G 1	Major Walter Hagen	Angers	2
I./St.G 1	Major Paul-Werner Hozzel	Angers	27
II./St.G 1	Hptm Anton Keil	Pas deCalais	32
III./St.G 1	Hptm Helmut Mahlke	Angers	26
Stab St.G 2	Major Oskar Dinort	St.Malo	3
I./St.G 2	Hptm Hubertus Hitschhold	St.Malo	29
II./St.G 2	Hptm Walter Enneccerus	Lannion	33
III./St.G 2	Hptm Heinrich Brücker	St.Trond	31
Stab St.G 3	Oberst Georg Edert	Caen	2
I./St.G 3	Hptm Walter Sigel	Caen	14
Stab St.G 77	Major Clemens Graf von Schönborn-Wiesentheid	Caen	3
I./St.G 77	Hptm F-K Frhr. von Dalwigk zu Lichtenfels	Caen	33
II./St.G 77	Hptm Waldemar Plewig	Caen	25
III./St.G 77	Hptm Helmut Bode	Caen	37
IV.(<i>Stuka</i>)/LG.1	Hptm Bernd von Brauchitsch	Tramecourt	35

Of this total of 332 from an establishment strength of 456 Ju 87s, only about 280 were initially fully operational. All these units operated the *Berta-2*, although St.G 1 had a few R-1s on strength.

Attacks against shipping had become commonplace, but still, maritime *Stukas* apart, the aircrews had to work out their best practice methods 'on the hoof' as it were. Former naval man *Hauptmann* Helmut Mahlke, leading III./St.G 3, told this author how it was to take on a moving target. Dives were, whenever possible, made against the head wind, aiming off with the *Reflex-Vizier* sight, to give due allowance for wind-drift after release. It was always difficult to gauge the exact wind direction at sea as

¹² The late, and much-respected Jeffrey Ethell for example, described the Stuka in one of his books as being photographed, "on the way to London", this just never happened but is widely believed.



A closer view of the badge of 6./St.G 1. Note the shadow on the cheek of the man seated in the cockpit, caused by the diving lines engraved on the canopy. Used by the pilot when diving, these lines were aligned with the horizon and indicated the dive angle. They were engraved only on the starboard side of the canopy.

Ju 87 B-1s of 6./St.G 1 in France in the summer of 1940. When St.G 1 was first formed in July 1940, its Stab, Stab-Staffel and I. Gruppe were allocated the operational code A5 and the Staffel letters A, B, E, F, H, K and L. However, although formed at the same time, the II. Gruppe was allocated the operational code 6G and the Staffel letters D, R, S, T and possibly U. This aircraft (Right) is 6G+AT and carries the badge of 6./St.G 1 on the forward fuselage.

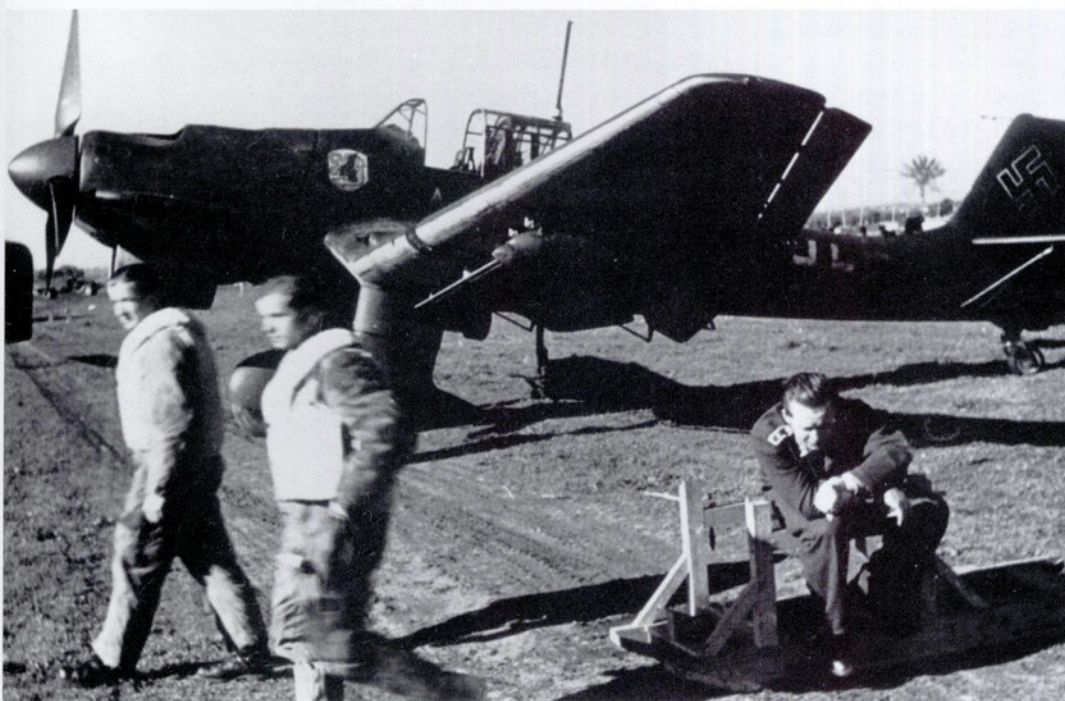


Junkers Ju 87 B-1 of 6./St.G 1, France 1940

Finished in a standard 70/71/65 splinter scheme, this machine had its individual aircraft letter A in yellow and had a yellow band on the spinner. Note that the aircraft had only one siren, the propeller on the port side being removed and the housing faired over.



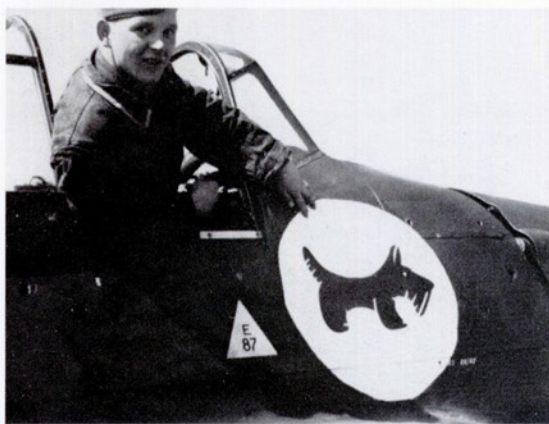
A damaged Ju 87 of 7./St.G 1. This Staffel was formed in July 1940 by redesignating the former 1./Trägergruppe 186, a Staffel which had been especially formed to operate from the German aircraft carrier 'Graf Zeppelin', hence the anchor in the Staffel badge. In the event, the carrier was never completed but the badge was retained by 7./St.G 1 throughout its existence. A number of aircraft from this Staffel were marked with the names of places of some significance in the unit's history. On the engine cowling of this example is the name 'Lee-on-Solent', a naval air station on England's south coast. The code on this machine was J9+MH.



Ju 87s of 7./St.G 1 in France. Note the name on the engine cowling of 9J+KH below and the helmet and anchor badge on the machine left. On operations conducted in 1939 and 1940, a Staffel was usually broken down into Ketten flying in Vic formations. The moment at which they were to dive was determined by the Staffelkapitän, or by the leading aircraft. This was the first to dive, followed by the left aircraft and then the right aircraft. The left and right Ketten then dived successively in the same order.



The crew of this Ju 87 B of 7./St.G 1 appear to be waiting in readiness for orders to take off on a mission. They are wearing life jackets, which would indicate that the targets are likely to be shipping in the English Channel. Note how the Swastikas on the fins of the Stukas on these facing pages differ in their positioning. Some are found on the fin/rudder, others found on the fin only.



The badge of the Gruppen Stab and the various Staffeln of I./St.G 2 comprised a Scottish terrier superimposed upon a disc in the Staffeln colour. The inspiration for the badge was a dog of this breed owned by Hptm. Hubertus Hitschhold, the Kommandeur. The white disc shown here indicates the aircraft belonged to I./St.G 2.

it was so variable at different altitudes. It was essential to continually manoeuvre the aircraft during the dive to compensate for the avoiding action of the target, wind-drift variance and other variables. As conditions changed, they continually affected the pilot's sighting, so accurate aiming required total concentration, even without incoming anti-aircraft fire. Against merchant ships, which at this stage of the war had poor to non-existent anti-aircraft defences, the method adopted was to approach the target from aft in the steepest dive possible, up to 90 degrees according to Mahlke. On descending to around 460 metres, the attack dive was changed to 45 degrees and the sight was lined up on the ship's stern and strafing with the forward-firing guns to keep the ship's gunner's heads down. Machine-gunning was maintained until it

could be seen striking the water ahead of the vessel, at which point the bomb toggle was released, as this would mean the bomb would strike the target behind the bridge superstructure and would bury itself to exert maximum damage and not just bounce off the steel decks at such a low height. Delayed action fusing for about 2-4 seconds ensured that the two following *Stukas* of each *Kette* would likewise have time to deliver their attacks and get clear of the blast. With each dive-bomber delivering one 550 kg bomb and four 50 kg demolition bombs into the target, results were usually positive with the vessels breaking in half.

The first unfortunates to receive the full '*Stuka* treatment' were within a large Atlantic convoy, OA 178, off Portland. St.G 2 struck this convoy, which had no air protection whatsoever, and the Portland naval base itself with devastating results. A brand-new anti-aircraft vessel, the *Foyle Bank* and four big merchant ships were sunk outright, while a further eleven ships were hit and damaged, for the loss of a solitary Ju 87. It was a major victory, which Admiral Max Horton, the commander of the Royal Navy's Northern Patrol, termed "a disgraceful episode". It had the strategic effect of causing the cessation of all further Atlantic convoys via the Channel.

The coastal convoys carrying coal and other vital cargoes to London continued to run the gauntlet and the *Stukas* next turned their attentions to them. Between 7 and 9 July they sank four more ships and hit a coastal defence battery. Even though the RAF had been charged with providing fighter escort to these convoys, on 11 July Ju 87s attacked and hit three more vessels and sank a ship of the Inner Patrol. When poor weather lifted the IV.(*Stuka*)/LG 1 joined in, hitting a convoy off Dover sinking one ship and damaging a second. They also bombed Dover naval base. II./St.G 1's turn came on 20 July, when another convoy was struck, another ship went down, with one damaged, and the destroyer *Brazen* had her back broken, and sank later.



Ju 87s of I./St.G 2 in France. On 16 August, St.G 2 lost nine aircraft during the attack on Tangmere, including one machine of I. Staffeln which was shot down into the sea off Caen by RAF fighters.



Although allocated its own Scottish terrier badge with the disc in yellow, the Staffel colour, 3./St.G 2 also had an alternate badge featuring the coat of arms of Breslau, as shown in these two photographs, probably taken at St. Malo in August 1940, depicting an aircraft being prepared for a mission. Note the generally weathered appearance, and the repainted area on the radiator intake where some stencilling has been obliterated. In the scene above, the machine, T6+HL, is shown with its camouflage of foliage still in place. Finally, as the engine bursts into life the groundcrew with cranking starter handle gather themselves in a minor dust storm. Note the individual aircraft's letter 'H' painted on each lower wheel spat.

Well known photographs of the remains of an almost identical aircraft of 3./St.G 2 — (as seen on page 47) only the demarcation between the upper and lower camouflage colours on the radiator intake indicate that these are different machines — being examined by British service personnel. This aircraft, T6+KL, had taken part in an attack on the RAF aerodrome at Tangmere on 16 August, but was shot down by Hurricanes of 43 Sqn. and crash-landed at South Mundham, south of Chichester. The Stuka flew through trees, heavily damaging the airframe and effectively landed itself. Both members of the crew, Ofw. Witt and Fw. Röcktäschel, were mortally wounded.



1939-1941

Friedrich-Karl *Freiherr* von Dalwigk zu Lichtenfels

Friedrich-Karl *Freiherr* von Dalwigk zu Lichtenfels was born on 1 April 1907 in Torgau on the Elbe. He was affectionately known as 'Kuken' and was a member of the 'Old Guard' of *Stuka* pilots who helped build the dive-bomber forces. On 1 October 1933 he officially entered the *Luftwaffe* as a *Leutnant* and was promoted to *Oberleutnant* in 1936 as a member of the *Geschwaderstab* and then of II. *Gruppe*, St.G 162. After the unit was re-designated in April 1938 as I./St.G 167, he became *Staffelkapitän* of the 2. *Staffel* which was again re-designated in April 1938 as 2./St.G 168 and which was subsequently transferred to Graz in Austria. In April/May 1939, the unit received its final designation of I./St.G 76.

On 1 March 1939, he was promoted to *Hauptmann* and shortly before the outbreak of war, was transferred as



Gruppenkommandeur to I./St.G 77 where he distinguished himself during the Polish campaign and then during the invasion France and the Low Countries. He took part in most of the operational sorties flown by his unit and often took on the most hazardous targets himself. After the fall of France he continued flying combat missions against Allied shipping in the English Channel and southern England.

On 9 July 1940, approximately 20 km south of Portland, while attacking shipping in the Channel he was attacked by Spitfires of 609 Squadron. He fell victim to the guns of Fl.Off D. M. Crook and crashed into the sea. His total number of operational missions is unknown, but he was posthumously promoted on 19 July 1940 to *Major*.

The tempo was now increasing and on the 25th a determined assault was made on convoy CW 8 in the Deal area by Fink's dive-bombers. Twenty-one ships of this group were attacked by fifty-seven *Stukas* from III./St.G 51 and II./St.G 1 in three waves. Losing two of their number to defending fighters the Ju 87s sank five ships and damaged four more, two of which were subsequently lost to E-boat attack. Furthermore two British destroyers, which sought to intervene, were both hit and badly damaged. The Admiralty decided that the ship casualty ratio of one in every three ships sent were also suspended. On the 27th the final such convoy was attacked by I./St.G 77 near Swanage, while, in further attacks on Dover two more destroyers were put out of action along with their Depot Ship. Dover was abandoned as an anti-invasion base after an attack by forty-eight Ju 87s from the IV.(*Stuka*)/LG1 and II./St G 1.

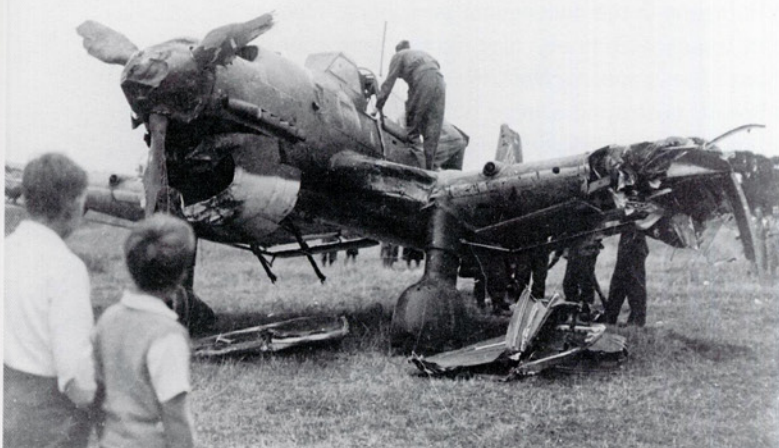
The British now attempted to run the convoys under cover of darkness, but Fink was able to plot the movements of the ships on his *Freya* radar system and when CW 9 passed through after losing three ships to E-boats, he was ready for it. St.G 1 led the assault at first light, and fifty-seven dive-bombers followed up with a sharp attack south of the Isle of Wight. This time the RAF finally reacted



Probably photographed in France during an early stage of the Battle of Britain, this Ju 87 B-1 has apparently taxied into a patch of soft sand. The aircraft belonged to 5./St.G 77 and the ground personnel on the wing are trying to act as a counter-balance while others try to free the machine. Note that the bomb, which has been removed in order to lighten the aircraft, has a red tail cone with a white stripe and that whistles have been fitted to the fins.

and deployed strong fighter defences against this force. For the first time *Stuka* casualties were significant, with six lost and three damaged. Two more dive-bombers were lost in further attacks off Weymouth, but two more merchant ships were sunk and three damaged. Further attacks on convoys were mounted on 11 and 12 August in which another five ships were damaged, before the *Stukas* were switched to attacking land targets. Nonetheless, in just a few weeks, the *Stukas* had closed the Straits to shipping and driven the Royal Navy from Dover, its most useful base for anti-invasion patrols.

Another view of T6+KL, showing RAF personnel examining the airframe. Though heavily damaged in its flight through the trees the *Stuka's* airframe strength is readily apparent. Note the wing leading edge indentation damage between port wheel spat and the fuselage.



Battle of Britain – the test

Ju 87 unit Order of Battle – 10 August 1940

Luftflotte 2

II.Fliegerkorps

II.Gruppe/St.G 1	Pas de Calais
IV.(St.)Gr./LG 1	Tramecourt

Luftflotte 3

VIII.Fliegerkorps (transferred to Luftflotte 2 on 29 Aug 40)

Stab/St.G 1	(Ju 87 plus Do 17)
I.Gruppe/St.G 1	
II.Gruppe/St.G 1	
Stab/St.G 2	(Ju 87 plus Do 17)
I.Gruppe/St.G 2	
II.Gruppe/St.G 2	
Stab/St.G 77	(Ju 87 plus Do 17)
I.Gruppe/St.G 77	
II.Gruppe/St.G 77	
III.Gruppe/St.G 77	



A radio operator makes a friendly wave to the camera while his pilot taxis towards the take off point.

From 13 August onward the Ju 87 was to undergo its severest test. Long known to be vulnerable to fighter attack if not adequately defended by protecting fighters, the *Stuka* was thrown headlong into combat with two of the world's best fighter aircraft, and it suffered accordingly. The Battle of Britain was indisputably the major defeat for the *Stukas*; brought about in part because a tactical weapon was mis-employed strategically.

The opening of *Adlertag* was postponed until 13 August due to poor weather, and then only got going during the afternoon for the dive-bombers and even then the weather was still sufficiently bad to spoil an attack mounted against shipping off Portland by *Hauptmann* Enneccerus' II./St.G 2 with their R-1 *Richards* and *Major Graf* von Schönborn-Wiesentheid's St.G 77 against Warmwell, and they returned with their bombs. Similar poor conditions negated St.G 2's attack on Rochford airfield. The only dive-bombing successfully carried out this day was by forty aircraft from the IV.(*Stuka*)/LG 1 who flattened the Coastal Command airfield of Detling, near Maidstone, destroying twenty-two British aircraft on the ground without loss to themselves.

On the 14th *Stukas* targeted Dover harbour and Hawkinge airfield as well as Channel shipping, while the following day IV.(*Stuka*)/LG 1 again achieved excellent results with 40 Ju 87s in an attack on Hawkinge, destroying hangars and barracks and cutting the power to the Dover station for the loss of just one aircraft. Simultaneously, II./St.G 1 bombed Lympne airfield, rendering it inoperable for the next two days. I./St.G 1 and II./St.G 2 went back to the Portland area and returned without loss.

On 16 August it was the turn of RAF Tangmere to 'host' the Ju 87s, St.G 2 delivering a telling blow that afternoon which destroyed seven Hurricane fighters and six radar-equipped Blenheim fighters as well as other aircraft on the ground, plus another Hurricane in the subsequent air fighting, along with two hangars, workshops and ancillary buildings. But losses were heavy; nine *Stukas* were shot down and three severely shot up by intercepting RAF fighters. That same day *Hptm* Helmut Mahlke's III./St.G 1 dive-bombed Royal Naval Air Station at Lee-on-Solent, destroying a large number of Fleet Air Arm aircraft on the ground and the main hangars. A section of *Stukas* attacked Ventnor radar station, which was put out of use for a week. The defences had been surprised in both cases and Mahlke's *Stukas* took no losses in these telling attacks.

The 17th was 'weathered out' but the 18th was to see further successful attacks, as well as some dreadful casualties. Ford airfield in Sussex was targeted by II./St.G 77 and Thorney Island by I./St.G 77, both successfully with few losses. III./St.G 77 struck Poling radar station, and again scored many near misses and brought down two of the pylons. Like Ventnor, the station was out of commission for a week. But while reforming, the dive-bombers were hit by the combined weight of four RAF fighter squadrons before they could reform and their defending fighters failed to help them. As a result *Hauptmann* Meisel, despite extra armour-protection worked into his aircraft, and eleven other Ju 87s were

destroyed, with a further six machines badly damaged. This one day's operation therefore cost St.G 77 a total of fourteen machines shot down and ten damaged, an appalling 20 per cent casualty rate. Between July and August the *Stukas* had lost fifty-nine aircraft, their heaviest rate of loss, and in return had sunk six warships, fourteen merchant ships, badly damaged seven airfields and three radar stations and had destroyed 49 British aircraft, mainly on the ground.

On 19 August, the units of VIII. *Fliegerkorps* moved up from their bases around Cherbourg to be concentrated in the Pas de Calais under *Luftflotte* 2, closer to the proposed invasion area. There they were posed ready to support the army once it had established a bridgehead. The significance of this move was noted by the British, General Alan Brooke noting in his diary on 7 September that: "*All reports look like invasion getting nearer. Ships collecting, dive-bombers being concentrated, parachutist captured...*" But, thanks to the switching of the *Luftwaffe* effort away from the RAF fighter airfields to London, Operation *Seelöwe* was destined never to be launched. Already Hitler's thoughts had turned eastward and the final reckoning with his erstwhile "ally", Stalin's Soviet Union.

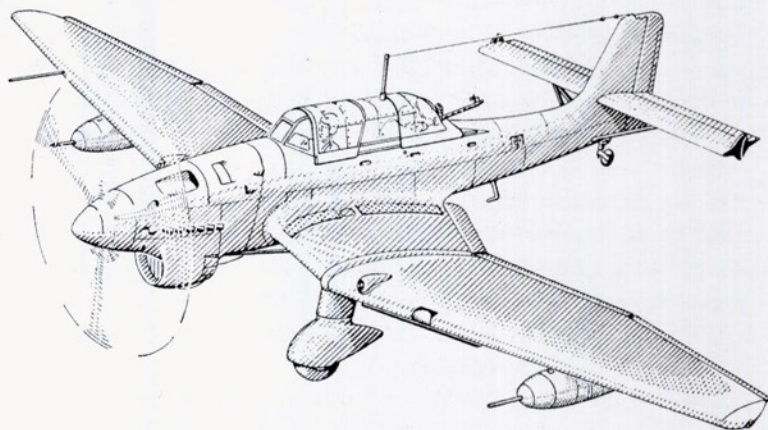
Instead, after a lull, anti-shipping attacks were resumed by some Ju 87 units from 1 November onward, as part of the new winter tactic of enforcing a blockade. Over the next ten days seven merchant ships were sunk and others damaged, mainly in the Thames Estuary for the loss of four Ju 87s. On the 14th, III./St.G 1, with an escort of drawn from JG 26 and III./JG 51, went out against another convoy. The whole mission was, for the first time ever, placed under the overall command of *Oberstleutnant* Adolf Galland, the *Kommodore* of JG 26. On arrival over the estuary no targets were sighted, so the dive-bombers were ordered to attack Dover instead, as the alternate target. But instead of accompanying its nineteen *Stuka* charges, the fighter escort kept well back to avoid the flak defences, and Mahlke's unit was left to its own devices as the RAF fighters closed in. The British claimed to have destroyed no fewer than sixteen Ju 87s in this battle – but the real truth was that just two *Stukas* were shot down, one crew being rescued. Many other dive-bombers were heavily shot up, and some had to make forced landings on returning to base, but, as Mahlke told this author: "*All our aircraft, except the two shot down over Dover, were combat-ready again in a few days.*"

Bad weather again closed down anti-shipping operations and before long a general move eastward was in train as part of the careful and concealed build-up for *Barbarossa*, the planned invasion of the Soviet Union. By the spring of 1941, only St.G 1 with thirty Ju 87s remained facing England. In order to give the illusion that the *Stuka* force remained based in France, the dwindling numbers of dive-bombers were utilised in night-bomber sorties over the Channel. Their under-surfaces were painted over black. Operations on a small scale continued throughout the winter months into March. Targets included ships at sea, Chatham naval dockyard, and Dover while some *Stukas* operated at the extreme length of their range penetrating to the upper Thames Estuary in January. They were only pin-pricks but served their purpose and were resurrected again the following winter along the South Coast of England.

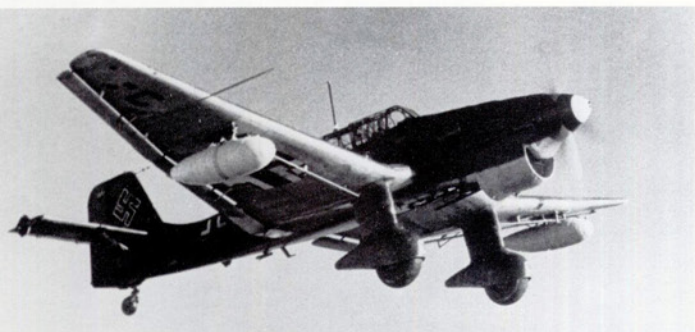
The Richard

One of the prime lessons learnt from the Polish campaign had been the limiting effect of the Ju 87's lack of range, which was just 550 km in the *Berta*. Greater flexibility was required and, to remedy this somewhat, work was already in hand for a new variant, the Ju 87 R (*Reichweitenausführung* = Long-Range Version) or '*Richard*'. A standard B-1 aircraft (W.Nr. 5554) was therefore modified by the addition of two 300-litre drop tanks, one mounted under each outer wing panel, affixed to detachable steady braces and given additional securing by means of a heavy strap. In practice, for safety reasons, only 295 litres of fuel was actually carried. In addition, two flexible wing tanks, each of

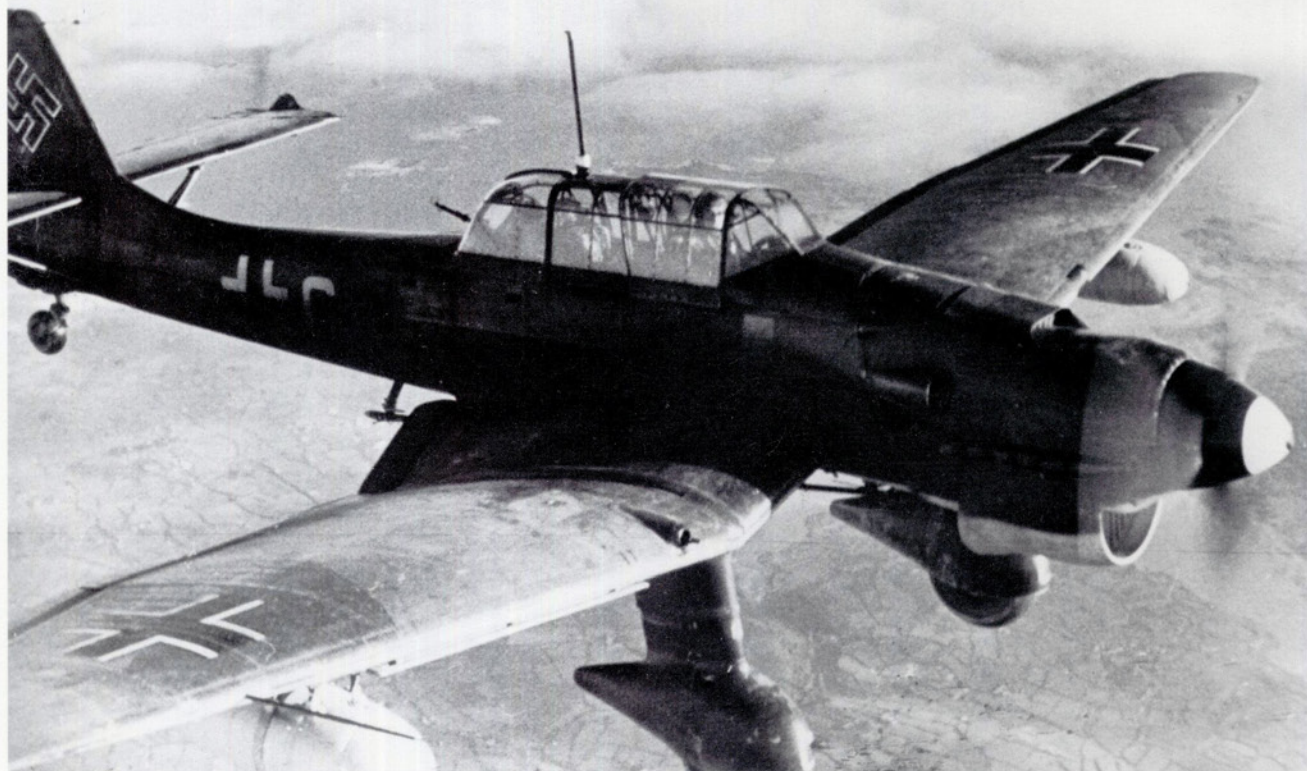
a further 150-litres were incorporated inside the inner wing panels, giving a fuel and oil capacity of 1,370 km in total, and with power from a Jumo 211 A engine, the R-1 had range of 1,255 km. A few of these variants joined I./St G 1 in Norway, and later flew missions over the English Channel and Thames Estuary with St.G 2.



A wartime drawing taken from a Junkers handbook L.Dv.T. 2087 R-2/Fl, *Bedienung und Wartung des Flugzeuges* (Servicing and maintenance instructions) dated May 1941.



During a transfer flight a Propaganda Kompanie photographer took these photographs of a Ju 87 R-2, W.Nr. 5473 of 3./St.G 2 coded T6+CL. The 300 litre drop tanks are clearly visible which boosted the range of the aircraft to 1,255 km.



Waldemar Plewig

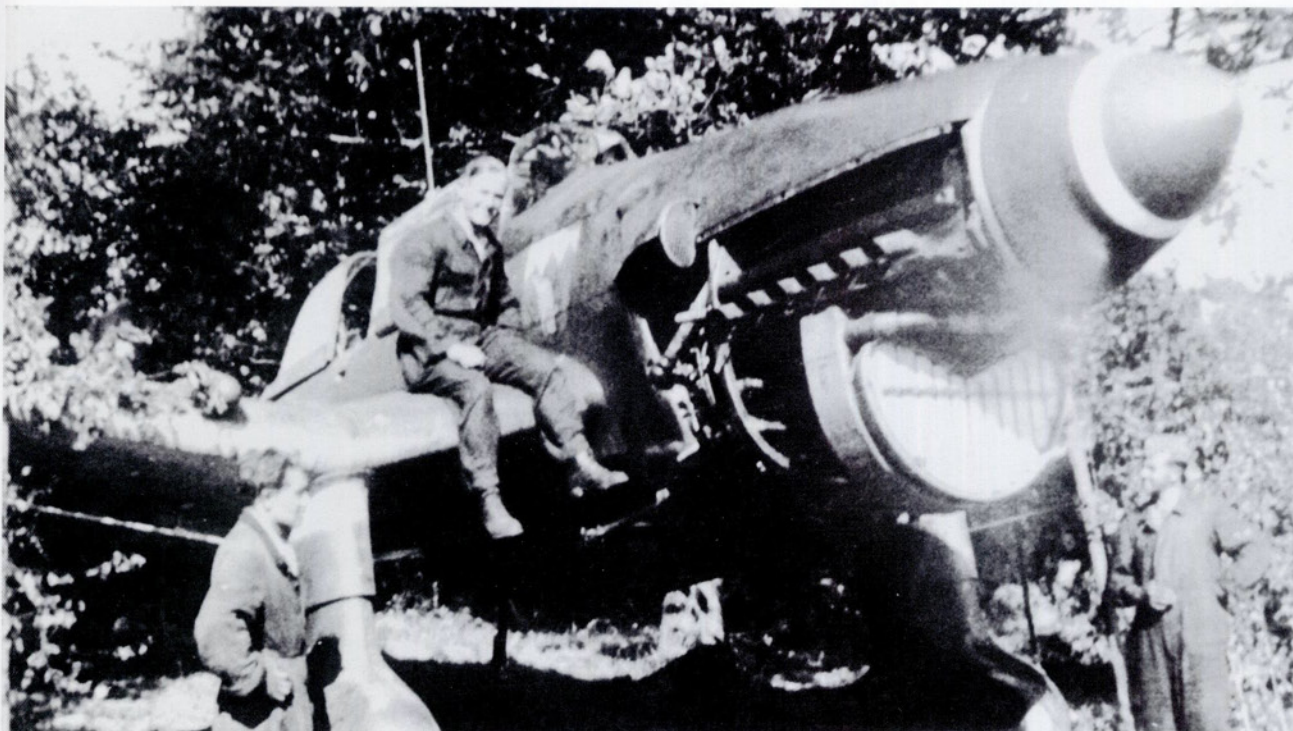
Waldemar Plewig was born in Ostrowo, on 6 January 1911. On 1 January 1931 he joined the *Infanterie Regiment 7* as a Private. In March 1935 was promoted to *Leutnant* and later that year transferred to the *Luftwaffe*. He was sent for military training to the Pilot Training School in Gotha and in 1936, with the rank of *Oberleutnant*, was sent the Pilot Training School in Perleberg as Adjutant. In July 1937 he was transferred to III./St.G 162 (later re-designated as I./St.G 163) as a *Staffelführer*. He later joined II./St.G 163 in Langensalza which, from 1939, was re-named III./St.G 2 '*Immelmann*' and on 1 January 1939 was promoted to *Hauptmann*.

During the Polish Campaign he flew operational missions as a *Staffelkapitän* with II./St.G 77 and distinguished himself in combat. From April 1940 he became *Kommandeur* of II./St.G 77 the unit now having been transferred to the West. With the German attack in the West he took part in operations in initially against Fort Eben Emael and then in attacking the Maas,



Antwerp, Boulogne, Calais and Dunkirk. He further took part in attacks on the Maginot Line near Sedan which helped German forces to break through the French lines. At the end of the campaign he and his *Gruppe* provided successful escort to German ships in the Channel.

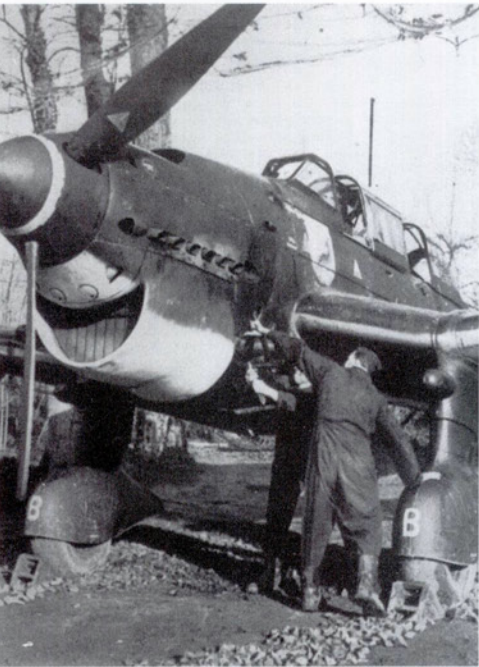
On 8 August 1940, following a mission off the Isle of Wight where he had been attacking the Royal Navy convoy codenamed '*Peewit*', he was attacked by Hurricanes of 145 Squadron and shot down. He was severely wounded in the subsequent crash-landing and taken prisoner. He was awarded the *Ritterkreuz* on 14 December 1940 which was forwarded to him at the POW camp at Camp Shap Wells Hotel between Carlisle and Kendall in England, where the British commandants presented the award with full military honours. On 1 April 1942 he was promoted to *Major* while still in the camp. He had flown a total of 210 operation missions.



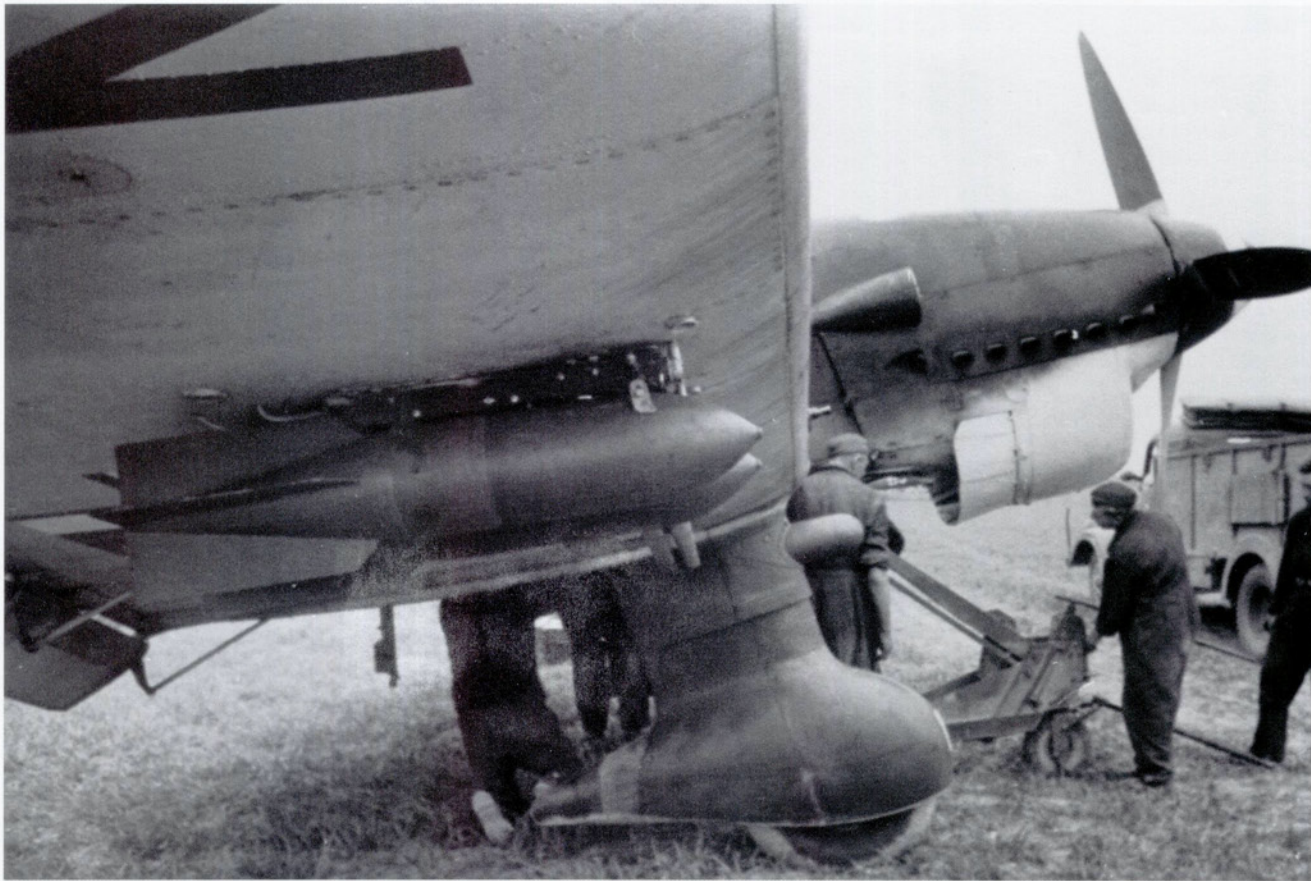
Technical personnel running up the Jumo 211 D engine of a Ju 87 B-1 of 1./St.G 77. One of the successes attributed to this Stukageschwader during the French campaign was an attack on Roncanay, south of Troya, when important rail installations were destroyed with 250 kg bombs. During the French campaign, the usual bomb load carried by the Ju 87s was one 250 kg bomb and four 50 kg bombs, but against England they carried one 500 kg bomb and four 50 kg bombs.



A Ju 87 of St.G 77 being bombed up. This Geschwader had no fewer than 16 aircraft shot down when it attacked Poling radar station and the airfields at Ford and Thorney Island on 18 August. Another two aircraft crashed on their way home and four more were damaged. One Ju 87 pilot shot down over England commended to his interrogators that, owing to the high losses, he considered it "a crime" to be ordered to fly against England in a Ju 87. Note that, in this photograph, although the aircraft's sirens have been removed, whistles have been fitted to the bomb's fins. As with the sirens, the shriek of these whistles was intended to intensify the psychological effect of dive-bombing.



Various scenes of Ju 87s being refuelled and rearmed for their next missions. In Britain, the Air Ministry did not produce or circulate anything as far as combating German aircraft was concerned until March 1941. Nevertheless, its comments confirmed that pilots of fast fighters found it impossible to shoot down a Ju 87 while in its dive as, '...owing to the steep angle of the dive and the slow speed attainable with the dive brakes, our fighters overshoot. It is therefore recommended that fighters should try to attack the Ju 87 before it commences its dive or, failing this, when it has pulled out of its dive. The Ju 87 has been found to be well armoured behind and below the rear gunner so that attacks from directly astern and below are less effective. Formations of Ju 87s are usually preceded or accompanied by large fighter escorts which endeavour to distract our fighters.'



Similarly, a Ju 87 B-2 airframe with the Jumo 211Da and Ha engines was produced in turn, but the internal tanks were initially omitted. This gave the *Richard-2* (R-2) a range of 1,250 km. This version equipped St.G 3. There was also some streamlining carried out to help offset the increased drag of these external tanks and fittings.

As a by-product of their extra range, and with maritime operations in mind, improvements were made to the radio equipment of the *Richard* as well as the *Berta*. A whip aerial was to be seen below the rear fuselage, which indicated the fitting of the new FuG 25 equipment. A circular Direction Finding (D/F) loop, the *Peil Gerät* cartwheel antenna, was set under a Plexiglas blister below the rear gunner/radioman's position. A tropicalised variant was later produced for Mediterranean operations.

Into the Mediterranean

Not all had been going to plan for Germany's Axis partner either. Mussolini's vaunted invasions of both Egypt from Libya and Greece from occupied Albania had come to grief (much to Hitler's anger) in humiliating reverses. And so while a tiny British army chased the Italians back across the border in the North African desert, the Greeks did the same in the snow-covered mountains. The *Duce* was forced to seek the *Führer's* help. Irrked by these irritations at the time his master-plan in the East was being assembled, Hitler nonetheless condescended to support the Italian leader. The Greeks had invited the British to help and this brought the threat of British bombers close to the vital Ploesti oilfields, which Germany could not tolerate. The elimination of Greece (Operation *Marita*) was planned with Bulgarian assistance. The Royal Navy had inflicted defeat after defeat on the Italian Navy and the *Regia Aeronautica* – Douhet's and others' predictions to the contrary – had failed to prevent it. Malta was held, indeed reinforced. At the western end of the Mediterranean there was the possibility of seizing the vital British fortress of Gibraltar with Franco's help, (Operation *Felix*); after all, the Spanish dictator owed Hitler several favours.

While his Generals warned against peripheral diversions from the preparations in hand, an uprising in Yugoslavia turned another Balkan state from a willing German ally to another threat from the rear. Hitler covered most of these points in his Directive No. 18, issued on 12 November 1940. With regard to Gibraltar he emphasised that:

"... the forces detailed for the attack on Gibraltar harbour must be sufficient to ensure a resounding success. Dive-bomber units in particular, are to be transferred to Spain to engage naval targets and to support the attack on the Rock."

The attack was even pencilled in for 4 February, but, in the event, the wily Franco hedged his bets, still wary of the Royal Navy's strength in the area, and a frustrated Hitler had to ditch *Felix* as well as *Seelöwe*. Instead, on 10 December, a commitment was made to assist his ailing Axis partner with practical help.

Göring had already approved the sale of fifteen Ju 87s to Italy, which had lamentably failed to produce an effective dive-bomber of its own. The package included training the Italian pilots at the *Stukaschule 1* at Graz, Austria, and their first combat mission took place against a British convoy on 2 September, and was followed by similar missions, and against Malta three days later. They also supported the Greek adventure commencing in November. By March 1941, further purchases, including R-2s, brought Italian *Stuka* strength up to three units – 96^o, 97^o and 101^o *Gruppo*. By February 1941, yet a fourth *Gruppo*, 102^o, had begun operating in North Africa.

But more than this was required to assist Germany's struggling ally in both Libya and Albania. Count Ciano, the Italian Foreign Minister, recorded in his diary on 6 December 1940:

*"Conference with Marshal Milch, who has come to Rome to settle the question of the Stukas for operation in the Mediterranean. He was calm and optimistic about the situation in general", which, Ciano also records, "...greatly relieved Mussolini who passes on to a counter-attack."*¹³

So the *Stuka's* went south. X. *Fliegerkorps*, under *General der Flieger* Hans Geisler, which specialised in anti-shiping warfare, was sent to bases in Sicily to close the approaches to Malta to British convoys and fleets. As part of this force came II./St.G 1 led by *Major* Walter Enneccerus and I./St.G 1 commanded by *Hauptman* Paul-Werner Hozzel with their own specialised expertise. In particular the armoured-deck aircraft carrier HMS *Illustrious* whose aircraft had sunk three Italian battleships in their own harbour at Taranto, was singled out as a priority for early elimination.

As Hozzel recalled: *"The Geschwader received news that the British carrier Illustrious was bound from Gibraltar to Malta. It was expected to pass the island of Pantelleria, south of Trapani, in the next few hours. It was said to cruise quite unexpectedly and as if the British ruled the Mediterranean, proudly ignoring the existence of any Italian fleet or air force, not to mention the German Stukas on Sicily. It seemed to be a fine catch for us."*



General der Flieger Hans Geisler, commander of X. Fliegerkorps when it transferred from Norway to the Mediterranean in January 1941. The Korps included I. and III./St.G 1 which had been based in the Pas de Calais since the Channel battles of the previous summer. Geisler was an anti-shiping specialist who was tasked with closing the approaches to Malta to British convoys. He would deploy his newly-acquired Stukas to good effect.

¹³. Ciano, Count Galeazzo Ciano's *Diary 1939-1943*, Heinemann, London, 1947.

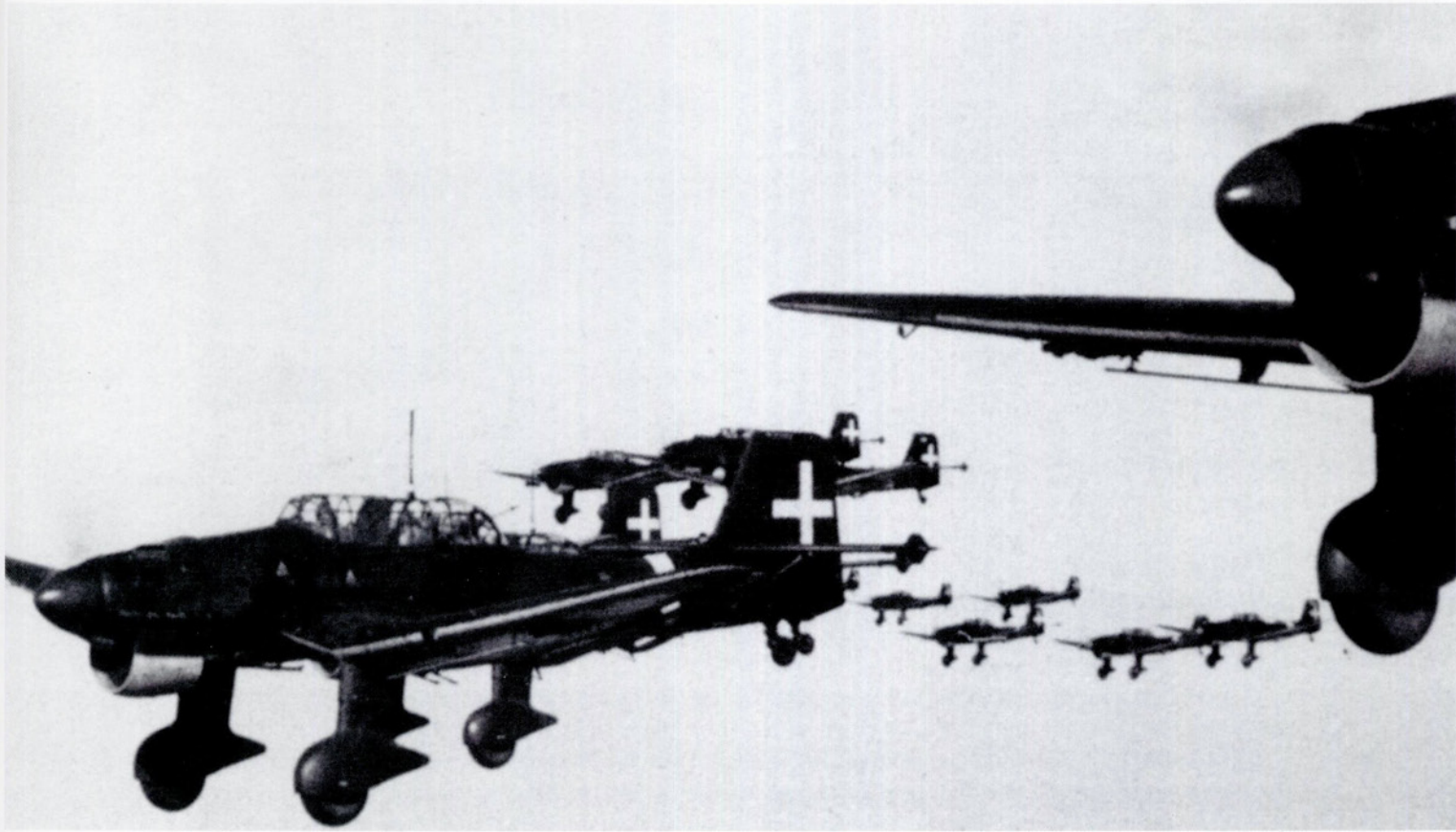


On 14 September 1941, 12 Italian Ju 87s of 209 Squadriglia took off to attack Sidi Barrani. Over the target area, they first lost their escort of Bf 109s from JG 27 and then lost contact with each other. With the pilots disorientated, ten of the aircraft ran out of fuel and forced-landed at various places in the desert, eight of the aircraft and crews falling into British hands. One of the eight aircraft, W.Nr 5763 flown by Sergente Bartolomasi, is shown above right and right shortly after capture. The further photograph, above left taken while the machine was on fighter affiliation duties, shows the machine with dual British and Italian national insignia in October.

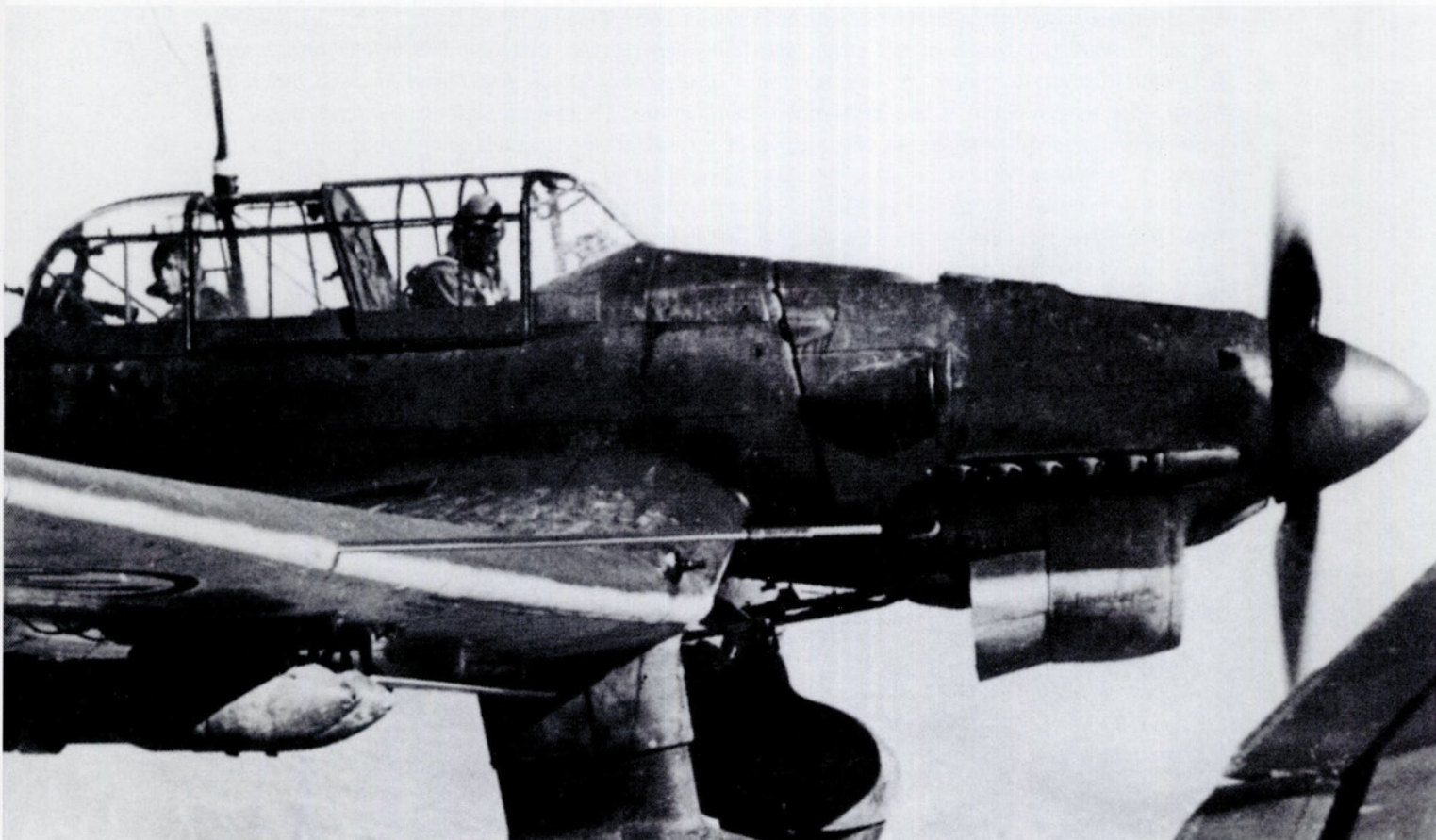


Junkers Ju 87 B-2 of 209 Squadriglia, 96 Gruppo, Libya, September 1941

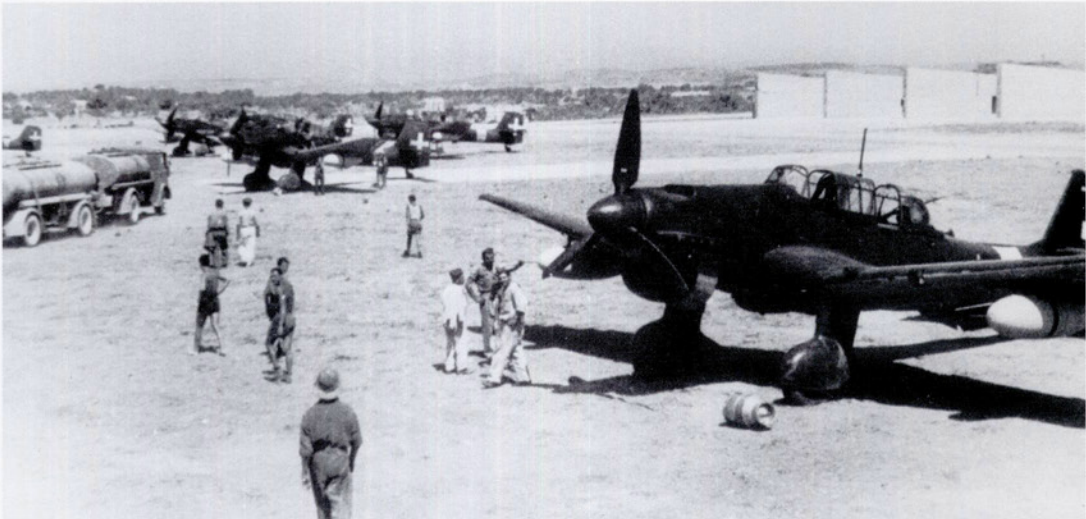
The camouflage on this machine was the standard German 70/71/65 scheme but with appropriate Regia Aeronautica national insignia and the Squadriglia number 209 in white. A white band encircled the rear fuselage band, and the nose and spinner were in yellow. Note that the underwing fascies have been applied incorrectly, as the axe blades should face the direction of flight.



Ju 87 Rs of the Italian Regia Aeronautica in flight.



Ju 87 Rs of the Regia Aeronautica. The machines shown were probably photographed in Sicily.



Hitler also despatched a small, armoured and motorised army detachment (which eventually became the famed *Afrika Korps*) under *General* Erwin Rommel, to bolster the Italians in the desert battles. He was to require dive-bomber support of course, and St.G 2 initially provided fifty *Tropische (Trop)* Ju 87s for the job, with dust filters fitted to the compressor air intakes and other modifications suitable for desert operations.

The *Illustrious* was a harder nut to crack than coastal shipping in the English Channel. Although her broad flight deck presented an ideal target, it was armoured against bombs of 250 kg. It was estimated by the Germans that it would require four direct hits to sink her. This called for a hitherto unattainable degree of bombing accuracy against a moving target. In addition she carried her own defensive fighter force (albeit the inferior Fairey Fulmar), had powerful anti-aircraft batteries of her own, usually sailed in company with the fleet battleships which had even more wide-ranging anti-aircraft defences to add to the total, was screened by destroyers and usually operated well out to sea. The *Stuka* commanders studied these interlocking problems with meticulous care. Practice dives were made day-after-day against a floating mock-up of the target until they were certain that four hits in one attack were possible. To divert the Fleet Air Arm fighters a diversionary attack was called for, and the *Regia Aeronautica* was to deliver a sea-level torpedo-bomber attack to lure the defending aircraft away. The protecting battleships' anti-aircraft defences would be nullified by allocating a ten-strong section of the attacking *Stukas* against each ship, thereby forcing each to concentrate on her own defence; the carrier's own anti-aircraft guns were to be smashed by the first attacks dropping 250 kg instantaneous fused bombs to decimate the guns crews. Then, with all the layers of defence stripped away, the killer blows were to be delivered by *Major* Enneccerus' elite *Stuka* crews whose aircraft would be equipped with their 500 kg armour-piercing bombs.

All that was then required was for the British fleet to venture within the range of the waiting Ju 87s. The British duly obliged on 10 January, when the Mediterranean Fleet took over escort of a convoy in the central Mediterranean. They even inadvertently assisted to weaken their own defences by detaching the anti-aircraft cruiser *Bonaventure* from the force. The German plan was then put into effect and worked perfectly. The few patrolling Fulmars either expended their ammunition or were drawn away by the torpedo-bomber feints; the battleships were similarly distracted and II./St.G 2 and I./St.G 1, fielding a combined force of forty-three aircraft, made the classic dive-bombing attack of the war on *Illustrious*¹⁴. They did better than four hits; they scored six direct hits and three near misses.

Ju 87 unit Order of Battle – 10 January 1941 (Sicily)

X. Fliegerkorps				
Stab/St.G 3	Ju 87	Trapani	9	(8)
I.Gruppe/St.G 1	Ju 87	Trapani	35	
II.Gruppe/St.G 2	Ju 87	Trapani	35	(23)

¹⁴ The other classic dive-bombing of carriers was the Japanese Aichi D3A1 Val's easy destruction of the British *Hermes* in April 1942, and the sinking of the four Japanese carriers by the US Navy's Douglas SBD Dauntless off Midway in June of the same year. In both those cases the carriers lacked armour protection and all were lost. At Midway the American torpedo-bombers attacked first, and were virtually annihilated, but again, did draw the defending fighters down to sea level enabling the SBDs to have a free run at their targets, which they duly took full advantage of.

Gerhard Grenzel

Gerhard Grenzel was born on 13 May 1915 in Brandenburg/Havel. He volunteered for the *Luftwaffe* in 1935 and trained as a pilot. As a non-commissioned officer he was assigned to I./St.G 1 and took part in the Polish campaign, where he attained the *Eisernes Kreuz* (EK) II (Iron Cross Second Class). He then flew in the Norwegian campaign where he distinguished himself attacking ships of the Royal Navy for which he was awarded the EK I (Iron Cross First Class) and was promoted to *Feldwebel*. During the final phase of the German invasion of France he carried out many attacks on Allied convoys in the English Channel and later against targets in southern England. He was one of the first Ju 87 pilots to be awarded the *Ritterkreuz* on 8 May 1940 together with Paul-Werner Hozzel, Martin Möbus and Elmar Schaefer.



He was promoted to *Staffelkapitän* of 2./St.G 1 and in January 1941 his unit was transferred to Sicily from where he continued to attack Allied convoys in the Mediterranean. Between 6-13 January 1941 the Allies mounted 'Operation Excess', which sent convoys to re-enforce the military forces defending the island of Malta. On 10 January, Grenzel took off to attack one of these convoys but between Pantelleria and Malta he crashed into the sea and together with his radio operator went missing. The full circumstances of his disappearance have never been fully explained. His final total of operational missions is also not known. At the time of his disappearance, he held the rank of *Leutnant*.



8 May 1940: smiling for the camera shortly after an award ceremony, the first four Stuka pilots – all from of I./St.G 1 – to be awarded the *Ritterkreuz* in recognition of operations against British warships in Norway. From left: Hptm Paul Werner Hozzel, Oblt Elmar Schaefer, Lt Martin Möbus and Uffz Gerhard Grenzel. "The 8 May 1940 was a great day for our Gruppe," wrote Hozzel, "Among the Knights Cross recipients was the first NCO of the Wehrmacht. We were among the first winning it and were proud to wear it as representatives of the still 'young' Stuka... Any other Stuka Gruppe would have accomplished the same, or even more in our place."

Five *Stukas* were claimed shot down, three by ship-borne anti-aircraft fire and two by pursuing Fulmars after the attack. The only thing that did not go to plan for the Germans was that, despite enormous damage both topside and internally (one bomb went down an open lift and detonated in a hangar deck), the *Illustrious* did not sink. She proved a tougher proposition than imagined and her engines remained intact. Despite two smaller attacks mounted later in the day, in which another direct hit and another near miss were attained, she reached Malta dockyard. Here repeated attacks scored yet another direct hit and several near misses but the ship was patched up sufficiently to enable her to break for safety on 23 January.

On 11 January another telling blow was delivered when two British cruisers, the *Gloucester* and *Southampton*, returning from a detached mission, and believing themselves to be beyond *Stuka* range, were surprised by a force of twelve Ju 87s of II./St.G 2 at a range of 300 miles from their base airfield. Both vessels were hit, the *Gloucester* once on her bridge, but the bomb failed to detonate. The *Southampton* was less fortunate, taking two direct hits which started uncontrollable fires and she had to be abandoned and later sank. She was the largest warship at that date to fall to the *Stuka*. The Royal Navy had been very lucky not to lose the *Suffolk* off Norway, but the loss of the *Southampton* finally drove the lesson home: dive-bombers were deadly against warships. It was to be two years before heavy warships were again risked in the Sicilian Channel.

In early January 1941, I./St.G 1, II./St.G 2 and Stab/St.G 3 were transferred to Trapani in Sicily for attacks against British convoys in the Mediterranean. This Ju 87 B of 7./St.G 1, already painted with a white fuselage band, was probably photographed during the transfer flight.



The II./St.G 2 achieved some of its greatest successes against the Royal Navy in the Mediterranean while under the command of Major Walter Enneccerus, seen here in North Africa but at a later time when he occupied a Staff position.

The First Malta Blitz

Paul Hozzel, the *Gruppenkommandeur* of I./St.G 1 recalled the *Luftwaffe's* attacks on the *Illustrious* in La Valetta dockyard thus: "This aircraft carrier was a matter of prestige for OKL, also a precedence. It had to be sunk under all circumstances. If OKW could report the sinking of a British aircraft carrier by German Stukas, both friend and foe would sit up and take notice. So commenced our attacks, with heavy losses, against the acrrier in La Valetta. There were more than 90 AA batteries of all calibres which spat their fire at us. At the same time Hurricanes seriously interfered with us on the approach route and on our departure. On virtually every sortie I lost three or four of my old, battle-tested crews – irreparable losses. It was just impossible to replace those thoroughly trained and experienced pilots and their back-seaters. During those actions the carrier was hit by four 1,000 kg bombs, the heaviest a Ju 87 could carry. Still we did not succeed in sinking it, though she must have suffered terrible inner damage."¹⁵



The attack on the *Illustrious* in Valetta heralded the first all-out aerial assault by the *Luftwaffe* on the island. Hitherto Italian attacks had inflicted limited damage but a new intensity was reached in January and March 1941 when a determined attempt was made to neutralise the island as a British base. All forms of aerial attack were launched, aimed primarily at the island's dock facilities

and airfields, but the densely packed buildings around the harbour naturally suffered from their proximity to these targets. There were some 150 *Stukas* on hand to deliver the more accurate of these blows, but rather than mounting attacks every day, they were made during periods of intense activity, often corresponding to the arrival and unloading of supply convoys from either Gibraltar or Alexandria. Also, the *Luftwaffe* units were still building up their ground organisation at Trapani and Comiso in Sicily to support their flying units in the field. This took a little time, as the supply chain down from France to Sicily was a long one and communications were not first rate. Nonetheless the build-up was eventually satisfactorily accomplished.

I. and III./St.G 1 began moving from their French bases around St Pol in mid-February, flying via Metz and Munich and then down the Italian mainland, reaching Trapani after five days where they joined II./St.G 1 under *Hauptmann* Anton Keil. III./St.G 1 under *Hauptmann* Mahlke, moved to Comiso and commenced combat missions against Malta with an attack on Luqa airfield on 26 February, just one week after leaving France. Four *Stukas* failed to return from the combined units involved, and other aircraft, including that flown by Mahlke himself, took heavy damage but managed to return. Mahlke later recalled:

"I was hit during my dive attack, just after bomb release, at very low altitude. I recovered my aircraft from the dive using full controls, full power and manual trim. When we levelled out I found myself heading toward a large hangar on my target airfield. The doors of the hangar loomed invitingly open and inside I could see three aircraft undergoing maintenance. I thought – 'These are my last moments' – but they were not. My aircraft started to climb in the last seconds and I passed a few scant metres over the hangar roof in safety, my landing gear cutting a telephone wire en route."

Flying from Trapani in Sicily on 10 January 1941, II./St.G 2, operating with I./St.G 1, so seriously damaged the aircraft carrier 'Illustrious', shown here under attack, that it had to be withdrawn for extensive refitting, and on the following day damaged the cruiser 'Southampton'. On 26 May 1941, II./St.G 2 was again successful in damaging the carrier 'Formidable' and the destroyer 'Nubian'.

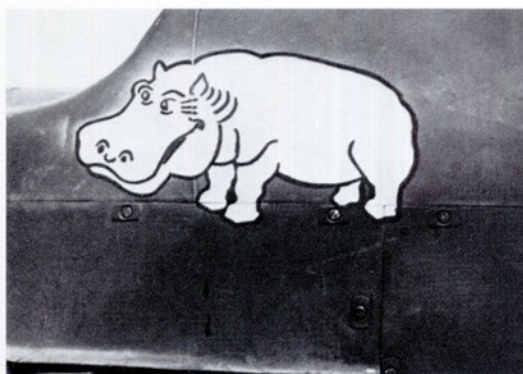


¹⁵ Paul-Werner Hozzel, *Memoirs of a Stuka Pilot*, February 1978



Ju 87 R-2s, of I./St.G 2 carrying the unit code T6, being fitted with underwing tanks and refuelled somewhere in the Mediterranean theatre. This Gruppe operated from various bases in Italy, Greece and North Africa throughout 1941; though there is an absence of the usual white theatre band on most of these aircraft, the third aircraft in the line-up does have one painted around the fuselage Balkenkreuz. This suggests that they were photographed early in their deployment, possibly at Trapani. Note the individual aircraft letter M under the wingtip.

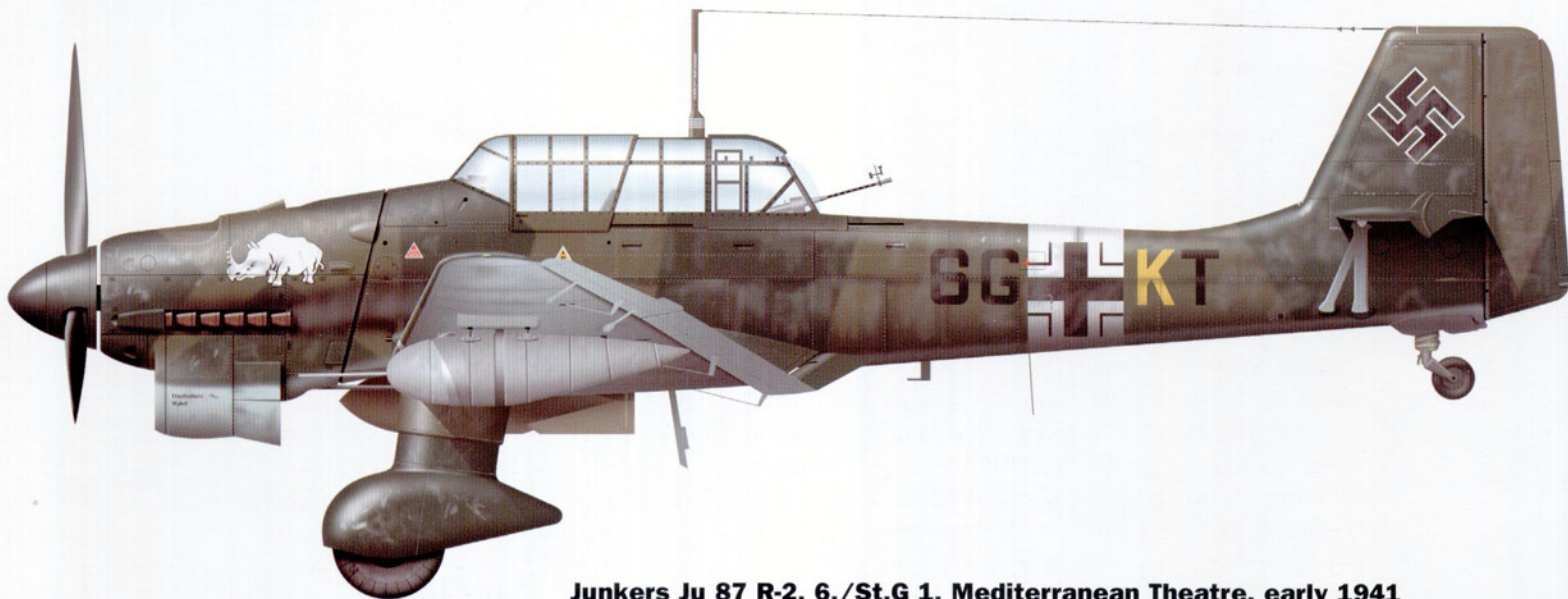




A feature sometimes seen on the engine cowlings of Ju 87s was the name of a fallen comrade. However, while based in Italy or Greece, some aircraft of I./St.G 1 were decorated with animal emblems. Thus, one machine carried a lion left, while another far left, a hippopotamus.



This Ju 87 R-2 left of 6./St.G 1, coded 6G+KT which was similarly decorated with a rhinoceros.



Junkers Ju 87 R-2, 6./St.G 1, Mediterranean Theatre, early 1941

Apart from the unusual emblem on the nose, this aircraft featured the normal 70/71/65 scheme with a white fuselage band centred on the Balkenkreuz.

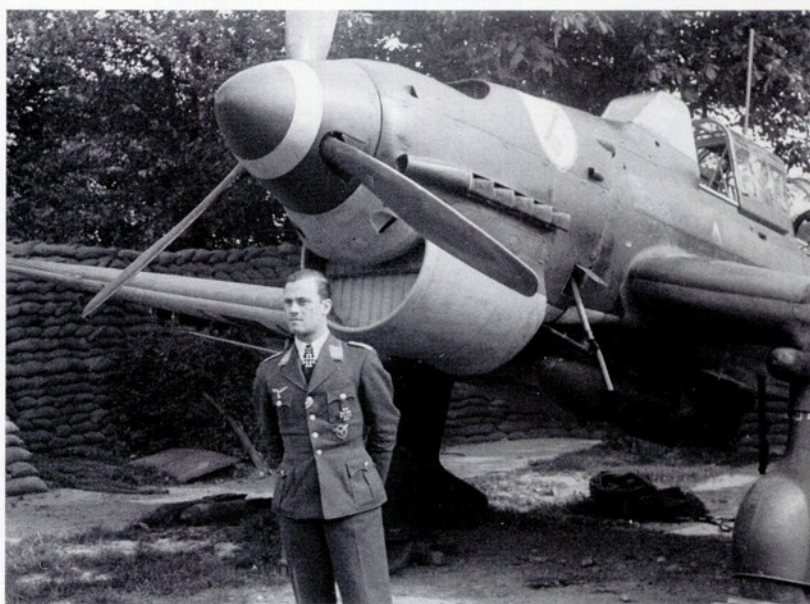
Anton Keil

Anton Keil was born on 21 October 1910 in Plattling, Niederbayern (Lower Bavaria). He joined the Army in April 1931 and transferred to the *Luftwaffe* as an *Oberfähnrich*. On 6 March 1934 he was promoted to *Leutnant* and became an instructor at the pilot training school in Cottbus.

On 1 March 1937 he was further promoted to *Oberleutnant* and became a *Staffelkapitän* in III./St.G 162. He flew in the Polish campaign in 1939 as a *Staffelkapitän* in III./St.G 51 which later also took part in the attack in the West during the summer of 1940. At this time the unit had been re-designated as II./St.G 1. He had been promoted to *Hauptmann* on 1 October 1939 and on 1 July 1940 became *Gruppenkommandeur* of II./St.G 1.

With his *Gruppe* he took part in the invasion of Belgium and then operated over the Somme in France, in particular attacking the fortifications on the Maginot Line, which helped to make a swift break-through for the invasion of rest of France. His unit continued with missions against British warships in the English Channel and generally harassing Allied movements. After the fall of France he took part in attacks on RAF airfields in southern England and was recognised as being particularly skilful at navigating his way to pre-designated targets. Keil received the *Ritterkreuz* on 19 August 1940 – the twelfth *Stuka* pilot to receive the award.

In 1941 part of his unit was transferred to the Balkans, and subsequently took part in Operation *Barbarossa*, the attack on the Soviet Union commencing on 22 June 1941. On 29 August



1941, while on a mission to attack the railway station 1.5 km east of Skalowa, Keil's aircraft was hit by ground fire and he was forced to make an emergency landing. The aircraft came down in a marshy area and on touching down somersaulted on to its back killing both crew members. Russian troops in the area made their way to the crash site and with the aid of tree branches smashed the rear cockpit and dragged *Feldwebel* Wilhelm Knof, the radio operator, out and stole all his possessions. As they were unable to reach the pilot, the Russians simply set fire to the aircraft with Anton Keil's body still inside. He had flown a total of 132 operational missions in the Ju 87.

Mahlke concluded:

*"I had taken off from Comiso at 1315 and finally got my aircraft safely down there again at 1445, landing the machine with full power on since it was obvious that I stood no chance of getting her down and level with anything less. But the Ju 87 made it and I could not agree more that, for its purpose, the Stuka was a sturdy and exceptionally strong aircraft."*¹⁶

Attacks alternated between these targets and the harbour area, and on 9 March a heavy dive-bombing attack was mounted on Hal Far airfield. Losses were bearable, but continuous; there were, by this time, fifteen Hawker Hurricanes, plus a further eighteen flown in from aircraft carriers to bolster the aerial defences as well as the heavy and light flak units already in place.

Naturally shipping in the various creeks and anchorages suffered in the process, as on 16 January when both the light cruiser HMAS *Perth* and the newly arrived freighter, *Essex*, were both badly damaged by the attacks aimed at *Illustrious*. In the case of the *Essex* a major disaster was only just avoided. The *Stuka* bomb which hit her, penetrated through to her engine room, killing fifteen of her crew and wounding twenty-three more. But her holds were packed with 4,000 tons of high explosive, which, by some miracle, failed to detonate. Had the Ju 87's pilot's aim been less than half a metre out either way, not only the *Essex* but also a considerable part of Valetta dockyard would have been pulverised instantly.

Malta's reprieve was brought about not by her defences, however, but by the transfer of the *Stukas* to the Balkans, in turn brought about by unexpected developments in Yugoslavia and the landing of British troops in Greece.

¹⁶. Helmut Mahlke to the author, 12th December 1976.



From late February 1941 until just before the invasion of Russia in June, II./St.G 1 operated from various bases in Italy and Greece. This Ju 87 R-2 has the white fuselage band applied to aircraft operating in these areas, while the operational code 6G was inherited from III./St.G 51, from which II./St.G 1 had been formed. This particular machine, 6G+CS, belonged to 5./St.G 1.



Junkers Ju 87 R-2, II./St.G 1, Mediterranean theatre, early 1941

Although finished in the standard European scheme of 70/71/65 with a white fuselage band, the operational code on this machine was in a dark grey rather than the usual black. This feature has been observed on other aircraft of II./St.G 1, and also on machines of the earlier III./St.G 51 from which it was formed. Similarly, while the red aircraft letter C is correct for the 5. Staffel, the Staffel letter S is anomalous, again due to the Gruppe's origins.

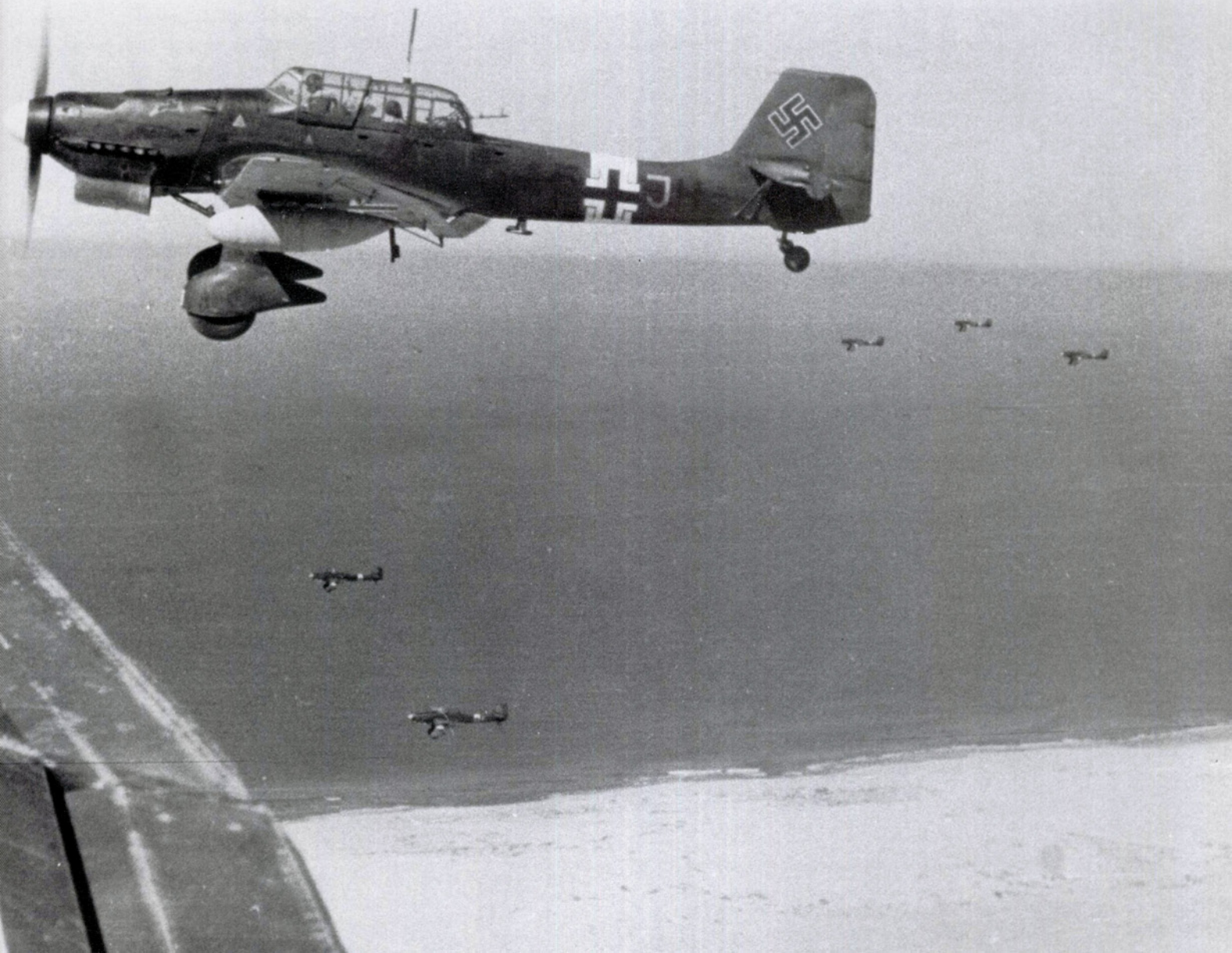
Fliegerführer Afrika

Under the aegis of X. Fliegerkorps both I./St.G 1 and II./St.G 2 under *Hauptmann* Hozzel and *Major* Enneccerus respectively, with a combined total of just sixty Ju 87s, moved into North African air bases during January and February to face the British advance into Cyrenaica, the more numerous Italian army having been routed all the way back westward to El Aghelia by 9 February.

Hozzel recalled: "In the Tripoli bazaar we purchased the tropical outfit for our Stuka units. Tropical clothes and equipment were, at that time, not available in Germany. We then transferred to Bir Dufan in the desert, a small hunting seat said to belong to Italy's Air Marshal Balbo. It was situated about 100 km south of Misurata, on the camel track leading to Dakar on Africa's west coast. There we pitched our camp. It was a romantic adventurous atmosphere. We thought back to the dreams of our childhood."

Within five days, the Stukas were in action. From then onward they provided invaluable close-support to the Axis counter-offensive once it got underway. This offensive rapidly re-conquered most of the lost ground, except for the small port of Tobruk which alone held out. Frequent attacks were mounted on both the garrison's defence, a particularly heavy raid being mounted by II./St.G 2 under Enneccerus, and on the harbour itself which quickly became a graveyard of sunken vessels.

A formation of Ju 87 Rs of I./St.G 1 over the Mediterranean. All aircraft have retained their European camouflage scheme and the aircraft nearest the camera, A5+JH is from the Gruppe's 1. Staffel and carries the Gruppe's diving raven badge.



The first *Stuka* attack in North Africa – and a close shave Paul-Werner Hozzel, I./St.G 1

One morning, General Rommel landed in our camp in his Fieseler Storch to find out how we could support him while he gathered his forces in the Tripoli region. He told us that it would take him at least six weeks before he would be able to go into battle. Until then we were to keep the British off his back. In Berlin, he had been assured that the two *Gruppen* of our *Stukageschwader* 3 would master that task. For us, of course, this was a serious commitment. Before leaving, Rommel said he wanted us to act quickly so as to halt any further British advance. This meant an attack against the armoured spearhead at El Agheila.

So it was that our I./St.G 1 had the honour of flying the first such sortie in North Africa.

A sandstorm blew up. The *Kommandore* did not insist on take-off. On the other hand, Rommel's position was precarious. I consulted with my *Staffelkapitän*. We decided to risk an instrument flight. The engines were fitted with dust filters. All of us were trained in blind flying. The *Ketten* took off at intervals of one minute. Only after we had climbed to an altitude of 2,000 metres was visibility clear. Forming up, we started our 500 km approach to the target. On our flight we made a wide detour to the south because we felt sure no one would expect us from that direction. We knew that there were enemy fighters in Benghazi, and possibly a small number in Agedabia, not far from El Agheila. They would not, we hoped, intercept us because we had no fighter escort.

The sun was high in the sky as we dived, liked birds of prey, from 5,000 metres on the British outpost on the Great Syrthe. Our bombs whirled up a lot of dust, that's all we could see. There was no AA defence that we could see. All the same, we lost one of our crews. On our return to Bir Dufan we were greeted enthusiastically. Italian radio intercepts had picked up a report by the British senior command in El Agheila saying that more than forty armoured scout cars had been destroyed as a result of our mission. It was the first successful counter-blow for General Rommel.

The following attack was carried out by Major Enneccerus and his II./St.G 2, whilst we flew 800 km back to Trapani to pick up new bombs. It was 800 km back.

Next day, our attacks covered another 1,000–1,200 kilometres. We thus flew in turns for a number of weeks.

In the last sortie flown by my *Gruppe* – against a British division advancing south of Benghazi which we had attacked in low-level flight – we lost five aircraft in a surprise attack by Hurricanes.

Mine was the last aircraft to break away from the enemy, and as I moved up to take lead of the *Gruppe*, some enemy



The experienced *Stuka* commanders, Major Paul-Werner Hozzel (left), Kommandeur of I./St.G 1 and Hauptmann Helmut Mahlke, Kommandeur of I. and III./St.G 1 study situation maps in Mahlke's field HQ during operations against Malta in early 1941.

fighters curved in at me. I tried to escape at low-level behind the dunes, but in vain. I could not shake off my pursuers. Then I flew out over the sea hoping to get rid of them. It was useless. They stuck to me, firing at my aircraft, two from the left, two from the right, one from the rear. We fought for our lives. My back-seater with his quick-firing twin gun to the back, me with my two machine guns, forward. The fire from the enemy guns rattled into our wings and fuselage. The two tanks in our right wing were hit and leaking. I thought my hour had come.

Simultaneously however, it appeared that our adversaries had become a little challenged by our desperate resistance and wild jinking movements. Their fire was no longer well-placed. Luckily for us, there seemed to be no 'ace' among them. Now something incredible happened; my back-seater suddenly shouted: 'We've brought one down! He's in the water! The others are flying over him...'

Banking around and looking back I saw that he was correct. Now I thought they would take their bloody revenge and finish us off. But – again – something unexpected happened. Two of the British airmen took us in their midst, approaching so closely that we could see their faces. Evidently, they wanted to see us run out of fuel and drop into the sea. I must have scowled at them, thinking it most unfair to attack a single Ju 87 with five Hurricanes. When nothing happened however, the two fighters suddenly turned away and disappeared behind us. Miraculously, the tank in our left wing had remained intact. The distance to the coast near El Agheila was about 80 km. We made it, making a forced-landing in a glide, with our tanks empty, in no man's land, about 200 km away from the nearest Italian outpost in Sirte. We spent the night in the desert.

Next morning, we were spotted by a search party sent out by our unit, picked up and taken back to Bir Dufan. It was a close shave, but *Stukageschwader* 3 had carried out its first missions.¹

¹ Paul-Werner Hozzel, *Memoirs of a Stuka Pilot*, February 1978



Ju 87 R-2s of I./St.G 3. When this Gruppe was formed in July 1940, it was allocated the operational code S1, although most other parts of the Geschwader were allocated the code S7. Shown in the centre of this photograph, probably taken in Greece in 1941, is S1+AB, a Ju 87 R-2 flown by the Kommandeur, Major Walter Sigel.



Junkers Ju 87 R-2 flown by Major Walter Sigel, Kommandeur of I./St.G 3, Greece 1941

This aircraft was camouflaged in a standard 70/71/65 scheme and carried a white band around the rear fuselage. The spinner tip and the individual aircraft letter A were in green, RLM 25. Note the disc upon which the griffin badge was placed was also in Stab green.



A Ju 87 R-2 of 3./St.G 1 coded A5+GH, comes in to land after a mission.

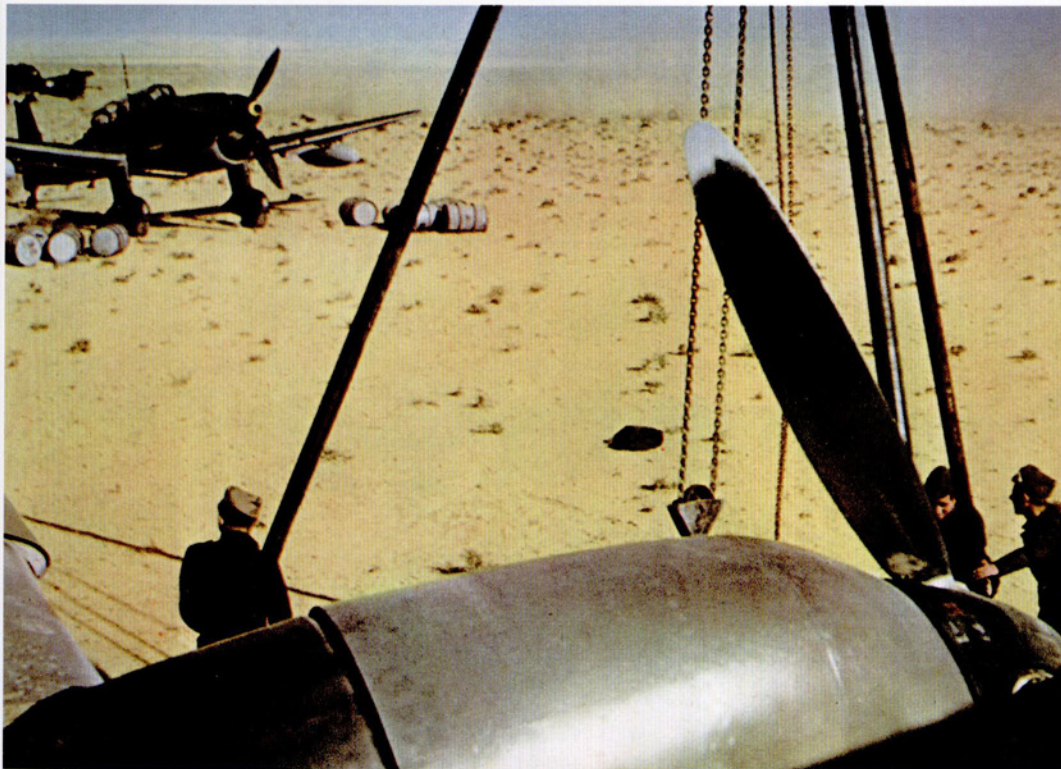


In June 1941, most of Stukageschwader 1 was sent to the East to support the invasion of Russia, leaving I./St.G 1, II./St.G 2 and I./St.G 3 as the only dive-bomber units in the Mediterranean. Here, a formation of Ju 87 R-2s from I./St.G 1 is shown flying along the North African coast. Note the internal blinds in the cockpit offering some respite from the hot African sun.



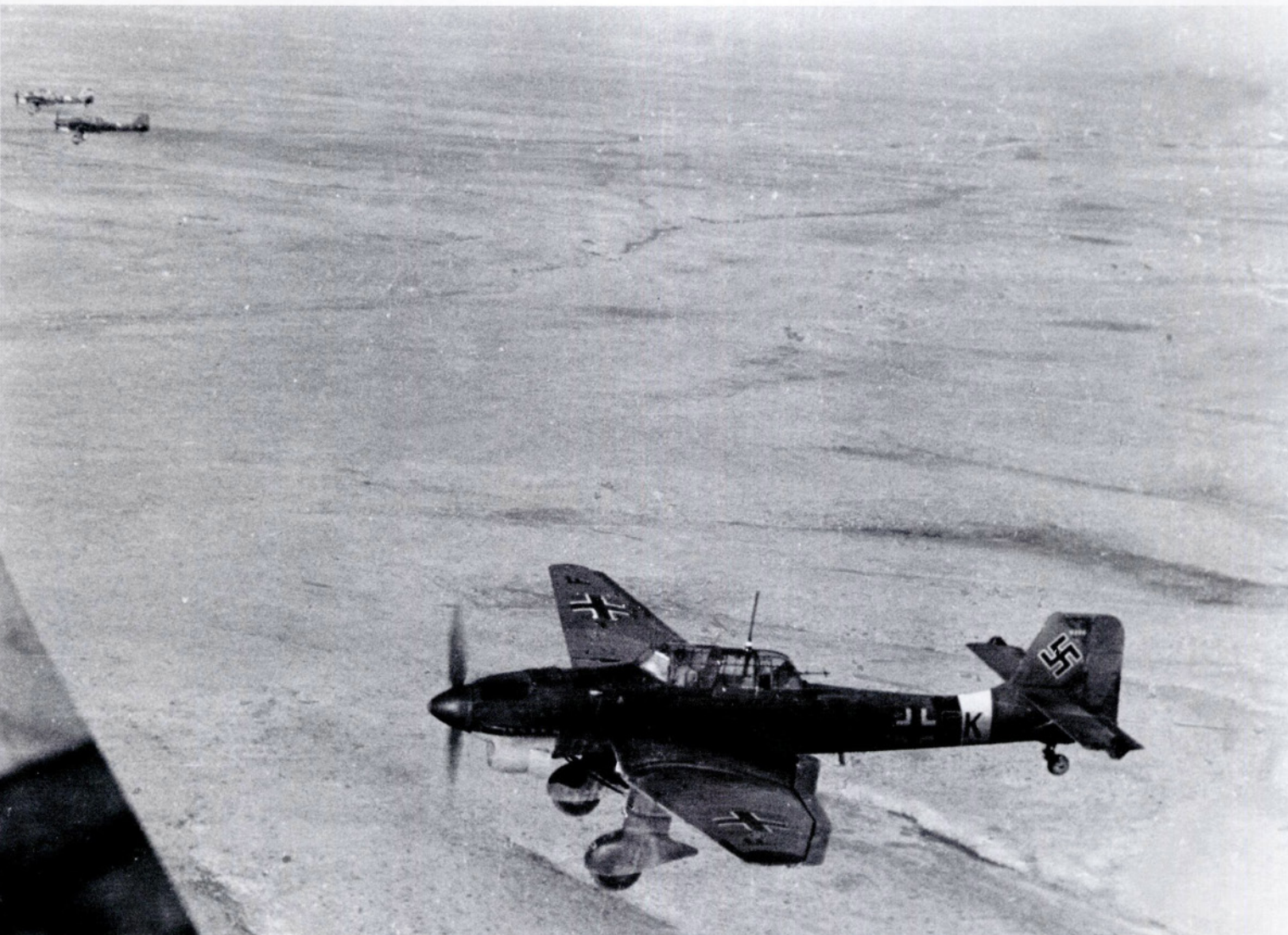
Junkers Ju 87 R-2 of 1./St.G 1, North Africa, 1941

Finished in a standard European splinter scheme of 70/71/65, this aircraft carried the operational markings A5+BH and had the white individual aircraft letter B repeated on the upper wingtips. This machine belonged to 1. Staffel and carried the I. Gruppe's diving raven badge on the engine cowling. Note the internal cockpit blinds.



A Ju 87 R-2 of 5/St.G 2 on a desert air strip. The aircraft has either been or about to be refuelled hence the fuel drums. Note the Bf 110 of ZG 26 in the foreground undergoing maintenance.

These Ju 87 Rs of 2./St.G 1 are returning from a mission having released their long rang drop tanks and bomb loads. The machine nearest the camera is coded A5+ FK and also still has its bomb carrying fork hanging down. The individual aircraft letter has been applied in black on the upper outer wing surfaces and is thinly outlined in white in the fuselage sides.



Helmut Mahlke

Oberstleutnant Helmut Mahlke saw service on virtually every front as a Stuka pilot and unit leader. Mahlke was born in Berlin on 27 August 1913 and served in the German Navy before transferring to the Luftwaffe in 1935. He was attached to various maritime aviation units until September 1939 when he commenced dive-bomber pilot training at Kitzingen. He then flew as *Staffelkapitän* of 2.(St.)/Tr.Gr.186 based at Kiel and Wertheim before flying his first combat missions with this unit in France. In July 1940, he was appointed *Kommandeur* of III./St.G 1 and saw action over



England and the Channel, Malta, North Africa, Crete and Russia where he was shot down on no fewer than three occasions. He was promoted to *Major* in June 1942. He flew 159 combat missions and was accountable for the destruction of several Russian ships and one submarine. He was awarded the *Ritterkreuz* on 16 July 1941 and served for the latter part of the war in staff positions with *Luftwaffenkommando Ost* and *Luftflotte 6* on the Eastern Front. He is seen here during his time in the Mediterranean.



When I./St.G 1's aircraft were transferred from their forward base at El Machin to the Bulgarian airfield of Krainitzi, with its 150-200 strong ground crew following in Ju 52 transporters, in readiness for Operation *Marita*, they were immediately replaced in the desert by the *Richards* of III./St.G 1 which moved from Trapani to Derna and commenced operations against British shipping as early as 12 April and against Fort Solario at Tobruk five days later.

Nor did the Royal Navy escape the attentions of the North African based Ju 87s for long. As the British were rolled back, the *Stukas* were called in to deal with British warships operating on the Army's flanks. One such ship was the old monitor HMS *Terror*, first commissioned in 1916. Armed with two 15 inch guns and many anti-aircraft guns, she had been stationed at Malta for a time to supplement the island's defences. She had now been called upon to fulfil her true role, that of coastal bombardment, which she did to great effect, but not for very long. She had

Tobruk and its harbour under aerial bombardment.

already been damaged by a near miss at Benghazi and again by the close detonation of two mines on her way to Tobruk, but she would face her nemesis off Derna on 22 February at the hands of the dive-bombers. The *Terror* had her back broken in this attack and her engine room flooded. Attempts to take her in tow and reach Derna failed as she developed a heavy list and had to be abandoned, later sinking.

The attrition continued; Helmut Mahlke of III./St.G 1 recalled one such operation to the author thus:

*"The army had asked for help stating that a 'battleship' was shooting with very heavy guns at their positions. We duly flew off to the limit of our range and just at the point-of-no-return, when I had to make my decision to turn back, I saw a rather big man-o'-war and attacked immediately. Due to the severe haze, details of the ship could not be clearly made out until we were below 1,200 metres. The first flight hit the bow of the ship, which went under the waves within seconds, when the second flight also attacked and hit her in the stern. The third and fourth flights returned with their bomb loads intact, reporting that the ship was already under water when finishing their dives. During our debriefing we had the problem of identification of our target. We knew of course it was not a battleship, but what kind was it? Finally we decided to report it as a 'Warship', most probably a Monitor of coastal type of about 8,000 tons."*²

Other naval victims claimed by the *Stukas* off the North African coast during this period included the minesweeper *Huntley*, sunk on the last day of January, and the destroyer *Dainty* of the Inshore Squadron, (which had set up to run the gauntlet and supply Tobruk once it had been invested and cut

² Helmut Mahlke to the author, 12th January 1977.

In order to provide Ju 87s operating in the Western Desert with a suitable camouflage, the original RLM 70 and 71 upper surfaces were oversprayed with a sand colour. As shown here, this was sometimes applied in such a way that areas of the original greens were left unpainted to give a mottled finish.



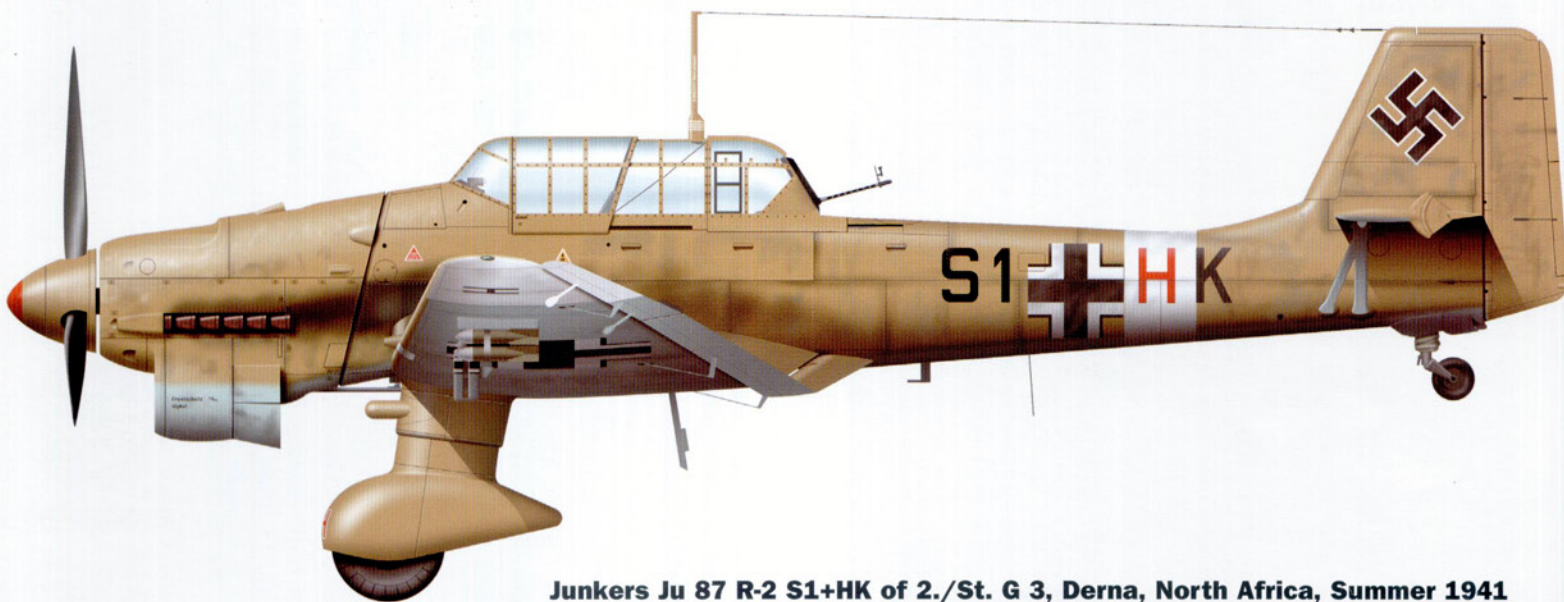
This Ju 87 R-2, almost certainly S1+FH of the 1. Staffel of Stukageschwader 3, has an overall tan finish. Note, however that while the fuselage band is white, as appropriate for the Mediterranean Theatre, the undersurfaces of the wingtips, and possibly also the lower part of the radiator intake, are yellow. Yellow areas were applied to the engine undersurfaces on most Luftwaffe aircraft operating in the Mediterranean, and were to facilitate the rapid identification of friendly aircraft, but the yellow under the wings is most unusual.



Ju 87 R-2s from 4./St.G 2 in flight in North Africa. The aircraft shown nearest the camera (left) carried the operational code T6+BM. Note that although this Staffel had a four-leafed clover badge, as seen on T6+EM (above), it also had the insignia of the Afrika Korps, adapted by adding a Luftwaffe eagle, as an additional Staffel badge. The same eagle and palm badge was later employed by the whole of II./St.G 2 while operating in North Africa, although in all cases it appears to have been applied only to the starboard side of the engine cowlings.



Some machines, particularly those of St.G 3, were recamouflaged in an overall tan finish. The full operational code on this Ju 87 R-2 of 2./St.G 3 shown flying over North Africa, was S1+HK. Note the SD 10 anti-personnel bombs carried in two bundles of five under each wing.



Junkers Ju 87 R-2 S1+HK of 2./St. G 3, Derna, North Africa, Summer 1941

The original RLM 70 and 71 greens of the uppersurfaces, undercarriage fairings and spinner on this machine were completely oversprayed with a desert tan. Evidently, this was done with some care as there were no signs of overspray on any of the aircraft's operational markings or national insignia. White theatre markings were applied under the wingtips and as a band around the rear fuselage, and the tip of the spinner was red, the Staffel colour. The individual aircraft letter H was repeated under the wingtips in black and on the forward faces of the wheel fairings where it was in red, outlined in white.

1939-1941

off by land). She was dive-bombed and sunk on 24 February. The British naval C-in-C, Admiral Andrew Cunningham was exasperated and wrote later that: *"The German dive-bombers were a menace."*³ In a letter to the Admiral Dudley Pound, the First Sea Lord, on 10 February, Cunningham revealed what practical steps his fleet was taking to counter the *Stuka*. He advised:

"We are trying some new methods against them. One which looks very promising is to make the destroyer screen put up an umbrella barrage over a particular ship, probably the carrier. I am also going to have twelve fighters in the air over the fleet when we encounter these gentlemen again. I haven't much doubt of the result."

He may later have regretted the final sentence, for his command was soon to have ample opportunity to put their new defences into practice!

Tropische Stukas

One new facet that the versatile Ju 87 now had to encounter was operating in the desert. The rugged *Stuka* was ideally suited to operate from rough airstrips close behind the fast-moving front line as General Erwin Rommel used skill and speed to replace numbers and outfox the British, but the hazards of extreme heat by day and cold by night, coupled with the sand and dust which penetrated every moving part of an aircraft, required adaptation.

All three types of Ju 87 involved in the desert campaigns underwent similar modifications. The starboard positioned conventional air filter was replaced with a redesigned version of larger section for desert conditions and first trialled by II./St.G 1 at Trapani in March following Italian experience. Small alterations were made to the aircrafts' oil lubrication system to enable them to cope with the hostile environment in which they were now operating. Initially, these changes were carried out by the units own mobile maintenance staff, but later it was to become a special production line feature.

The chances of being forced down far from any immediate help in the wastes of the Libyan or Egyptian desert were not palatable. Accordingly, to give such unfortunate crews some improved chance of survival until help came, upgraded survival modifications were incorporated. These changes featured internal water tanks, survival kit with spades, emergency ration packs, blankets and mattresses for the cold nights, sunshades fitted to the gun sights, shotguns and extra handguns to aid hunting for food. Such aircraft were known as *Trop* (*Tropische* or Tropicalised) *Stukas*. Each aircrew had its own adaptation or additions to this of course.

Early attacks on the Malta convoys

While a considerable proportion of the *Stuka*'s effort was directed to attempting to bomb Malta into submission, the British were equally determined to hold onto the island whose strategic position made it ideal as a base to sever Axis supply routes to North Africa. This entailed running convoy of vital foodstuffs, oil and ammunition, as well as aircraft and troops, from either end of the Mediterranean, protected either by the main Mediterranean Fleet based at Alexandria in Egypt or by Force 'H' based at Gibraltar. Whichever route was taken, the convoy route was flanked by Axis airfields in Sardinia, Pantellaria, Sicily and Crete to the north, and Libya to the south, along with pro-Axis Vichy-French bases in Morocco, Algeria and Tunis. Thus each convoy faced increasingly tough opposition the closer it came to its destination. Between 1940 and 1942 these convoys became increasingly more costly but they continued to run the gauntlet. Although the 1940 convoys had been disputed by the *Regia Aeronautica*, and their handful of Ju 87s, the arrival and reinforcing of the *Luftwaffe Sturzkampfgeschwader* in the area in 1941 brought about a different scale of opposition and led to some major air-sea battles.

The first occasion that the German *Stukas* intervened was against Operation 'Tiger', which was a fast convoy of five modern freighters laden with tanks for the British Army in Egypt, escorted by Force 'H' (which included the unarmoured carrier *Ark Royal*) and reinforcements for the main fleet, the battleship *Queen Elizabeth* and cruisers *Naiad* and *Fiji*. Once word was received of this escorted convoy, I./St.G 1, with twenty-eight *Stukas*, was hastily transferred west to Cagliari airfield in southern Sardinia. From here they mounted an attack but to no effect.

³. Viscount Cunningham of Hyndhope, Admiral of the Fleet the, *A Sailor's Odyssey*, Hutchinsons, London, 1951.

Close-up detail of the eagle and palm badge which was initially used by 4./St.G 2 and later employed by the whole of II./St.G 2 while operating in North Africa.

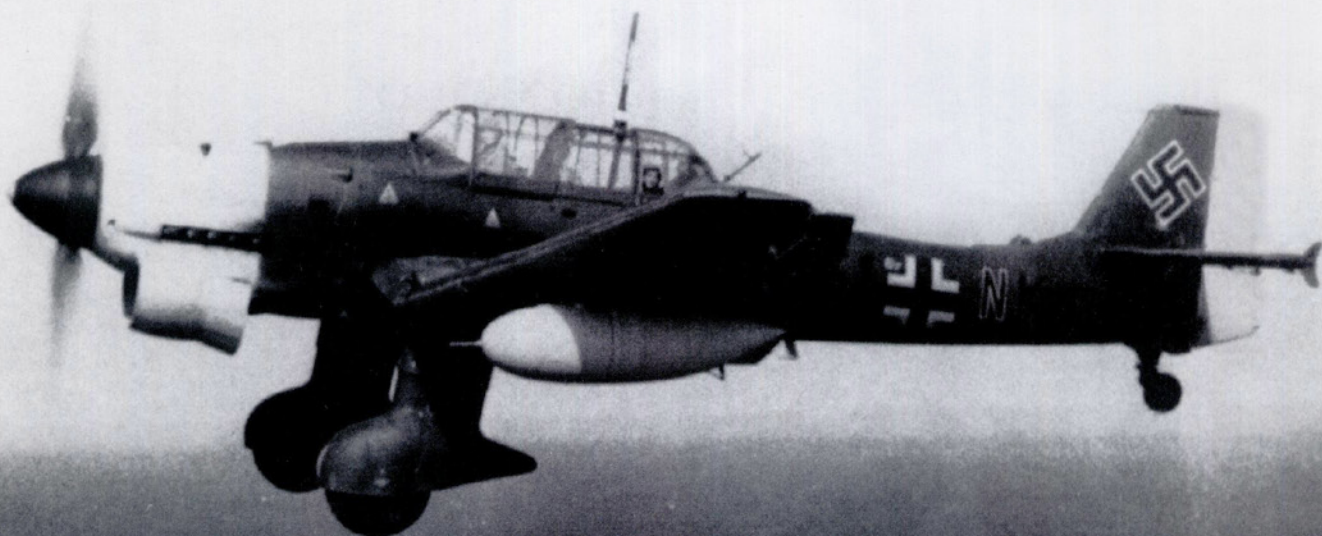


Major Walter Enneccerus, the Kommandeur of Stab II./St.G 2, flying low over the Mediterranean in his Ju 87 R-2 coded T6+AC. Note that the aircraft letter A is in green and that the machine carries the Africa palm and eagle on the nose, originally the Staffel badge of 4./St.G 2.



Junkers Ju 87 R-2 flown by Major Walter Enneccerus, Stab II./St. G 2 Mediterranean Theatre, 1941

The overall appearance of this machine is typical of the aircraft operated in the Mediterranean theatre by II./St.G 2 in early 1941. The camouflage is RLM 70/71/65 and the white fuselage band is set squarely behind the fuselage Balkenkreuz. Note that instead of the aircraft letter, small, white vertical bars have been painted on the front of the wheel fairings.



Through the Balkans

While these momentous events had been taking place in the south, for the bulk of the *Stukagruppen*, preparations had been underway for the planned invasion of the Soviet Union throughout the early spring of 1941. This involved the setting up of bases in the bordering countries of Bulgaria and Rumania, the latter to protect the Reich's oil supplies, the former to give a southern flank for the coming offensive. The *Stab* (fourteen aircraft) and I./St.G 2 (thirty-seven aircraft) had returned to Thalerhof near Graz, Austria; II./St.G 2, were at Wels with thirty-six operational machines. The 5. and 6./St.G 3 had moved to Bari (twenty-nine aircraft) while 4./St.G 3 was at El Machina, North Africa, but then moved across the Mediterranean to Krainitzi in Bulgaria. Following the *coup d'etat* in Belgrade, the whole of St.G 77 rapidly transferred eastward to Arad airfield in north-western Rumania, commencing on 31 March, taking the route Théville, Romilly, Cutzheim, near Strasbourg, Erding, Gotzendorf and Arad, which it reached on 2 April. Here it came under the operational control of *Oberstleutnant* Karl Christ's *Stab*./St.G 3. It also utilised the airfield at nearby Derta. Meanwhile III./St.G 2 had moved to Otopenic airfield near Bucharest, Rumania and then via Krainitza/Plovdiv to the forward operating base of Belica, close to the Greek and Yugoslav frontiers.

A Ju 87 R of 2./St.G 3, coded S1+NK, carries the distinctive Balkans Theatre markings of yellow front engine cowlings and rudder. Note that armour plating has been fitted behind the pilot's seat. The 300 litre drop tanks have been fitted with short hollow tubing to assist in forcing air into the tanks to help the pressure to feed the fuel to the engine.

Ju 87 unit Order of Battle – reported 5 April 1941 (Balkans)

Luftgaukommando XVII

Erg.Staffel/St.G 2	Ju 87	Graz (Austria)
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Luftflotte 4

FLIEGERFÜHRER GRAZ (UNDER KOMMODORE OF ST.G 3)

Stab/St.G 3	Ju 87	Graz (Austria)
II.Gruppe/St.G 77	Ju 87	Graz (Austria)

FLIEGERFÜHRER ARAD (UNDER KOMMODORE OF ST.G 77)

Stab/St.G 77	Ju 87	Arad (Rumania)
I.Gruppe/St.G 77	Ju 87	Arad (Rumania)
III.Gruppe/St.G 77	Ju 87	Arad (Rumania)

VIII FLIEGERKORPS

Stabsstaffel/St.G 2	Ju 87	Belica-Nord (Bulgaria)
I.Gruppe/St.G 2	Ju 87	Belica (Bulgaria)
III.Gruppe/St.G 2	Ju 87	Belica (Bulgaria)
I.Gruppe/St.G 3	Ju 87	part at Belica (Bulgaria)
I.Gruppe/St.G 3	Ju 87	part at Krainitzi (Bulgaria)



Ground crew preparing to start the engine of a Ju 87 B-1 of Stab II./St.G 77 in the Balkans. The yellow campaign marking on the cowling has evidently just been applied as there is no sign of any exhaust staining. Note the engine starting handle and the propellers for the wind driven sirens.



Ju 87 B-1 of Stab II./St.G 77 in the Balkans. This aircraft, flown by the Kommandeur, has suffered a collapsed port undercarriage.



Junkers Ju 87 B-1 flown by the Kommandeur of II./St.G 77, Balkans 1941

This machine was finished in a standard 70/71/65 splinter scheme with the badge of Stab II./St.G 77 on the forward fuselage. Note the lack of propellers on the oleo fairing where the sirens have been removed and capped over. When the yellow campaign markings were applied, these caps were also painted yellow.

Simultaneous attacks against both Greece and Yugoslavia commenced on 6 April. The *Luftwaffe* was disdainful of the air forces of these two countries, and of such assistance that the RAF was able to deploy, so much so that the *Stukas* had their whole nose sections including the radiator cowlings and their rudders, painted bright yellow for easy identification by their own troops. While St.G 77 struck in the north against the Yugoslav capital, and at Smederevo and Jeda, St.G 2 supported the attacks to the south, which quickly seized Alexandroupolis near the Turkish frontier, and the forcing of the Rupel Pass down the River Struma and Fort Davtavil. In attacks on a British armoured column, the Adjutant to Major Oskar Dinort, the *Kommodore* of St.G 2, *Oberleutnant* Uhlitz, was killed when his aircraft was shot down. After an incredibly audacious advance up the Strumitsa, through the frontier mountains and down the Vardar valley, the Germans took the port of Salonika. The Greeks offered stubborn resistance and from the 6th to the 9th fortifications on the Metaxas Line were continually dive-bombed to break resistance; similar support was given to the German breakthrough to Petric. In contrast, the Yugoslavs, who had been told an attack was impossible before 20 April, were caught in disarray, with their main forces concentrated in the north of the country. Immediately, strong reinforcements were ordered south to meet the threat to the capital, but the *Stukas* caught them in transit. One account read:

*"The dive-bombers swooped out of the low cloud and the long winding columns – 250 kilometres jammed with marching men and beasts and carts crawling at a foot pace – were bombed and strafed and blasted. The German aircraft flew along emptying their machine-guns, when they had used up their bombs, on what must have seemed an almost stationary target. That was the end of the Yugoslav (sic) reinforcements which should have held the southern passes from Bulgaria."*⁴

As well as outflanking the Metaxas Line as simply as they had the Maginot Line, in a single day the Germans had taken Skolpje in the upper Vardear bend, then struck south to Prilep and Monastir, thus outflanking both the British and Greek positions around Vevi, and the Greek left flank, still deep within Albania. The RAF response was weak and ineffectual and while the *Stukas* operated with telling effect daily, "*Bad weather hampers the RAF*" was the story given as to why it had failed to stop the *Panzers*, which in places were driving on three abreast just as they had in the Ardennes a year before. A hasty defence was organised around the rail junction at Florina, but this too was taken and Allies fell back around Kozani after fighting a rearguard action at Amindaion. The *Stukas* now attacked Greek forces east of Kozani and at Servia supporting the pincer attack toward the latter. The Aliakmon bridges were blown but the Germans were already advancing west along the southern bank and a further retreat followed. III./St.G 2 suffered its first loss of the campaign near Mount Olympus on the 14th, when *Oberleutnant* Christian Banke's Ju 87, coded T6+KT, was shot down by a Hurricane.

Soon, however, the Greeks followed the example of the Yugoslavs and sued for peace once their Army of the Epirus had laid down its arms having been cut off by the German seizure of Yanina on 20 April. The British withdrew to the sea and awaited the Royal Navy once more. The *Stukas* now used recently captured airfields in Thessaly; I. and III./St.G 2 worked from Larissa within hours of the British being forced out, and harried them all the way to the evacuation ports and beaches, and beyond. Already the Greek Navy had been largely eliminated, the dive-bombers sinking the ancient battleships *Kilkis* and *Lemnos* in dock at Salamis on 23 April as well as seven destroyers and three minelayers. The *Stukas* followed remorselessly, St.G 2 soon operating from Megara within easy range of Piraeus, the port of Athens, inflicting heavy casualties on the evacuation fleet, sinking the troop ships *Costa Rica*, *Hellas*, *Pennland* and *Slamat*, as well as escorting destroyers *Diamond* and *Wryneck*.

Stuka Anvil – Crete

The British had occupied Crete since 29 October and thus had seven months to bring the island's defences up to strength. They had 28,000 troops in position, under General Freyberg, plus eleven battalions of Greek troops to which were added Royal Marines, three ANZAC units from Greece, to given an overwhelming strength of 42,000. Suda Bay to the north of the island was a natural anchorage and was much used by advance forces of the Mediterranean Fleet. The Royal Navy, after their victory over the Italians at Cape Matapan in March, ruled the seas. With three good airfields at Maleme, (Khania), Rethimnon and Iraklion, and with a terrain that fully favoured the defender, and

⁴. David Garnett, *The Campaigns in Greece and Crete*, London, 1942.

with, we now know, very good intelligence about the German intentions, both General Archibald Wavell and Admiral Andrew Cunningham thought it could be held against invasion. They had what should have been the absolute trump card of knowing precisely the German plans. It could be defended against seaborne invasion, but the Germans had other ideas, especially *General der Flieger* Alexander Löhr commanding *Luftflotte 4* and *Generaleutnant* Kurt Student, who commanded the elite XI. *Fliegerkorps* with its airborne units, paratroops and 493 Ju 52 transport aircraft drawn from a number of *Kampfgruppen zbV*. Together, they won Hitler's approval to take Crete by aerial assault, something their opponents considered impossible. However, whereas in Greece there was at least a small degree of RAF presence to offer opposition, on Crete there was absolutely none apart from a few Fleet Air Arm Fairey Fulmar and Grumman Martlet⁵ fighters operating at the extreme length of their range, since the RAF had withdrawn to Egypt. So ironically, the three airfields, which should have been the key of the defence of Crete from the air, instead became the gateways for the German airborne assault. No Axis invasion convoys got past the Royal Navy at night, but by day the *Stukas* ruled the skies and military history was again re-made with Operation *Merkur*.

Ju 87 units operating over Crete, May 1941

Unit	Base	Commander	Strength
I./St.G 2	Molai	<i>Oberst</i> Hubertus Hitschhold	35
II./St.G 2	Scarpathos	<i>Major</i> Walter Enneccerus	33
III./St.G 2	Mycenae	<i>Hptm.</i> Henrich Brucker	35
I./St.G 3	Argos	<i>Oberst</i> Karl Christ	38
I./St.G 77	Gygea, Mulaoi	<i>Hptm.</i> Helmut Bruck	29
III./St.G 77	Mulaoi	<i>Hptm.</i> Helmut Bode	31

Crete – the battle ashore

At 0700 on 20 May, the *Luftwaffe* assault on Crete opened. Intense bombing attacks were made on all the known anti-aircraft and artillery positions around the airfields at Maleme and Khania (Canae or Rethimnon) to stifle all such opposition. St.G 2 contributed to an attack by all arms and this was followed an hour later by the arrival of the first glider troops. Meanwhile the Ju 52s dropped string-after-string of paratroops. They were met by fully alerted defenders already positioned to make the best use of the terrain and deny access to the lightly armed para and glider troops.

It was the *Stuka*'s duty to soften up the British defences and support the heavily engaged German troops who managed to reach the ground intact and link up. However, the rocky and thorny scrub terrain was broken into deep ravines and rugged peaks with little flat terrain for the Germans to establish themselves. From their experience in Greece, the *Stuka* crews had seen their bombs having little effect on dug-in infantry, mortar and machine-gun positions concealed in such a rugged landscape. Much thought had been given to maximising the blast effect of their standard SC-50 and SD-70 bombs, which mainly vented upward which limited the damage they did. To overcome this, a method of detonating the bombs above ground-level was roughed out *ad hoc* by Oskar Dinort's St.G 2 at Molai in mid-May. Friedrich Lang, the former Technical Officer of I. *Gruppe*, explained to the author how this came about:

"The first trials were with 60 cm-long willow sticks which we screwed into the screw hole on the point of the 50 kg bombs. The trial area, marked out with a white sheet, was a wheat field with some olive trees scattered in it. You could easily see the depth of the shallow crater and the scatter effect around it by the damage to the wheat."

*"The willow stick did not work out since it broke off and did not detonate the bomb before impact. The next trial was undertaken with even lengths of metal rod. They also did not come up to expectations. The rod became embedded in the ground and the bomb detonated too late. We were successful with the third attempt. On the end of the metal rods we welded an 8 cm-diameter metal disc. The bomb now detonated at about 30 cm above the ground. The scatter effect was high, as expected. The rods were, at the beginning, made in our own workshop wagons and first used when we attacked Crete. Later, they were made by industry under the name of Zunderabstandstabe. They were called Stachelbomben (Stabo) or 'daisy-cutter' bombs for obvious reasons."*⁶

⁵ The Martlet was the British name for the US Navy F4F Wildcat carrier fighter purchased under Lend-Lease in limited numbers and being used operationally for the first time from shore bases.
⁶ Friedrich Lang to the author, 16th December 1976.

The main aerial assaults on the three airfields on 20 May 1941 were delivered after a preliminary series of air attacks from 0600 onwards in which St.G 2 *Immelmann* was prominent with I. *Gruppe* under *Hauptmann* Hirschhold and II. *Gruppe* under *Major* Enneccerus followed by *Hauptmann* Brücker with III. *Gruppe*. The *Geschwader* delivered a succession of heavy blows on known defensive positions and artillery emplacements around Maleme at the western end of the island, with its strategically important dominant feature, known as Hill 107. Forty-five minutes later the first of fifty-three gliders of the German Western Assault Force started landing followed by 5,000 paratroops dropped from 120 metres from Ju 52s against an alert and well-concealed defence. Casualties were severe and only a bare fingernail of a perimeter was obtained. The second wave followed during that same afternoon, being split between the other two airfields. However, its take-off was delayed and the *Stuka* attacks, which were delivered on time, failed for the defenders had time to recover and regroup before the Germans eventually arrived. Again, only a few German troops survived the drop and the hard fighting that followed, and counter-attacks later removed the main threats to both. All now depended on what happened at Maleme. Here, desperate attacks by the surviving German detachments that evening finally forced the defending New Zealand defenders from the summit of Hill 107.

To prevent counter-attacks during the morning periods, the Ju 87s were continually employed from first light in non-stop missions to Maleme and concentrated on British artillery and anti-aircraft batteries around the landing ground. Transport aircraft began to land, both on the beach and at the airfield itself, and, despite heavy losses, reinforcements and supplies were gradually built up. The *Stukas* successfully dominated the sky by day so the British were forced to mount their counter-attack during the night of 21st/22nd, which, although it almost reached the airfield, was held and then driven back. By dawn next day the Ju 52s continued to land and the *Stukas* continued to blast the New Zealanders as the Germans drove forward. Gradually the tide turned and more forces were landed in quantity, both at Maleme, where specialist mountain troops were disgorged and soon proved their value, and in the large undefended areas away from the main airfields. They cut British access to the small ports on the southern coast and gradually drew the net tighter around both Rethimnon and Iraklion.

By this time further reinforcements for the dive-bombers had moved up. St.G 77 initially working out of Molai, Cape Malea, carried out attacks on British positions at Alikami and at Canea on the 26th, with a third sortie classified as "a free-ranging patrol" against targets of opportunity later the same day. By the 27th, despite the constant rhetoric from Winston Churchill far away from the reality of the situation in London, General Freyberg admitted that his troops were at the limit of endurance due to "...the concentrated bombing that we have been faced with during the last seven days." Typical of the attitude of the defenders was that of some Australian infantrymen later rescued by a British warship, who stated simply that: "As soon as we started to fire, the *Stukas* were on us." The British commander-in-chief also realised the game was up, even if Churchill did not. General Wavell authorised the evacuation of the surviving garrison from 27th onward – if that were still possible.

Crete – the battle at sea

At sea, Admiral Cunningham's firm resolve, despite the bitter lessons of Norway, Dunkirk and the *Illustrious* incident, had been to take every risk to prevent the Germans reinforcing their slender toehold by landing heavy equipment and reinforcements by sea. This courageous decision, although successful in its principal aim, played directly into the hands of the short-range Junkers Ju 87 units. By placing themselves almost adjacent to the *Stuka*'s island bases, the Royal Navy offered up a substantial number of targets, with no fighter cover whatsoever, almost on their doorstep. In near perfect weather conditions, the *Stukas* could shuttle backward and forward, refuelling and bombing up in sortie after sortie which eventually wore down the warships' defences as ammunition became depleted and damage mounted. Heavy losses among the warships were inevitable, both during the opening phase, and the later evacuation of the garrison to Egypt.

The toll in ships lost and damaged was therefore a heavy one. Initially, as related, the main task of the Junkers Ju 87s had been to provide support to the handful of Germans ashore, thus only a limited number could be spared to attack the various naval squadrons off the disputed island. Even so, damage soon began to mount for the ships operating at night, which destroyed or turned back every Axis attempt at seaborne reinforcement. A result of these night engagements was that the British vessels were sometimes exposed with the coming daylight. As the situation ashore gradually improved, the *Stukas* increasingly were able to bring their precision and accuracy to bear. Three British light cruisers, *Carlisle*, *Naiad* and *Perth* were all damaged in attacks by St.G 2.

Again, old lessons for some reason were ignored and the British commanders continued the suicidal practice of detaching single ships or small units, from the main fleet, where they could share the combined heavy fire-power of all the ships, including the large AA batteries of the battleships. Thus, at 1330 on 22 May, the destroyer *Greyhound* was sent alone to sink a Greek caique flying the German ensign off Pori. This she did but was caught by eight *Stukas* before she could rejoin and was sunk by three direct hits. Two more destroyers, *Kandahar* and *Kingston*, in turn detached to rescue her survivors, were pounced on by the ever-vigilant Ju 87s which damaged one with three near misses. The light cruisers *Gloucester* and *Fiji*, although they had almost exhausted their AA supply, were sent in support and suffered the same treatment, both being sunk after having to resort to firing practice ammunition at their tormentors. Two further destroyers, *Havock* and *Ilex* were also damaged by near misses the same day.

Nor was this the end of it. The 5th Destroyer Flotilla commanded by Captain Lord Louis Mountbatten, had been ordered out of Malta to reinforce the fleet. On 23 May, three of these ships were detached to carry out a bombardment of Maleme airfield, now in German hands. One destroyer, the *Kipling*, suffered mechanical problems and had to drop out, and so the remaining pair, *Kelly* and *Kashmir* proceeded on their own. Their bombardment completed, (it caused little inconvenience to the Germans), they were duly caught on their own south of Gavdos Island at 0755 next morning by *Hauptmann* Hubertus Hitschhold and his twenty-four *Stukas* of I./St.G 2. Both ships were immediately hit while taking avoiding action and quickly sank. Fortunately, the *Kipling* had finally effected her repairs and came up in time to rescue the survivors, and, despite six further attacks over a six-hour period, which ruptured her fuel tanks, survived to stagger into Alexandria⁷.

The Royal Navy even attempted a small-scale counter-attack, with its strictly limited resources. A task force, comprising the battleships *Queen Elizabeth* and *Barham*, the aircraft carrier *Formidable* escorted by eight destroyers, was despatched to conduct an operation to cover the evacuation. The *Formidable* even had the temerity to mount an air attack of her own with eight antiquated Fairey Albacore biplanes against the *Stuka* base on Scarpanto. Four of the Albacores aborted the mission and the remaining four inflicted minimal damage without loss to themselves. However, during their withdrawal and while some 250 miles south of Kaso Strait, they were sighted by a force of twenty Ju 87s of II./St.G 2 led by *Major* Walter Enneccerus, working from North Africa against British supply ships heading for Tobruk and all equipped with long-range fuel tanks which gave them unexpected extra range. At once 'Ennec' went into the well-drilled routine that he had employed against the carrier's sister ship just a few months before.

The carrier's report stated tersely that:

"In the course of the attack, about eight aircraft definitely attacked Formidable and the ship was hit twice within a short space of time by larger armour-piercing bombs, once forward on the starboard side and once aft on the starboard side of XI turret. The hit forward caused a large fire in the Fleet Air Arm workshop and severe structural damage from the main deck to the upper gallery deck between 6 and 24 bulkheads. The fire was got under control in about five to ten minutes and the ship was able to maintain her position in the fleet at 19 knots."

"The hit aft put XI turret out of action and shook the ship very badly, We were extremely fortunate, however, as the bomb was deflected clear of the ship and exploded in the water under the starboard quarter."

Screening ships were also attacked by II./St.G 2 and the destroyer *Nubian* took a direct hit right aft. Her report read:

"The fleet was then attacked and the umbrella barrage was recommenced. Shortly after fire was opened it was observed that Formidable had been hit. A number of enemy aircraft then passed down Nubian's port side at a fairly low elevation and fire was transferred to them. At this moment one of the signalmen pointed out a Ju 87, which was approaching the ship at a low level from astern. I put the wheel hard to starboard and directed the guns on to this target. The machine was, however, fairly close and before effective fire could be developed it had reached its position and

⁷ One recent account has it that all three ships were in company at the time of the attack, which is just not true. But the same "concise, authoritative" source also states the destroyer *Nubian* was hit on her bow, when she was in fact hit on her stern; and features a photo of the attack on the aircraft carrier *Indomitable* in August 1942, which it says shows the attack on *Illustrious* in January 1941; so should not be taken as perhaps not that authoritative!

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dropped a bomb. This bomb hit No. 4 mounting and exploded heavily."

This bomb hit right aft (not in the bow as one account alleges), and set off a second explosion almost at once.

*"This explosion occurred about four minutes after the first and was much more spectacular due to the fact that it was freely vented. A large column of flame and smoke rose to a height of about 200 ft. I do not think it caused as much damage as the actual explosion of the bomb. I think this second explosion was caused by the depth chargers or cordite in the ready-use lockers; there were four depth charges primed in the trap but I think if all four had exploded the explosion would have been rather worse than it was."*⁸

During the evacuation, the warships, many in need of repair, were stretched to their limits to evacuate the troops. The *Stukas* could now concentrate almost exclusively on these squadrons filled with exhausted soldiers. On 28 May Admiral Rawlings' force came under repeated *Stuka* assault and the cruisers *Ajax* and destroyer *Imperial* were both damaged. After picking up their cargoes of troops from the Heraklion garrison, the latter's steering gear broke down and, although otherwise whole and intact, the decision was made to sink her. However, her sacrifice did not prevent the Squadron suffering further grievous damage next morning. The destroyer *Hereward* was damaged and sank later trying to reach Crete, the destroyer *Decoy* was near missed and the *Ajax* damaged a second time. The I./St.G 3 and St.G 77, working out of Cygea, now joined in the hunt.

An eyewitness aboard the destroyer *Hotspur* recorded his impressions on this series of attacks thus:

"At 8.15 we were ahead of the Dido, and I saw a series of bombers attack her. The third dropped his bomb, and I saw it come absolutely straight down at her. My God, she must be hit! Then it landed, and for five seconds I could see no Dido at all. A great sphere of black smoke burst out from ahead of her bridge, and a single stick-like object curled up into the air, and dropped smoking into the sea. It was one of her guns from a fore-turret. Then the whole of the cruiser seemed buried in an opaque mass, and I wondered if the bomb had gone deep and hit a magazine. Then she seemed to come steaming out of the blackness like a miracle, and in a few minutes she was engaging aircraft with her after-guns, and one gun missing from B turret with its twin bent nearly double."

*"Attacks went on consistently. If we were not engaging as *Stukas* were diving on us, we were firing on those retiring from an attack on the cruisers. I do not know what was shot down on that day. Some staggered off, obviously hit, but there was no time to follow the antics of a *Stuka* who had attacked. All eyes were up waiting for more. Half-an-hour later we saw a single *Stuka* dive on the Orion. Up till now she had miraculously escaped attacks from five or six diving one after the other. This attack took the breath away from us all. The pilot must be mad. He went on and on until we thought he was going to dive into her fo'c'sle himself; then he let go his bomb, and, hardly flattening out at all, he plunged into the sea thirty yards ahead of Orion. There was a cheer from us all for a split second, and then we saw Orion's A turret dissolve, the whole casing blowing off, leaving two nude and embarrassed guns to face the daylight in twisted ineptitude. This bomb put both her foremost turrets out of action."*

There was a brief lull, and fighter protection was promised by the RAF, but it never appeared.

*"However, just before eleven, when we were beginning to hope that we might all get through with luck, a squadron of about a dozen yellow-nosed *Stukas* appeared, probably fresh. With perfect precision they dived one after the other on the Orion, from aft. It looked as if they were determined to get her. But so great was the upheaval around her that she must have been lost from sight to the last five or six, and they can only have aimed at the smoke and plunging water. We, at half a mile, could not even see her, and most of us never expected her to come out of so mighty an inferno. Some of the bombers pulled out near us, and for the next minute I was too busy directing our point-fives. And then I looked at the cruiser, expecting almost anything. Pouring yellow and black smoke, she was swinging round towards the Kao Straits, again out of control."*

"The whole squadron waited breathlessly, and then she began altering slowly round, and limped back towards us. She was still game. We dropped back and round the wounded ship, and steamed on with her."

⁸. HMS Nubian, Official Report of Proceedings 26 May 1941 (ADM 199/810 115261)

Sometimes great clouds of yellow smoke would come from her funnel, and she would drop right down in speed owing to the sea-water seeping into her oil-tanks.”⁹

Amazingly, both cruisers survived this ordeal to reach Alexandria with their cargo of soldiers, but they were out of the war for many months.

The tight timetable for the onset of the major assault on the Soviet Union, already postponed by weeks, meant that for the Ju 87 crews, little time was allowed for rest and recuperation following the fall of Crete. The whole breathtaking invasion and occupation of Yugoslavia, Greece and Crete had been accomplished within a few weeks and the total loss to the entire *Stuka* force involved was just forty-two aircrew. This was an enviable achievement and casualty rate, but sterner tasks now awaited them to the north.

Barbarossa

Propping up Mussolini or squashing the hapless British Army in Greece, Crete and Libya, were all viewed as mere sideshows by the Germans. The focus of Hitler’s ambition remained, as it had always done, a brief period of expediency excepted, the overthrow of his fellow dictator in the East, Josef Stalin and the invasion of Soviet Russia. The fiasco of the Russians war against Finland, following enormous purges of their own Army officers, gave the illusion that Operation *Barbarossa* would be a relatively easy exercise, despite the enormous size of their opponent. “*We have only to kick in the door and the whole rotten structure will come crashing down...*” Hitler told the Chief of the OKW Operations Staff, *General Jodl*.

Basic preparation work had begun in October 1940, amidst the greatest secrecy under the *Ostbauprogramm*, (Eastern Construction Programme) with airfield construction and personnel accommodation taking place in occupied Poland. The pretext of cover for flying training requirements away from the English Channel was used to lull Russian suspicions. With the coming of good weather in March, this work accelerated and *Flak* units began to move East with administration and supply units, and fuel dumps following. The delays caused by *Marita* and *Merkur* were not significant as the plan was always not to move flying units in until the last possible moment so that Soviet suspicions would not be aroused. Quite the contrary; these same operations gave good cover for the locating of *Stukas* on the Bulgarian and Rumanian bases at the southern end of the enormous front line.

Movement of the dive-bombers towards the new battlefield took place even before the last British soldier had left Crete. The movement of VIII. *Fliegerkorps* had been ordered at the end of May, and by 1 June the support forces were boarding their trains for the long journey north. The *Stab./St.G 77* typified the move, with its Ju 87s taking off from Cygea at 0522 on 2 June for Athens main airport. Here they refuelled then flew the 295-kilometre leg on to Salonica, which they reached at 0812. Then it was on, across the border, to reach Sofia, Bulgaria at 1034 the same morning for an overnight rest. The *Stukas* were again airborne at 0720, reaching Lemlin at 0840 and, after the briefest of halts, were en route to Kecskemet, Hungary at 0855, a 210-kilometre leg. Here again there was an hour’s stop to refuel and they lifted off for the ‘hop’ to Olmütz, which they reached at midday. Take-off was at 1230 and they reached Sprottau at 1400. The Junkers had made the move in two days, and ground crew and essential equipment followed by Ju 52 transports, with the heavy equipment trailing behind on the primitive rail network.

It was not until 19 June that the final moves forward to the intended battle zone took place. *St.G 77* with 122 Ju 87s on strength flew from Sprottau to Deblin, Poland, close to the River Vistula, north of Radom and Lublin and to the south-east of Warsaw – their old stamping ground of 1939. On the 20th they flew to their forward base of Biala-Podlaska, just across the demarcation line from the huge fortress of Brest-Litovsk where they were placed under the command of *Generalfeldmarschall* Albert Kesselring’s *Luftflotte 2* operating in support of Army Group Centre.

A summary of reported *Stuka* dispositions on 21 June 1941, the eve of Operation *Barbarossa*, was as follows:

⁹ Lieutenant-Commander Hugh Hodgkinson, DSC, RN, *Before the Tide Turned; The Mediterranean Experiences of a British Destroyer Officer in 1941*. (Harrap, London 1944).



A Ju 87 of 2./St.G 2 returning from a sortie in central or southern Russia. Note the Flak damage near the rear of the cockpit which almost certainly killed or severely injured the rear gunner who, since he cannot be seen in his usual position, has probably collapsed.



Junkers Ju 87 B-2 T6+JK, 2./St.G 2, Russia 1941

This machine was finished in the standard 70/71/65 camouflage scheme and carried the Staffel's Scottish terrier badge below the windscreen. This, and also the individual aircraft letter J, were in red, the Staffel colour, and outlined in white. Yellow theatre markings were applied to the wingtips and around the rear fuselage, the latter being considerably wider than was usual. Note that the fuselage lettering is positioned slightly higher than the Balkenkreuz centreline.



When II./St.G 1 was formed in July 1940, it retained the eagle and shield badge of III./St.G 51 from which it had been created. This Ju 87 B-2 of 7./St.G 1, coded G6+DR and shown in Russia in 1941, has yellow theatre markings under the wings and as a band around the rear fuselage. Note that the red spinner tip was separated from the green RLM 70 of the rest of the spinner by a narrow white band. RLM 70 was so dark that, when adjacent contrasting colours were applied, it appeared black. The spinner colours may therefore have been intended to represent the national colours of red, white and black. Painting the individual aircraft letter on the undercarriage fairing was a fairly common practice in most Ju 87 units although it was usually placed on the front of the fairing rather than on the side, as shown here.



Two Ju 87 B-2s of 5./St.G 1, with mud spattered wheel trousers, with another Staffel in the distance, photographed early in the Russian campaign. Both aircraft nearest the camera have a wide yellow theatre band around their rear fuselages and the eagle badge of II./St.G 1 on their cowlings. This Gruppe used the operational code 6G and Staffel letters normally allocated to a III. Gruppe.

Luftflotten 1, 2 and 4, reported Order of Battle, 21 June 1941

II.(S)Gr./LG 2	Bf 109, Hs 123	(from Balkans)	56	(50)
Stab/St.G 1	Ju 87	(from Mediterranean)	9	(5)
I.Gruppe/St.G 1	Ju 87	(from Mediterranean)	39	(28)
II.Gruppe/St.G 1	Ju 87	(from Mediterranean)	39	(24)
Stab/St.G 2	Ju 87	(from Balkans)	9	(7)
I.Gruppe/St.G 2	Ju 87	(from Balkans)	35	(19)
III.Gruppe/St.G 2	Ju 87	(from Balkans)	39	(20)
IV.(St)Gr./LG 1	Ju 87		42	(36)
Stab/St.G 77	Ju 87		10	(7)
I.Gruppe/St.G 77	Ju 87		38	(31)
II.Gruppe/St.G 77	Ju 87		39	(28)
III.Gruppe/St.G 77	Ju 87		35	(28)

Stuka Commanders, 21 June 1941

Unit	Commander	Strength	Command	Region
IV.(St)/LG 1	Hptm Bernd von Brauchitsch	36	Luftflotte 5	Arctic
Stab, II. and III. /St.G 1	Major Walter Hagen	57	Luftflotte 2	Central
Stab. III. and I. /St.G 2	Major Oskar Dinort	46	Luftflotte 2	Central
Stab. I, II & III. /St.G 77	Major Graf Clemens von Schönborn	94	Luftflotte 2	Central-South

Enormous as the task set to it was, it should be noted that the *Luftwaffe* committed only about 61 per cent of its total strength against the Soviet Union on 22 June 1941, an attacking total of 1,280 aircraft.¹⁰ And for the vital first wave of the assault only 868, including *Stukas*, were committed. The results achieved that day were stunning and have never been surpassed. On that day, commencing with special pre-invasion attacks delivered at 0305 on selected Soviet airfields by hand-picked crews, some twenty-five minutes before Army Group Centre jumped off from its start lines, the *Luftwaffe* destroyed more than 1,800 Soviet aircraft in an eighteen hour period, for the loss of just thirty-five of its own aircraft, and even of these just twenty were caused by enemy action.¹¹ It is pertinent to note that only one of these German losses was a Ju 87!

As before, the *Stukas*, along with the main bomber force, had two clear combat tasks to perform. These were what *General der Flieger* Paul Deichmann in his post-war account of the campaign has labelled the 'First Mission' and the 'Main Mission'¹². The First Mission was to achieve the maximum destruction of the Soviet Air Force using surprise as a key element; the Main Mission almost immediately then became the continuous, on-demand tactical close-support of the *Wehrmacht* spearheads as their armoured tips thrust forward through enemy fortifications and then encircled the huge Russian masses of the trapped armies. In other words, it was simply a refined version of the *Blitzkrieg* method pioneered in Poland, perfected in France and given a definitive rehearsal in the Balkans.

During the early months of the Russian campaign, III./St.G 2 operated on the Central Sector of the front. This machine, T6+IR, belonging to 7. Staffel, had the badge of the III. Gruppe on the forward fuselage and was unusual in having the Werknummer, 6006, repeated in larger white numerals below the Hakenkreuz. Note also the unusually wide yellow fuselage band and that, when the individual aircraft letter 'I' was applied to the undercarriage fairing, no allowance was made for the aircraft's attitude in flight, resulting in the letter appearing to lean forward.



¹⁰ Bundesarchiv, Köln, *Auszug aus den Lageberichten Obd.L. Ic, Llage Ost, 22.6.41, pp3, Angriff der ersten Welle.*

¹¹ *ibid*

¹² Lieutenant General Paul Deichmann, *German Air Force Operations in Support of the Army*, New York, 1968.

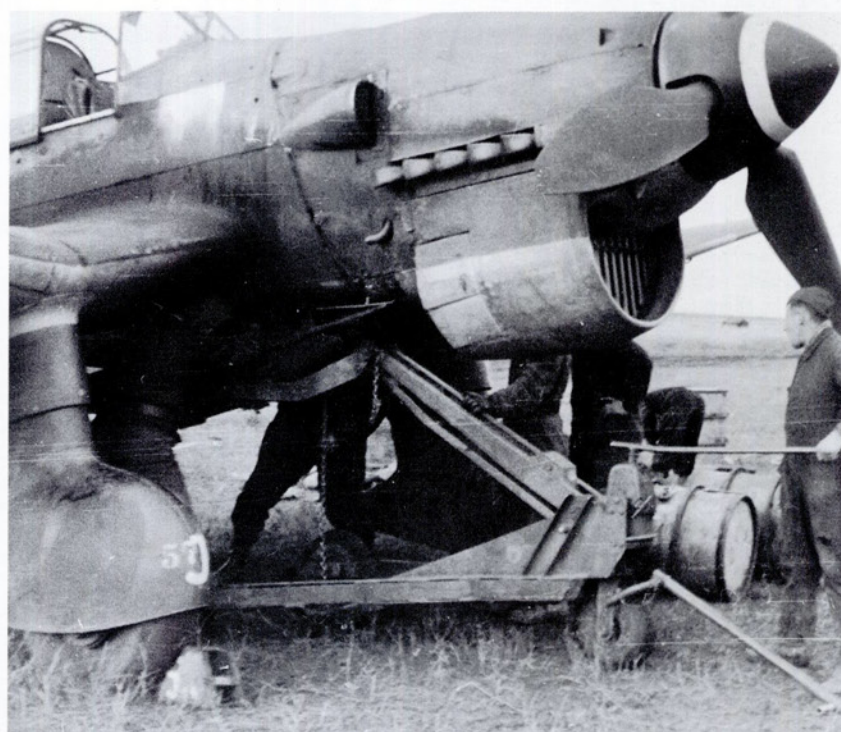
A Ju 87 B-2, almost certainly of St.G 77, returning from a mission in Russia. One of the myths associated with the Ju 87 is that the trapeze, which swung down when the centreline bomb was released, was a device which ensured the bomb cleared the propeller arc. In fact, a free-falling bomb, even when released in a vertical dive, slows down once released due to the effects of drag and cannot travel any faster than the aircraft. The trapeze therefore merely ensured that the bomb was thrown free of the slipstream and ensured a clean separation. The path of the bomb would thus conform to a predictable trajectory, so allowing a suitably trained pilot to make a more accurate attack. On today's combat aircraft, ejector racks achieve the same purpose.

Mechanics working on the Ju 87 B-2s of 7./St.G 77 in Russia. Note that both aircraft have already been armed and that the SC 50 bombs mounted under the wings have each been fitted with the so-called 'Dinortstab' fuse extensions. Said to have been devised by Obstlt. Oskar Dinort, the Kommodore of St.G 2 'Immelmann', the extensions ensured that when released over soft ground, which would have absorbed the effect of the detonation, the bombs exploded instead above the surface, so maximising the blast and fragmentation effect.



A Ju 87 B-2 of St.G 77 in Russia. In the period from 22 June to 30 November 1941, this Geschwader lost 14 pilots but was credited with the destruction of 2,401 lorries, 234 tanks, 92 gun batteries and 21 trains.

Luftwaffe armourers loading a bomb under a Ju 87 B-2 of I./St.G 77 in Russia. Note that on this particular aircraft, although it was later overpainted with the individual aircraft letter of the operational markings, the Werknummer was applied to the undercarriage fairing.



During the early days of the campaign in the East, flying operations commenced at around 04.00 hrs and crews sometimes flew several sorties a day. At the same time, in order to keep pace with the rapid advances of the ground forces, the Ju 87 units were frequently required to move base, often operating from remote fields in the endless, open Russian plains. Yet despite the hardships, dirt, heat and lack of any comforts, this existence was frequently preferred to life at home on account of the comradeship which developed between unit personnel. Thus the front became the mens' home, and after a day of continuous flying, crews were often content with, perhaps, a few sandwiches, a cognac, and a song to the accompaniment of an accordion before an early night in readiness for the heavy duties to come the next day. The scene here shows personnel of 7./St.G 77 enjoying such an occasion while sitting on a Ju 87.



During St.G 77's operations near Kishinev, north-west of Odessa in Southern Russia in mid-July 1941, the Ju 87 flown by Hptm. Gustav Pressler was hit by anti-aircraft fire and both he and his radio operator were listed as missing. Two days later, the radio operator returned and explained that he had baled out at low altitude after the aircraft had received a direct hit, probably in the pilot's cockpit. The wireless operator had then worked his way back through the forests, on several occasions escaping from pursuing Soviet soldiers. Based on this account, it was thought unlikely that Pressler had survived, yet a few days later, he too returned safely, though seriously weakened by dysentery and lack of food. He had baled out of his machine at the last moment and hidden from the Soviets for four and a half days, enduring hunger, thirst, the heat of the day and the cold at night. Pressler subsequently became Kommandeur of III./St.G 2 and was awarded the German Cross in Gold in January 1942 and the Ritterkreuz in February. In January 1943, he was awarded the Oak Leaves and in March 1944 he became Kommodore of SG 1. Pressler survived the war, finally as Kommodore of SG 104.

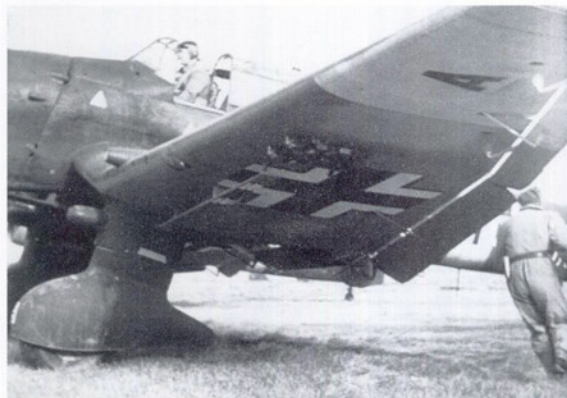
For the smooth accomplishment of both tasks further refinements of technique were now possible. For their vital missions to knock out the enemy air force on the ground, the *Stukas* were now equipped with a new weapon, the SD-2 fragmentation bomb. The *Berta* and *Richard* could carry these in a purpose-built weapons container, mounted onto a Rost 24 SD2/XII rack with one rack under each wing. The pilot released them by eye and used a simple push button on his KG 12A stick grip. They each held twenty-four 2 kg bomblettes for low-altitude release in the range of between 25 to 40 metres altitude. They could be pre-set with impact or timed fuses to give the dispensing *Stuka* time to escape their blast effect, although if dropped from under 10 metres they would not detonate. They had been fully tested by the beginning of 1941 and showed good results with maximum splinter dispersal. It had also been found that there was a tendency for some bomblettes to 'hang up' and sometimes these detonated inside the canister damaging or destroying the carrying aircraft, a particular problem for those bombers that carried them internally, but less so for

the Ju 87.

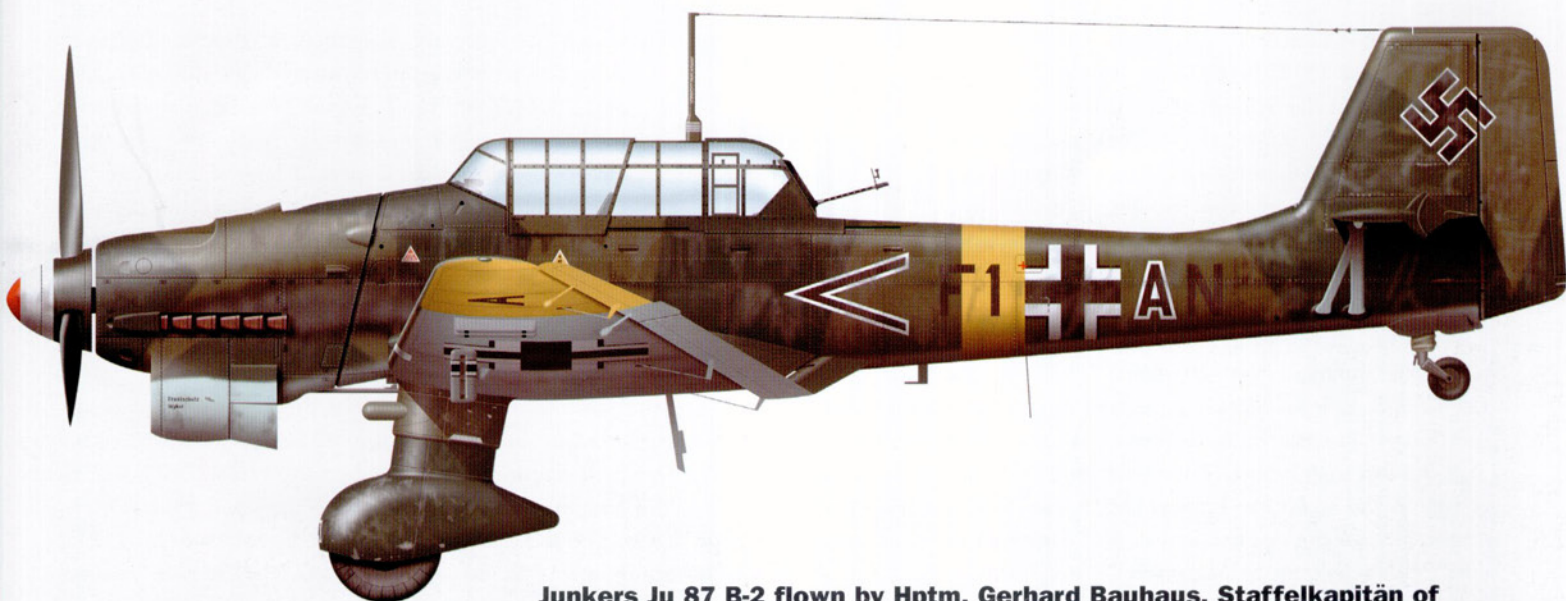
The main targets of the initial attack were the seven Soviet air bases in the 250 kilometre belt stretching back from the front line, four in the northern sector and seven facing Army Group Centre and which were known to hold the enemy's most modern aircraft. Once the enemy air force had been culled, the dive-bombers were able to revert to their original role and strike at communications as well as troops in the field, with the targeting of railway junctions and stations, road congestion points and massing enemy reserves. For the latter the *Zunderabstandstabe* industry-produced version of the *Stabo* were now in production, but the main free-fall weapons remained principally the SC 500 and

In this view of F1+EM, also of 7./St.G 77, the Staffel's eagle's head badge is clearly shown.





An unusually marked Ju 87 B-2 of III./St.G 77 in Russia in 1941. From the time of its formation in July 1940, this Gruppe retained the F1 unit code and aircraft marking system of I./St.G 76, from which it had been raised. The letters AN in the code F1+AN therefore designate this machine as being flown by the Staffelkapitän of 8./St.G 77, Hptm. Gerhard Bauhaus, who has added a fighter-style chevron to denote his position. The III./St.G 77 continued to use its non-standard unit code until at least April 1942, when it converted to the standard code S2 with appropriate Staffel lettering.



Junkers Ju 87 B-2 flown by Hptm. Gerhard Bauhaus, Staffelkapitän of 8./St.G 77, Russia, 1941

Although finished in a standard 70/71/65 scheme with yellow theatre markings, the position of the fuselage band and fighter-style chevron give this machine an unusual appearance. The aircraft letter 'A' appeared on the front of both wheel fairings outlined in white.

"I saw a dive-bomber crash close to the side of the ship..."

Oskar Dinort, *Kommodore* of Stuka *Geschwader* 2.

In September 1941, St.G 2 carried out a series of attacks against Soviet warships in Kronstadt harbour. The following is an account of the action as recalled by the *Geschwader* *Kommodore*:

"The *Stukageschwader* mounted an attack against the Soviet battleship *October Revolution* and the heavy cruiser *Kirov* moored in the harbour at Kronstadt. Using its special mass attack technique, the whole *Geschwader* made a strike on both targets simultaneously. While I was diving on the *October Revolution* together with the *Geschwaderstabskette*, I was distracted for a moment by a heavy explosion on the cruiser *Kirov* and, at the same time as the explosion, saw a dive-bomber crash close to the side of the ship.

Since I had lost sight of my target, I pulled up out of the dive, but because there was no room in the mass of closely packed



machines, I had to make two turns before I could manage it. I was by far the last machine to dive on the *October Revolution* and to release my bombs.

After pulling up I could see the effect of the bombing. The *Kirov* was burning and the battleship had been seriously hit several times. I then made for Oraniensbaum, fiercely fired at by light anti-aircraft guns and followed by two Soviet fighters which were shaken off by my gunner's defensive fire and by the timely appearance of Trautloft's fighters.¹³

Later, when evaluating the results of the attack and following very careful analysis of the crews' observations, it was clear that the aircraft that had crashed close to the *Kirov* was that flown by *Hptm.* Steen, (see below) the *Kommandeur* of III./St.G 2. His aircraft had been seen diving straight down onto the cruiser with an ever-growing smoke trail and it is beyond doubt that he had released his bombs from a very low height and had voluntarily sacrificed himself by diving his aircraft down onto the target."

Oskar Dinort was affectionately known as 'Onkel Oskar' by his men and fellow officers. He was one of the main supporters of the dive-bomber ideal and was considered an excellent pilot. In 1939 he was Gruppenkommandeur of I./St.G 2 'Immelmann' and took part in the invasion of Poland flying 40 operational missions. He later took part in the attack in the west and the low countries, before being transferred to the Balkans campaign and following on from there to the Mediterranean to take part in the invasion of Crete. After this he was again transferred east to take part in the invasion of Russia. In 1942 he was a senior Staff officer to Generalfeldmarschall Milch and from the end of September 1944 until the end of the war he was Kommodore of the 3. Fliegerschul Division (flying training school) being promoted to Generalmajor on 1 April 1945. In total he flew approximately 150 operational missions in the Ju 87.

Ernst-Siegfried Steen

Ernst-Siegfried Steen was born in Kiel on 25 September 1912. In 1932 he was trained as a pilot, initially at the Schleissheim fighter school and then at Liptzk, in Russia, the latter being used as a clandestine pilot training establishment under an agreement between the Soviet Union and Germany, which allowed the future *Luftwaffe* to train its pilots, away from the prying eyes of the Western Allies.

He entered the official *Luftwaffe* on a transfer from the infantry on 20 April 1935 as an *Oberfähnrich* and was quickly promoted to *Leutnant* on his transfer to *Stuka-Geschwader* 'Immelmann'. From 1938 he was a *Staffelkapitän* with I./St.G 2 and took part in the Polish campaign as well as the attack on France. On 9 June 1940, his *Staffel* was responsible for the decisive action that destroyed the road bridge over Oose near Pont St. Maxence.

He continued with operations over the English Channel and sank some 15,000 tons of British shipping, and also flew missions over southern England. He was transferred to the Balkans where he flew twelve missions in the Straights of von Casso, during



which he severely damaged a British destroyer. After this, he was again transferred east as *Staffelkapitän* of I./St.G 2 and on 7 August became *Kommodore* of the III. *Gruppe*. In Russia, with the German encirclement of a large mass of enemy forces, he was responsible for destroying, with a direct hit, the road bridge over the Volkhov near Novgorod on 14 September 1941. On 16 September that year, he attacked the Russian Fleet in the harbour of Kronstadt and in the early morning of 23 September 1941 completed his 300th operational mission.

On the same day, during his 301st mission, he attacked the heavy cruiser *Kirov*; he was flying a Ju 87 R-2, W.Nr. 5836, coded T6+CD, which was normally flown by *Obt.* Hans-Ulrich Rudel. When this aircraft was hit by Flak which damaged the tail, Steen tried to dive into the cruiser, but although he narrowly missed, his 1,000 kg bomb, released shortly before the aircraft crashed, exploded and damaged the ship. Immediately after his death, Steen was posthumously awarded the *Ritterkreuz* and his name was entered in the Golden Book of Airmen.

¹³. This is a reference to Major Hannes Trautloft, the *Kommodore* of JG 54.

"I'm already diving vertically through the veil of cloud..."

Hptm. Herbert Pabst, Staffelfkapitän of 6./St.G 77.

24 July 1941.

"After several days of wet (low clouds, rain, cold, rain, and still more rain) today the sun is shining and the weather is quite respectable.

So, we went into action first thing this morning with two sorties one after the other to gain a breathing space for our troops out at the front. At times, the Russians defend themselves with incredible stubbornness and a total disregard for the cost. Mens' lives mean absolutely nothing to them. On the second trip, I had a lot of unpleasantness because of incorrect information, but we did machine-gun some Russians as they fled across the fields.

We had a good breakfast with real coffee, and then peace, interrupted by my *Spiess*¹⁴ with an over-filled folder of papers to sign. My lorry column has at last caught up with us bringing, among other things, all the paperwork which has been neglected for weeks and weeks: promotions, decorations, assessments, commendations, reprimands, etc for 150 men. It all means an awful lot of work and effort if it is to be done properly, and whenever I can fit it in between everything else.

Lunch was in the big staff tent. Suddenly, the flak opens up. As we all shoot out and dive into the trenches, the bombs are already landing. Boom! Boom! Boom! Three columns of smoke rise from the landing strip not far away, and overhead a Russian aircraft climbs into the cloud and gets away. A damned daring attack and quite neatly carried out — the only trouble is that he didn't hit anything! Our fighters are up at once, but they didn't get him. The Russians don't like us and keep coming back to have another go at us. After all, this position is so familiar to them and is within such easy reach.

Another mission at 2.00 pm: to attack the road bridge over the Dniepr near Cherkassy, the 6. Staffel to lead. Not exactly pleasant, as it's deep inside enemy territory. According to the briefing, we can expect "heavy flak and enemy fighters in the target area."

All right, let's go! The Gruppe follows me up like a swarm of large, fat, angry bumblebees. We climb slowly. A village is burning beneath us. That will be the front down there. Our fighters dart around us protectively, but even so, I slink cautiously among the huge cumulus clouds. They are getting thicker and thicker and only rarely can I glimpse the ground through the occasional gap and check that I'm still on course. Now there's no break in the cover at all. Check map and wristwatch: I should be over the target in seven minutes' time. I stay firmly above the clouds, hoping that visibility will be slightly better over the river. My luck holds good, for a thin veil of cloud suddenly enables me to see a sea of houses, and there's the bridge.

Throttle back, and we begin a long, slow sweep around, quietly, quietly, hiding behind the patchy cloud. The descent becomes steeper. "Pumas¹⁵ prepare to attack!" and I'm already

diving vertically through the veil of cloud and down towards the bridge.

Bombs away! Pull out of the dive, full throttle, zigzag, zigzag. Behind me, I see the others dive, one after the other. A flash — a direct hit on the bridge. And another! Only now does the flak get over its surprise, and the shells explode to left and right, puffs of black smoke appearing beside and between us. But it's too late, we are already off. Just a couple of sharp turns. We foxed them beautifully. I'll bet they are hopping mad, but I'm pleased, and the bridge will be no use for a retreat for quite a while.

The Staffeln have come together again and we are again flying fairly high, close under the clouds, with the fighters around us. My radio operator is counting heads, as he usually does, and announces that all my flock is there. Good!

Now we have the clouds back beneath us so we can vanish into them if necessary. No one is going to get us now. We see the burning villages ahead of us again, I come down below the cloud layer over friendly territory, and soon we are back home.

While I am writing the mission report, the Kommandeur tells me that while we were away, our fighters shot down ten Russian bombers. Not a single one got through to its target."



Hptm. Herbert Pabst, the Staffelfkapitän of 6./St.G 77, and his wireless operator/gunner, Fw. Woletz, taxi out for another mission in Russia in the summer of 1941. The aircraft is a Ju 87 B-1, a variant which remained operational with St.G 77 until mid-1942, and carried the operational markings S2+AP. The inscription on the engine cowling, based on the letter A in the Luftwaffe's phonetic alphabet, reads 'Anton der Zweite' ('Anton the Second'), indicating that it replaced the original Anton.



¹⁴ Senior NCO.

¹⁵ The radio call sign used by 6./St.G 77.

SD 500 *Diana*¹⁶ bombs. For breaking up fortified concrete bunkers and fortresses, the armour-piercing PC 500-RS had been especially developed for the *Stuka*, with the PC 1000 reserved for known armoured targets, of which the nastiest surprise was the T-34 tank which was encountered in ever increasing numbers as the campaign wore on. As in France, the SC 50 was used, and although direct hits were difficult to achieve, the stripping of tracks from any tank effectively disabled it, while rear strafing attacks against the vulnerable engine air intakes were also effective.

To achieve the 'on-demand' service required by the forward ground forces, liaison had now become very sophisticated to a scale undreamt of by their opponents. Richthofen's VIII. *Fliegerkorps* had led the developments, still the only totally dedicated close-support command. By the time the offensive against the Soviets opened, each *Luftflotte* has its own *Koluft* embedded with an Army Group to act as liaison officer, making for optimum efficiency in directing the limited *Stuka* resources to the most urgent target. The *Koluft* responded to situations on a fluid front and authorised attacks. At a lower level, and operating with the forward elements of the *Panzer* columns as close to the action as possible, *Stuka* officers were already seconded as *Flivos* (Air Liaison Officers) which were part of a mobile team of specialist *Stuka* signals men using army vehicles and UHF equipment, and *Panzer Verbindungs Offizier* (Tank Liaison Officers). Now, as soon as the *Stukas* appeared over a given combat zone they could call down precise co-ordinates on targets just a few hundred metres from the German front line without endangering their own troops. Time and time again the prompt and accurate delivery of ordnance by the *Stuka* saved situations that were dire, or re-opened up an attack where no conventional artillery could prove effective. These teams moved around the front to wherever the need was greatest, for, as mentioned, the German resources were finite, while Soviet resources, despite almost unbelievable attrition in men and equipment, seemed endless.

Luftflotte 2, with II. and VIII. *Fliegerkorps*, embraced the bulk of the *Stuka* forces, tasked with breaking the strongest part of the enemy defences opposite General Bock's Army Group Centre, and these were tackled in turn, starting with the fortified lines along the Bug river and the fortress of Brest-Litovsk itself, where mass attacks were made using special 1,000 kg bombs to burst the formidable walls of the citadel.

Great battles of envelopment were fought, starting with the advance on Smolensk during June and July, and the bridge-cutting accuracy of the Ju 87 proving invaluable in this to prevent the enemy escaping. The Minsk pocket was closed at the end of July trapping four Soviet armies, which were destroyed. In September the *Stukas* of St.G 2 were temporarily switched to the Baltic coast on the northern front for the drive on Leningrad itself, and soon were on the outskirts of the city. Here they were tasked with the neutralisation of the Soviet Baltic Fleet, based at Kronstadt. Special armour-piercing bombs were employed in mass attacks on these warships, which rarely left their base in the Gulf of Finland. On 23 September, battleship *Marat* (23,600 tons) had her bows blown off by *Oberleutnant* Hans-Ulrich Rudel, the Technical Officer of III./St.G 2, in a classic attack over Kronstadt, and her sister ship, *Oktyabrskaya Revolutsiya* was also damaged, as was the cruiser *Kirov*, while many smaller warships were sunk outright.

Action then moved south to the battle for Kiev, where five Soviet armies were encircled and destroyed in the Uman pocket in September and at the huge Vyazma-Bryansk engagements in October, where nine more armies were eliminated.

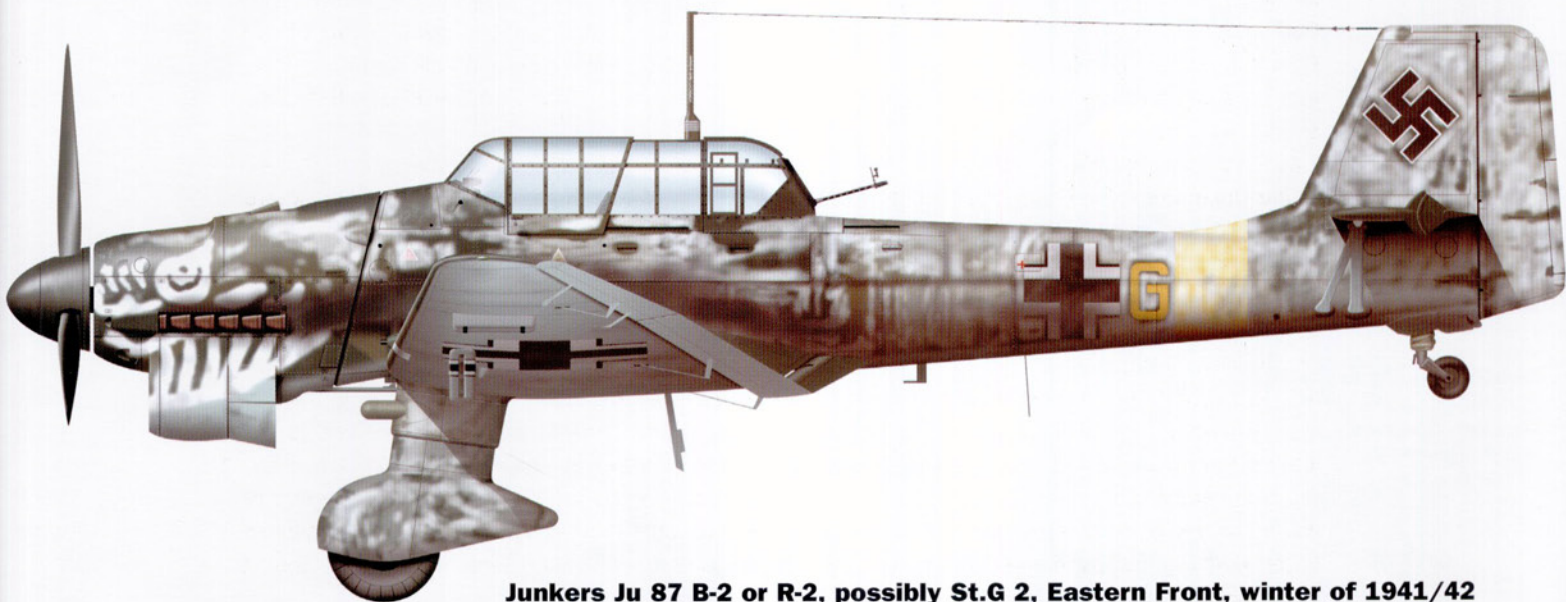
The movement of the *Stuka* forces hard on the heels of the Army and from sector to sector was typified by the movements of II. and III./St.G 1 in these months which moved forward to the line Vilna-Berezovka three days after *Barbarossa* commenced. Four days later, by 29 June, the two *Gruppen* were on the line Wizajny-Molodechno-Baranovichy having advanced some 240 kilometres in the first seven days of the invasion. Within the next seven days they had advanced another 250 kilometres to the line Lepel-Dokudovo and by 21 July they had reached the line Surazh-Demidov-Mosha-Shatalowka, to the west of Smolensk, having advanced their bases some 580 kilometres in a month. When Smolensk fell, the *Gruppen* were transferred north, to the Leningrad front – another 400 kilometres. At the end of August, it was decided to concentrate all available effort towards Kiev, and the units were transferred to the Konotop area, some 400 kilometres south of Smolensk, where they would support the closing of the northern pincer to the east of the city.

Finally, after the conclusion of the Kiev battle, towards the end of September, every available close support unit was based on the Moscow front. Accordingly, in early October, the units were transferred to Jukhnov to be incorporated in the specially formed temporary Close Support Group which was to

¹⁶. SC= Sprengbombe-Cylindrisch; SD = Sprengbombe-Dickwandig; PC = Panzerbombe-Cylindrisch.



As with the photograph opposite, this is another view of the formation of St.G 2 'Immelmann' of either Ju 87 B-2 or R-2 aircraft in winter camouflage on the Eastern Front. When applying this scheme, the painters, as on other aircraft of this unit, have used white paint to apply a crude shark's mouth to the nose of several aircraft.



Junkers Ju 87 B-2 or R-2, possibly St.G 2, Eastern Front, winter of 1941/42

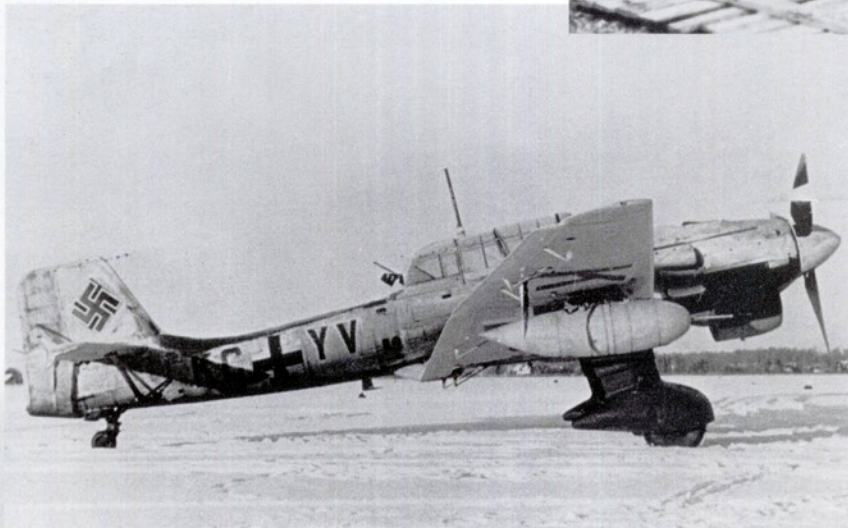
While the undersurfaces on this machine remained in RLM 65, a temporary white finish was applied over the 70/71 splinter scheme on the upper surfaces. Unfortunately, as all unit markings except the individual aircraft letter were also overpainted, the unit cannot be positively identified. Note, however, the weathering and the heavy exhaust staining on the white finish.

assist the Army in its thrust at Moscow from the south-west.¹⁷

The final drive on Moscow itself, Operation *Taifun*, finally got underway on 2 October, but was halted by a combination of fresh Siberian divisions reaching the front, the atrocious conditions brought on by the infamous 'Generals Mud' and 'Winter' which arrived earlier than predicted, and the exhaustion of the Germans, operating at the end of a long and precarious supply line. Despite this, it was later recorded that, "...it was possible to achieve a remarkable scale of effort, particularly by dive bomber units."¹⁸

Within sight of the Kremlin, the *Panzers* at first halted and then withdrew as Russian counter-attacks developed. The calls for support from the ubiquitous *Stukas* now reached a new crescendo as the dive-bombers were called in to blunt the heads of the Russian assaults.

Ju 87 R, KC+YV, of IV.(St.)/LG 1 fitted with long-range tanks and probably seen at Rovaniemi in Finland in late 1941. The unit operated under the command of the *Fliegerführer Nord-Ost* (Oberst Halle) based at Petsamo. This aircraft has retained its wheel housings, while others had them removed to facilitate operating from snow and ice.



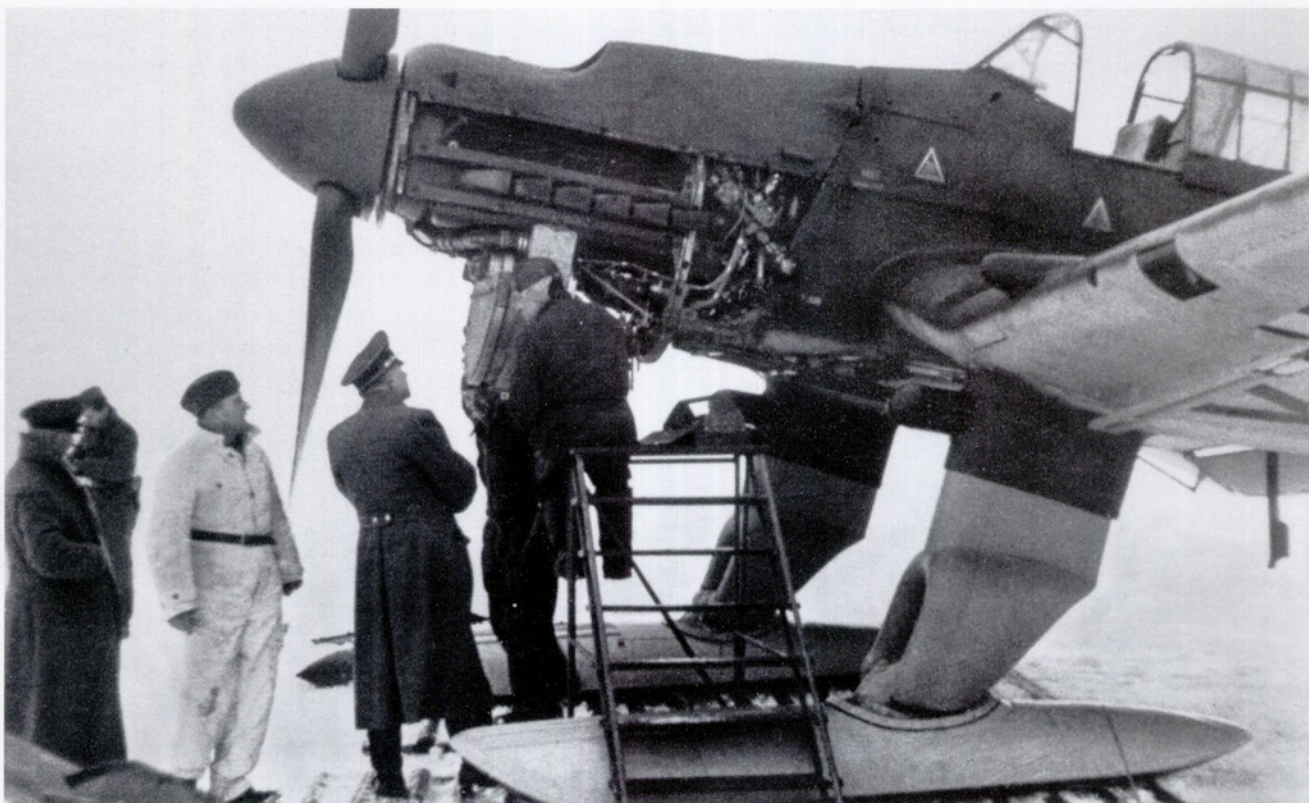
Ju 87 R, NC+WY, of IV.(St.)/LG 1 comes in to land on a snow-covered airfield in Finland, probably Rovaniemi, in late 1941. Note the absence of a 'back-seater' in the cockpit suggesting a transfer or test flight.



After a wash and brush-up, but looking a little tired having completed the servicing and preparation of their Ju 87 B for operations, these three Unteroffizieren pose for a photograph in front of their aircraft. Note that the cockpit on this machine and the one behind have been covered with a tarpaulin no doubt due to some expected bad weather. The stenciled inscription on the lower part of the cowlings reads: 'Frostschutz 50/50' with the word 'Glykol' underneath. This is an instruction to mix the Glycol with 50 per cent of anti-freeze.

¹⁷ The Rise and Fall of the German Air Force, op cit.

¹⁸ *ibid*.



In the Arctic

The IV.(St.)/LG 1 operated with Germany's Finnish allies, in the north, its main goals being the capture of the vital supply ports and naval bases of Murmansk and Archangel and the severing of the long rail link south at Kandalaksha, down which an increasing flood of American war supplies, ammunition, aircraft, tanks and motor vehicles were reaching the Soviet army.

Here again, initial successes were achieved. However, although the *Stukas* destroyed more than one hundred front line Soviet aircraft on their base airfields on the first day of the campaign, attacked Russian front line emplacements and fortifications along the Finnish border, and captured Litsa and Salla, the thrusts all along the front finally foundered on the trackless tundra while still well short of their targets.

Ski fitted *Stuka*?

The fitting of the Junkers Ju 87 with ski landing gear was seriously considered to deal with such conditions as prevailed on the Russian Front. Two *Bertas* and some *Doras* were known to have been experimentally fitted with ski landing equipment in the winter of 1941-42 and a total of 155 sets of this gear were ordered. However, although the trials themselves were successful, there was no interest at all from the combat units and the order was cancelled. Instead, the *Stukas* dispensed with the lower section of their wheel sections in snow conditions, thus preventing them from clogging up. Thus easily modified, the Ju 87 continued to operate very efficiently from snow or ice-packed runways close behind the battlefield.

An officer chats to ground crew as they work on the radiator of a Ju 87 H. The Ju 87 H was a trainer version of the D series and was equipped with a forward-facing Ar 96 seat in the dual controlled rear cockpit for the instructor. His forward vision was improved by a bulges rear canopy. As shown here the aircraft could be fitted with skis.

Advance to the Crimea

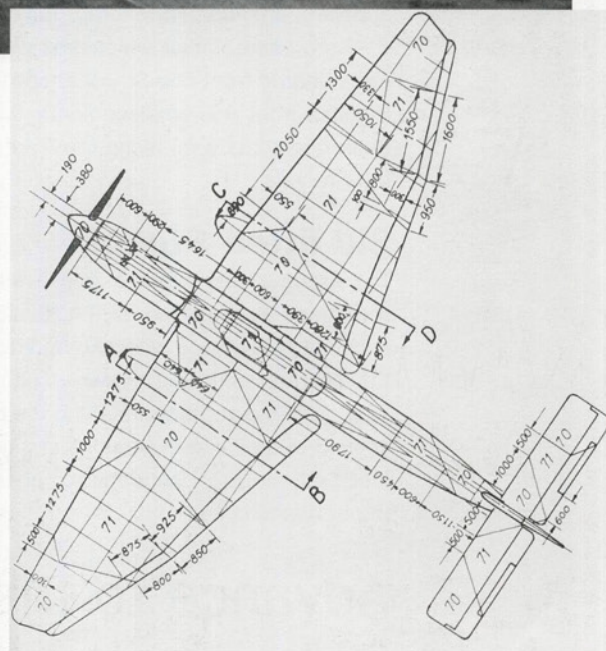
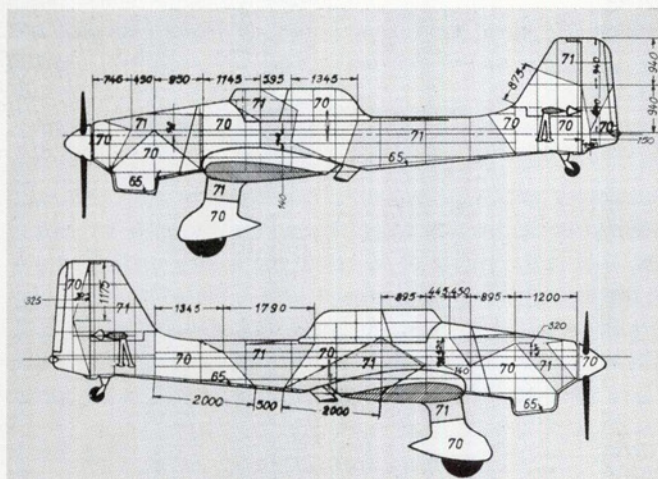
At the southern end of the front towards the end of June, St.G 77 retraced its steps back through the Balkans via Biala-Podlaska, Kecskemet, Craiova to Digera-Bucharest, arriving there on 20 June, and then on the Tudora to establish itself in readiness to support von Rundstedt's Army Group South. The first objective was Kiev; the River Prut was crossed and in early July the Geschwader was engaged in smashing the Stalin Line defences and flying non-stop missions against Soviet armour from Jassy. It was then switched to support the advance along the shoreline of the Black Sea with the great fortress and naval base of Sevastopol as its objective. The river Dnieper was forced with *Stuka*

Lessons

Despite being never more than an 'interim' main dive-bomber, the Ju 87 had taken the German armed forces to even more victories throughout 1941 at minimal loss. Moreover, the failure of her replacement aircraft¹⁹ to appear, meant that, despite her limitations, the *Stuka* was to soldier on in front line service to the end of the war. How the Ju 87 was adapted for a host of new roles and how she performed in them, are described in Volume Two of this work.



Official drawings showing the RLM 70/71/65 camouflage pattern for the Ju 87 B. The prescribed uppersurface pattern was closely followed, but the demarcation between upper and undersurfaces varied widely from that shown, particularly in the area of the radiator intake.



19 These replacements being, initially the Bf 210 and later the Hs 129. The former, on which enormous hopes had been placed, 3,100 being ordered from the drawing board, were an enormous disappointment and only a handful ever appeared. The total failure of the design led not only to the suicide of Ernst Udet, but also to the virtual disgrace of Willy Messerschmitt himself from any influence in the Luftwaffe. The close-support expert, Major Bruecker described the twin-engined Bf,210 as, "the most unsatisfactory aircraft Germany ever built." The full reasons for the failure of this machine have never been fully or satisfactorily explained. The twin-engined Hs 129 proved underpowered and only twenty-two mph faster than the Ju 87 itself. The Luftwaffe therefore had no choice but to continue with the faithful Stuka.