Germany's shrieking Ju 87 dive bomber lingered in the mind as a truly dreaded air weapon.

The Stuka Terror

By Rebecca Grant

"**Simultaneously**, like some birds of prey, they fall upon their victim and release their load of bombs upon the target. ... Everything becomes blended together; along with the howling sirens of the Stukas in their dives, the bombs whistle and crack and burst."

The time was May 1940. The diarist was one Sergeant Pruemers who, as part of Germany's 1st Panzer Division, was at that moment buttoned down and waiting to strike westward across the Meuse River and into the heart of France.

The German air attack went like clockwork. Luftwaffe historian Williamson Murray, describing the event that unfolded on that day, wrote, "Continuous Stuka attacks on French reservists holding the line had a devastating effect." France's infantrymen, according to a French general who witnessed the scene, "cowered in their trenches, dazed by the crash of bombs and the shriek of dive bombers."

The bridgehead across the Meuse was secure by nightfall. German tanks crossed the next day. The blitzkrieg into France was on.

This was not the Stuka's first successful operation in World War II. Nor would it be the last.

The Junkers Ju 87 Stuka dive bomber lingers in the mind as one of the icons of Nazi Germany's military machine. "Stuka" was the diminutive of Sturzkampfflugzeug, German for "diving combat aircraft." It was unique. Although its time of dominance lasted only four years—the period 1939-43—its low-altitude attacks were witnessed by millions.

From train sidings in Poland to the beaches of Dunkirk, from the head of Rommel's columns in North Africa to the vast steppes of Soviet Russia, the Stuka rained down terror on enemy soldiers, sailors, airmen, and civilians alike. This left a deep impression that has persisted to this day.

The Stuka was the war's pre-eminent dive bomber. It scored hits on targets ranging from artillery to aircraft carriers. Its deadly cluster munitions tore through troop concentrations herded together by the lightning-fast drives of the Panzer infantry and tanks. Stukas sank ships from the English Channel to the Black Sea. On the Eastern Front, the German aircraft's 37 mm cannon ripped up Soviet armor at a prodigious rate.

The Stuka was probably the most terrifying warplane of the war. For all that, though, it was not a quest for terror that lay at the root of its design; it was technical ingenuity.

In Hitler's stealthy rearmament effort in the 1930s, the German Air Ministry had no choice but to commit to bomber types that could be put into production

Photos from the collection of John Weal

Two Ju 87 Stukas during the fateful summer of 1940.

relatively quickly. A precision dive bomber fit the bill, and Junkers had one—a prototype called the K 47. This mono-wing attack airplane boasted a diving envelope ranging from zero to 90 degrees. Due to treaty restrictions, the Junkers K 47 was assembled in Sweden.

In the period 1931-34, the Junkers design team members experimented with K 47 configurations. Early trials demonstrated that a dive bomber could be very precise—but the aircraft gave up a lot to get that precision. The design trades would earn the Stuka its reputation, but also sow the seeds of its undoing.

A Stuka prototype—powered, strangely enough, by a Rolls Royce engine—began flight tests in September 1935 and was almost canceled in 1936. It was saved by the timely intervention of World War I German ace Ernst Udet, who pressed for its continued development. Udet was heading up the Technical Office. Though he was no great shakes of an administrator, he saw great potential in the dive bomber for precision attack.

By this point, the Stuka prototype was outperforming its competition. One of the most remarkable features of the Stuka was its automatic dive bombing system. Pilots set a predetermined release altitude for their bombs. As they peeled off from formation and pitched over into their dives, the system engaged as soon as the dive brakes extended.

Stuka pilots dove at close to 90 degrees and adjusted position with aileron control while watching target indicator lines painted on the canopy. At release height, the contact altimeter triggered a cockpit light and the pilot would release the bombs. This release would re-engage the elevator trim tab, bringing the tail down and pulling the Stuka out of its dive. Aircrews experienced about six Gs at the dive's completion.

That Howl Overhead

The Stuka soon had reached a service ceiling of 26,000 feet and a range of more than 370 miles.

The attack aircraft sported two wing-mounted machine guns along with a third gun installed in the rear cockpit. Typically, the early Stukas carried either one 500-pound-class bomb or one 250-pound bomb on the centerline bomb crutch and two 50-pound bombs on each wing. Often, these smaller bombs were filled with cluster-type munitions.

Later Stuka models were equipped with a 37 mm cannon for low-altitude attacks on tanks on the Eastern Front. Another variant, the Ju 87R, had underwing fuel tanks to extend its range so that it could reach out and strike Allied ships at sea.

How did the Stuka create its trademark—that terrifying howl? It was purposely designed into the aircraft. When the Stuka went into its dive, a powerful rush of air would push through a specially built siren, activating the blood-curdling scream. The idea was to maximize the panic on the ground below, and it worked.

It wasn't long before the Stuka made its combat debut. A handful of Ju 87 variants saw action in the Spanish Civil War in the late 1930s as part of the Kondor Legion. However, it was not until Sept. 1, 1939 that the world got unforgettable exposure to the Third Reich's extraordinary dive bomber. On that day, no fewer than nine Stuka groups comprising more than 330 aircraft struck Poland with devastating surprise dawn attacks.

In the beginning, Stukas tried and failed to prevent Poland's forces from blowing a bridge over the Vistula. After that failure, though, the Stukas racked up success after success. Attacks against encircled Polish forces and on Poland's cities stunned the world.

Above all, it was the fine-tuned coordination of Stuka air attacks with ground maneuver that impressed. The Luftwaffe had learned the value of coordination with the ground forces during operations in Spain.

"By the time war engulfed Europe, this German close air support system set the standard for its time," wrote historian John Schlight. Chief architect of this air-ground coordination system was Gen. Wolfram F. von Richthofen, a cousin of Manfred, the famed Red Baron of World War I. Richthofen had seen much action in Spain as a combat commander and staff officer for the Kondor Legion. He took command of the force in May 1939 and led them into action against Poland.

Next on the list for the Stukas was the invasion of Norway. Airborne paratroops relied on it as true flying artillery. Stukas also claimed Norwegian, British, and French warships in the few short weeks of the northern campaign.

Then came Case Yellow—Germany's conquest of France.

On May 10, 1940, Hitler launched his attack westward in Europe. German Army Group B attacked Belgium in the Ardennes to draw in the Allies, while Army Group A crossed through Luxembourg and southern Belgium. Their plan was to drive in a wedge, cross the Meuse, then sweep through open country to encircle and roll up Allied forces. "All depended on gaining the open country on the other side, where speedy maneuver would bring total victory," wrote historian Matthew Cooper.

The Stuka attacks were a big part of this effort to gain speed. German infantry began to cross the Meuse on the afternoon of May 13, 1940. The Stuka barrage watched by Pruemers was part of a coordinated air-ground offensive against the sparse defensive positions on the other side. On the Meuse, the Stukas pummeled French artillery and infantry, while the German infantry performed an astonishing river crossing.

According to historian Murray, Panzer commander Lt. Gen. Heinz Guderian carefully devised a plan with Fliegerkorps II commander Lt. Gen. Bruno Loerzer. They organized Luftwaffe support to come in waves while their infantry made the crossing. Luftwaffe fighters kept the French Armee de l'Air and forward RAF at bay.

The Ju 87R, pictured here in the Norwegian campaign, was equipped with underwing fuel tanks to extend its range—all the better to terrorize shipping lanes.

Richthofen's tight coordination of air and ground operations paid off. More than 1,500 German aircraft were used in continuous offensives. Stukas attacked, rearmed, and attacked again. According to one source, Stuka pilots flew up to nine sorties per day during the drive across and beyond the Meuse.

The noise of the low-altitude dives ensured that everyone knew what the Stukas were doing. Tactics called for loitering then diving in succession, making the attack aircraft highly visible and fearsome. Stukas worked just ahead of ground units. Some found a French tank regiment under the command of Col. Charles de Gaulle, who was trying to organize a counterattack on May 17, and repeatedly attacked the unit.

Luftwaffe fighters succeeded in keeping the airspace clear for the relatively slow Stukas. "The enemy fighters appeared less and less, so that the Stukas could fly without fighter cover and could themselves hunt freely," recorded one German officer, Lt. Dieter Peltz. "Sometimes it was sheer target practice."

Ten days later, retreating Allied Forces were falling back on the last remaining open Channel port—Dunkirk. Stuka attacks shattered Dunkirk's port facilities, then terrorized Allied ships attempting to rescue the remains of the force from the beaches. One British merchant captain wrote of how the concussion from Stuka bombs roiled the waters as they attempted to load evacuees. Stukas sank several ships during the evacuation and unleashed cluster munitions on troops jammed together. Since the Stuka dove and released at low altitude, the shrieking dive bomber and its effects were easy for all to see.

The Stukas were not the most plentiful of Germany's light and medium bombing force, rarely numbering more than 300 or 400 aircraft for any campaign. Other Luftwaffe medium bombers did as much or more damage, but the Stuka was the prime platform for precision and terror.

Failure Over Britain

The effectiveness came with a price. Nearly 30 percent of the dive bomber force was destroyed in operations in May and June 1940. Often the Stukas were dispatched with a covering force of fighters, but the RAF quickly learned to pick off the Stukas first. Ground anti-aircraft fire also took its toll.

The Stukas were a key part of Nazi Germany's plan to knock out the RAF fighter force for an invasion of England, but the slow-flying Stukas suffered when they tried to step out of the battlefield support role and move up to a more strategic task.

Reichsmarshall Hermann Goering wanted especially to use the Stuka's pinpoint accuracy against RAF radar stations and masts called the Chain Home system. It had proved nearly impossible to take down.

By Aug. 13, the Battle of Britain was raging at its peak. The biggest Stuka success of this campaign came late that day.

At around 5 p.m., a hundred Me 109s flew ahead of 80 Stukas. The bombers decimated the airfield at Detling, in Kent, hitting workshops, mess halls, and more than 20 aircraft on the ground. Yet, no RAF fighters were destroyed in the raid, and the British were about to get rich revenge on the Stukas.

As flying pinpoint bombers, the Stuka needed undefended airspace to operate. When the slow and highly vulnerable Stukas met fighters, it was all over. The top speed of the early Stukas was around 190 mph, compared with a 336 mph for the Hawker Hurricane and 408 mph for the Supermarine Spitfire.

On Aug. 18, British ace Flight Lt. Frank R. Carey led nine Hawker Hurricane fighters head on into a large formation of Stukas attempting to attack the radar station at Poling on the southeast coast of England.

"I fired at one ahead of me—it stood straight up on its nose with flames coming out of it," said Carey. The British destroyed 16 Ju 87Bs in that attack alone. Carey went on to bag 25 kills and become the RAF's second highest-scoring Hurricane ace.

Despite Goering's ambitions, the Stuka did not play a significant role in the Battle of Britain after August. Without air superiority, the audacious dive bombing never got going. Fifty-nine of the dive bombers were lost to enemy action from July through September 1940.

The Luftwaffe soon gave up on attempts at precision and switched to night bombing of London and other cities.

Conditions were soon more favorable for the Stuka in the East. Free to operate without facing enemy fighters, the Stuka was a major part of Hitler's punishment attacks on Yugoslavia in the spring of 1941. Raids on Belgrade etched the screaming bomber deeper into the European psyche.

Ruth Mitchell, sister of Brig. Gen. William Mitchell, was a photographer on assignment in Belgrade in April 1941.

The Ultimate Stuka Pilot

In the beginning, Hans-Ulrich Rudel was just another Stuka pilot, flying his first missions as the invasion of Russia began on June 22, 1941. He soon became special. Part of an elite unit, Rudel learned fast and distinguished himself in September 1941 when he sank the Soviet battleship *Marat* near Leningrad harbor using a specially designed 2,000-pound bomb.

On another occasion, he hit more than 70 landing craft in the water. Rudel would go on to fly 2,350 missions, most in the Stuka. Official Luftwaffe records credited him with destroying more than 1,000 ground vehicles, including a mind-boggling 519 tanks.

"Think about that number. It's nearly three entire tank divisions. Wiped out by one man," noted one commentator.

The score for the Luftwaffe's No. 2 tank killer? Sixty tanks.

Rudel and the Stuka were the perfect match. He was a phenomenon who relished flying on the deck. His scores mounted when Ju 87Gs were delivered to the Russian front in numbers in 1943. Rudel's style was to fire a single 37 mm round into the vulnerable rear turret area of the T34 with the aplomb of an assassin.

His toughness was the stuff of legend. Rudel was shot down many times but repeatedly evaded capture. After being hit in the thigh in November 1944, he flew with his leg in a cast. Late in the war, he also flew the FW 190 and was credited with 11 aerial victories.

Rudel's luck almost ran out in February 1945. He was again hit, this time in the foot, and crash-landed within German lines. A doctor stopped the bleeding but Rudel's leg was amputated below the knee.

He was fitted with an artificial leg and resumed flying in late March 1945.

Under the sympathetic guidance of the Nazi propaganda machine, Rudel became a popular hero and was lauded as the "Eagle of the Eastern Front." By the end of the war, he was the most decorated German combatant of any discipline—land, sea, or air.

Rudel flew his final sortie on May 8, 1945, the day the war in Europe ended. A mixed flight of Stukas and FW 190s escaped by air to the American lines to surrender, avoiding the Soviets, who had put a price on his head.

He was also a Nazi to the core. He fled to Argentina in 1948, but soon returned to start a business career in Germany. The success of Rudel's memoir *Stuka Pilot* extended his reputation and stands out as a firsthand technical account of the Stuka in low-altitude ground attack. Rudel died in Bavaria in 1982.

She later wrote about the Stuka and her experience in the bombings in her 1943 book *The Serbs Choose War.*

As many as 74 Stukas took part in first wave of the bombing of Belgrade. Mitchell hid under the stairs of her house. Explosions followed and then "with a weird smooth sound, like the tearing of silk, the neighboring houses started to collapse," she later wrote.

Then came the second wave. "Again the bombs were falling, thick and fast, and on and on," wrote Mitchell. "Now far, then near, the Stukas shrieked." Bombing went on for two days.

Soon after that, the Stukas helped knock the British out of Crete. The RAF had only a few fighters to oppose the aerial onslaught and paratroop landings. A Stuka unit under the command of veteran pilot Col. Oskar Dinort sank three cruisers and eight destroyers and damaged 13 other British ships in the week following the seizure of Crete's airfield.

Next the Stuka—along with the cream of the German Army—moved on Russia.

Barbarossa

Operation Barbarossa began on June 22, 1941. The Luftwaffe destroyed 1,200 aircraft, most on the ground, in a mere eight hours.

Against land armies left with no air cover, the Stuka excelled. The Germans had just 424 Stukas out of a total of over 4,000 aircraft, but again their terror outstripped their numbers. (The overall production run for the Stuka was small by World War II standards at just 5,752 aircraft.)

On the Eastern Front, the Stuka would earn a new battlefield reputation.

At first, the Stukas reveled in the lack of Soviet air opposition. Soviet soldiers called it "the screecher."

Stuka pilots helped bring Germany's 66 divisions to within 25 miles of Moscow. When winter set in, however, things changed dramatically. "Engines no longer start, everything is frozen stiff, no hydraulic apparatus functions; to rely on any technical instrument is suicide," wrote a young Stuka pilot Hans-Ulrich Rudel, a standout Stuka tactician.

By 1942, the Soviet Air Force was recovering, and dive bombing at nearly a 90 degree angle was turning just as suicidal as flying with frozen instruments.

As a result, the Stuka now went through a major change in tactics that turned it into a tank killer. The Stuka was rigged with removable 37 mm cannon mounted under the wings. Instead of dive bombing, the Stuka came in at treetop height to blast Soviet T34 tanks. These sniper-style tactics paid off handsomely for the Germans. The modified Stuka took on a new designation, the Ju 87G-1.

Veteran Stuka pilots would tally armor kills numbering in the thousands. German pilots on the Eastern Front racked up massive kills in the Stuka because of their skill and the plentiful targets—but also because they had no chance of going home, a fact that undoubtedly led the pilots to take more chances.

On the deck, the gun pods added weight to its already sluggish performance. By 1944, it took standouts such as Rudel, who was soon to be known as the Stuka ace, to compensate for the Stuka's by now well-known limitations. Other fighter aircraft, such as as an armored variant of the FW 190, took on more of the close support role. Some Stuka units shifted to night operations.

The Stuka reign of terror was over, but the gull-wing bomber stayed in action until the bitter end as the Allied militaries slowly but relentlessly rolled back the Germans to bring World War II to an end. ■

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