Editorial

Many readers probably know the quote, “History is written by the victors,” attributed variously to Niccolò Machiavelli, Winston Churchill or other learned sages of the distant past. Those of us interested in historic aircraft and the roles they played in the wars of the 20th century might put a different twist on the adage: “Interesting hardware is preserved by the victors.”

This could be one reason why very few of the most fascinating aircraft ever designed—those developed by Germany in World War II—are displayed in museums anywhere in the world. The list of aeronautical “firsts” that German aircraft designers came up with in their feverish attempts to turn the tide of the War is long—the first jet fighter (Messerschmitt Me.262), first rocket fighter (Me.163B), first variable-sweep-wing aircraft (Messerschmitt P.1101), first forward-swept-wing aircraft (Junkers Ju.287), first operational cruise missile (V-1), first practical ballistic missile (V-2), first jet-powered flying wing (Horten Ho.229), and more.

With some notable exceptions, however, these machines have faded into relative obscurity, not on display to public view, unknown and unloved except by geeky aviation enthusiasts.

This issue’s “Featured Aircraft” is a good example. Although 1,000 Heinkel He.177 Greifs were produced during the War, none of them exist today. But even though you’ll never see one for real, we hope you find this hard-luck story of Hitler’s strategic bomber interesting and informative. Enjoy.

Featured Aircraft

There is little doubt World War II could have ended very differently if a few key events had played out in other ways than they did. For example, what might have happened if Hitler had deployed his V-1 and V-2 “vengeance weapons” earlier and used them more effectively? Certainly, the War in Europe would have been prolonged, even though the outcome probably would not have changed. For another example, consider “what if” Hitler had invaded and occupied the British Isles. This would have changed the course of the War dra-

Featured Aircraft (Continued on Page 2)
From the Director

L ast spring in this column, I mentioned that War Eagles Air Museum’s displays of aircraft, automobiles and artifacts are not static, and I listed several “new” aircraft, automobiles and other items that we’ve acquired over the last five years or so. I’m happy to say that this trend continues.

If you haven’t visited the Museum in a while, you should come out to see our latest exhibit: a Vietnam-era Hughes 500 light helicopter. It’s so light, in fact, and we’re so short of floor space, that we’ve hung it from the ceiling. There’s no signage for it yet—we’re still working to upgrade all of our signs—but you can still get a good look at it.

Sometime later this year, we hope to finish our display of four air-dropped nuclear weapons, which we are in the process of refurbishing. The display will include six four-by-eight-foot information panels that tell the entire story of nuclear weapons. It will be very educational. Also, we’re working with Franklin Mountains State Park, the El Paso County Historical Society and the El Paso Community Foundation (among others) to commemorate local military airplane crashes. We’ll soon have a display of plaques that honor the crews of three aircraft—two B-24s and a B-36—that crashed in the Franklin Mountains decades ago.

There’s always something new at the War Eagles Air Museum. Pay us a visit soon and take a look around!

Skip Trammell

Great numbers of Heinkel He.111 twin-engine medium bombers attacked London in the Battle of Britain, but their small bombload limited their effectiveness.

Despite the many types of German fighters and bombers used in the Battle of Britain, one thing was missing from the lineup. The largest Luftwaffe bomber at the time was the relatively slow and vulnerable Heinkel He.111, a twin-engine medium bomber designed in the early 1930s. He.111s were too small to carry decisive quantities of bombs to targets in England. What Germany needed was a heavy, four-engine, long-range bomber, such as the British Avro Lancaster or the American Boeing B-17 Flying Fortress and Consolidated B-24 Liberator. The Allies later used such aircraft with devastating effect, bringing Germany to its knees and incontrovertibly proving the military utility of strategic bombing. Hitler did not have such an aircraft for the Battle of Britain, and that may have cost him the Battle and the War.

But it wasn’t for lack of trying…

Ironically, Germany’s lack of a big bomber stemmed largely from its military successes in the Spanish Civil War and in the first months of World War II. As early as 1933, Luftwaffe Chief of Staff General Walther Wever realized the important role that strategic bombing would play in a war with the Soviet Union—a war then seen as inevitable. He commissioned two of Germany’s leading aircraft manufacturers, Dornier and Junkers, to design a new strategic bombardment airplane dubbed the “Ural Bomber.” In 1935, the RLM (Reichsluftfahrministerium, or Reich Aviation Ministry) ordered prototypes of the resulting aircraft, the Dornier Do.19 and Junkers Ju.89. But after Wever’s death in an airplane crash in June 1936, interest in a Luftwaffe strategic bomber force waned. Wever’s successor, Albert Kesselring, saw no need for such a force, so he canceled the Ural Bomber on April 29, 1937. He thought the Luftwaffe needed more small, tactical aircraft. The successes of the Condor Legion in tactical support and dive-bombing roles in the Spanish Civil War, from November 1936 through May 1939, appeared to confirm Kesselring’s opinion.

Luftwaffe Commander-in-Chief Hermann Göring agreed; “The Führer does not ask the Führer ever changed his mind. On the back burner. Apparently Kesselring and Göring feared completely giving up on the idea of big airplanes, in case the Führer ever changed his mind. On June 3, 1936, the RLM had issued specifications for “Projekt 1041 Bomber A,” a more-advanced aircraft than the Do.19
and Ju.89, solely to Ernst Heinkel Flugzeugwerke at Rostock-Marienehe on Germany’s Baltic Coast. Bomber A was to be capable of carrying a 2,200 pound bomb load over a range of 4,160 miles at not less than 335 miles per hour. It would be able to outrun all contemporary fighters and outperform all bombers then in service. A year later, on June 2, 1937, the RLM directed Heinkel to build a full-scale mockup of the aircraft it had designed to meet the specification. On November 5, the RLM approved the mockup and assigned Heinkel’s big bomber the type number “8-177,” while at the same time demanding that the company beef up the design so it could withstand the stresses of dive-bombing attacks.

Heinkel knew his heavy bomber had to have four engines in order to meet its performance requirements. From the pictures and drawings here, you may think; “Four? That can’t be right. I see only two engines.” That’s because Siegfried Günter, Heinkel’s chief designer, came up with an unusual design solution. Each of the He.177’s two propellers was driven by two engines. That was one factor that gave the He.177 exceptional performance. It also led to a couple of disparaging nicknames that aircrews applied later in the War—the “Flaming Coffin” and the “Luftwaffe Lighter.”

Each of the He.177’s complex Daimler-Benz DB.606 powerplants consisted of two 12-cylinder, liquid-cooled DB.601 inverted-V engines—the type used in the Bf.109—mounted side-by-side in one nacelle, driving a transmission that transmitted power from the two engines to a single propeller. The inner cylinder banks of the DB.601s were very close together, and the designers had to shoehorn 12 exhaust pipes into that confined space. It’s not hard to imagine how hot that area became. With the inevitable grease, oil and fuel that would drip down and build up inside the lower cowling, it’s also easy to understand why engine fires plagued the He.177 throughout most of the program.

Günter took equally innovative approaches to other aspects of the Greif’s design. Rather than conventional engine coolant radiators, which had big weight and drag penalties, he proposed a high-pressure evaporative cooling system that used airflow over the wings to control the coolant temperature. Such a system had worked well on an He.100 fighter testbed. But it soon became clear that evaporative cooling could not handle the enormous amounts of heat generated by the DB.606s, so Günter had to switch to conventional annular radiators fitted behind the propellers. The Greif’s wing featured Fowler flaps spanning the entire trailing edge, including the ailerons, which were split into upper and lower parts to provide lateral control when the flaps were extended. The main landing gear had to be very strong and quite long to provide ground clearance for the huge four-bladed propellers, but there was not enough room in the nacelles or the wing to retract gear of traditional design. Günter solved this problem by mounting each of the two main wheels on each side of the aircraft on a separate strut. One strut retracted inward and the other outward, nestling the gear into shallow wells in the wing.

On November 12, 1938, the RLM ordered six prototype-series aircraft, then doubled the order on February 24, 1939. By that summer, it was becoming increasingly clear even to the most myopic Nazi leaders that Britain and France would...
one of the Greif's most troublesome features was its complex coupled powerplants. This photograph shows a 3,100-horsepower DB.610, consisting of two DB.605s, as fitted in He.177V15 and later versions.

Featured Aircraft (Continued from page 3)

honor their commitments to Poland in the event of a German attack. With the future uncertain, the RLM figured that a strategic bomber just might be a good thing for the Luftwaffe to have, so it put pressure on Heinkel to hurry up building the prototypes. It also ordered 20 pre-production He.177A-0 versions on July 6, and another 10 on October 3. By then, World War II had been underway for over a month.

The first prototype, He.177V1, flew on November 19, 1939, at the Rechlin Erprobungstelle (Testing Center) about 60 miles northwest of Berlin, with Lieutenant Carl Franke at the controls. Franke had to land after 12 minutes because the engine temperatures began to rise alarmingly—a harbinger of problems to come. Still, he was impressed with the aircraft's general handling qualities, although he reported some engine vibrations and he thought the vertical tail surfaces were too small. But Heinkel still obviously had a lot of work to do, as flights of other prototypes soon showed. He.177V2 disintegrated in the air on June 27, 1940, following the loss of V3 on April 24. V4 crashed into the Baltic during a stability test. In early 1941, V5 crashed after both powerplants caught fire, the first case of powerplants in flames. Even so, in April 1940, the RLM demanded that the bomber enter service as soon as possible, at one point insisting on a production rate of 70 aircraft per month. But the ongoing problems required almost constant modifications. Heinkel barely made five per month through 1940, most of which went to training units. Clearly the Greif was still not ready to fly in combat. Heinkel worked on the problems for a long time, even after the aircraft were in service with Luftwaffe units. This effort generated a bewildering variety of modifications, upgrades and model designations, and ultimately succeeded in making late-model He.177s reasonably reliable and somewhat less likely to burst into flames. But the whole story is far too complicated to cover in these few pages.

The He.177A-3 was the first version to see significant operational service. The Greif's first combat missions took place in January 1943 on the Russian Front, but not in a way its designers had ever intended. Twenty of them served as transports, ferrying ammunition and supplies to the encircled German 6th Army at Stalingrad. It was not an auspicious debut—seven Greifs crashed while flying only 13 missions, and none of the losses were due to enemy action. After a few weeks, the Luftwaffe gave up and withdrew them from the Front. But another mission for the big bomber, in an equally unlikely arena, soon presented itself.

By early 1943, Grand Admiral Karl Dönitz, Commander in Chief of the German Navy, had become increasingly concerned with Allied advances in anti-submarine warfare (ASW), which were making U-boat missions around the British coast practically suicidal as their crews tried with little success to stop the Allied convoys that continued to carry thousands of tons of supplies and equipment to the island nation. Dönitz insisted that the He.177 be outfitted as a torpedo bomber to attack Allied ships. Initial tests of this modification used an He.177A-3 with two Italian L5 torpedoes, but the definitive operational configuration used the He.177A-5, the first of which left the

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2 German aircraft prototypes were identified with the letter "V" followed by a sequential number. The "V" stood for "Versuchs." or "experimental." The 12 prototypes in the initial RLM order were thus designated He.177V1 through He.177V12.
assembly line in February 1943. In addition to torpedoes, the A-5s could carry other external weapons such as the Ruhrstahl 1400 Fritz-X radio-controlled glide bomb and Henschel Hs.293 and Hs.294 air-to-surface guided missiles.

Combat use of these guided weapons was unimpressive—the words “total failure” spring to mind. In the first operation against an Allied convoy in the Atlantic on November 21, 1943, Hs.293s dropped from 20 He.177s did not do any significant damage to the ships. Five days later, 14 aircraft attacked a convoy off Bougie, but four of the bombers were lost in action and three more written off in forced landings. A 50% loss ratio was clearly unsustainable, and showed that daylight attacks on shipping were impractical.

In early 1944, Greifs had some success on the Eastern Front, bombing from about 20,000 feet, which was too high for the Soviet fighter aircraft and tactics that were optimized for low-level missions. At the same time, He.177s took part in a last-ditch reprisal attack on London, ordered by Hitler personally, called Operation Steinbock, which marked both the debut and the dénouement of Heinkel’s big bomber over Britain. The Luftwaffe raidied combat units in Italy and Russia to get aircraft for Steinbock, coming up with 14 He.177s and 80 He.111s, Do.217s and Ju.88s. Raids began on January 21, 1944, and continued until early March. Steinbock was a dismal military failure—British defenses decimated the attacking medium bombers—but, ironically, the operation brought Greifs their greatest success. They carried maximum bomb loads to 23,000 feet while still over German territory, then made shallow dives on their targets at speeds of up to 435 miles per hour, which was too fast for British fighters and anti-aircraft guns to follow. Only four succumbed to hostile action. But they were still very unreliable. For example, 13 He.177s took off on February 13, but eight returned to base with overheating or burning engines. Of the five remaining, four reached London, and one of those was shot down. Again, the loss ratios were simply too high for viable combat operations. Later in the War, continuing engine problems, terrible reliability, fuel shortages and a lack of trained crews brought He.177 operations to a virtual halt. Many of the aircraft sat desultorily on airfields all over Europe, unable to fly even for training missions.

So, when all is said and done, what are we to think about the only World War II German strategic bomber, an aircraft that came along too late and with too little combat effectiveness to influence the course or the outcome of the War? Inarguably, it was the Luftwaffe’s most technically advanced bomber. In many ways, the He.177 was comparable to the American Boeing B-29 Superfortress. That aircraft also endured more than its share of design, development and operational problems, and also suffered from engine fires. Significantly, it took Boeing and the U.S. Air Corps years to fix the problems and transform the B-29 into one of the most successful, well-known bombers in history. Heinkel and the Luftwaffe never got a chance to put the effort into the He.177 that might have made it reliable and successful. Instead, Hitler’s big strategic bomber remains a little-known and unappreciated aviation oddity.  

To operate an Hs.293 rocket bomb, the bombardier had to lie in the glazed nose of the He.177 and steer the weapon with a two-axis joystick. All the while, the bomber had to fly straight-and-level, which made it vulnerable to anti-aircraft fire or fighter attack.

These poor-quality images show a Ruhrstahl 1400 Fritz-X radio-guided glide bomb mounted beneath an He.177 (top), and an He.177 in flight with a Henschel He.293A-1 rocket-propelled bomb (bottom). Neither of these weapons fit in the aircraft’s bomb bay.

The story of the Heinkel He.177 is convoluted and complicated. This artistic, Ltd. (UK), 1998

ADDITIONAL READING

Famous Bombers of the Second World War, Green, W., Doubleday & Co., Garden City, NY, 1969


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