

AVRO

# LANCASTER

● Heavy bomber ● Dam-buster ● Delivered largest bomb of WWII



BRITISH AIRCRAFT  
OF WORLD WAR II



**T**he Avro Lancaster was Britain's greatest bomber of World War II, providing the backbone of the RAF's night assault on Germany. This four-engine heavy carried and delivered a bigger bomb load than any other bomber in the European theater. From its first mine-laying mission in 1942 to its final bombing sortie of 1945, the "Lanc" was a formidable fighting machine. One aircraft even survived 140 combat missions over Germany.

▲ Crews liked their "Lancs," considering it superior to the previous Halifaxes and Stirlings. Despite its success, few crews ever lived to complete as many night raids as this one did.

## AVRO LANCASTER



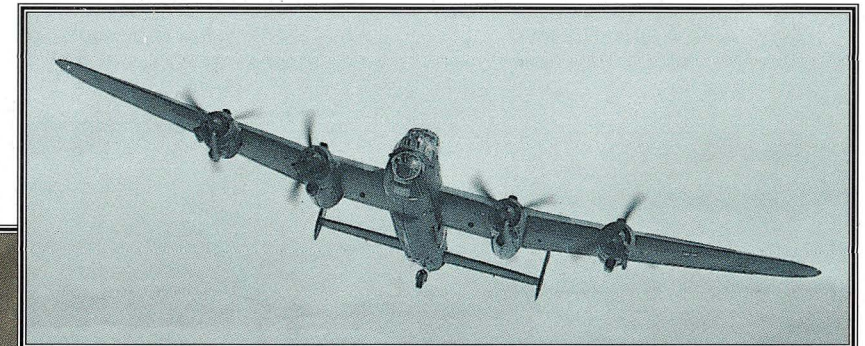
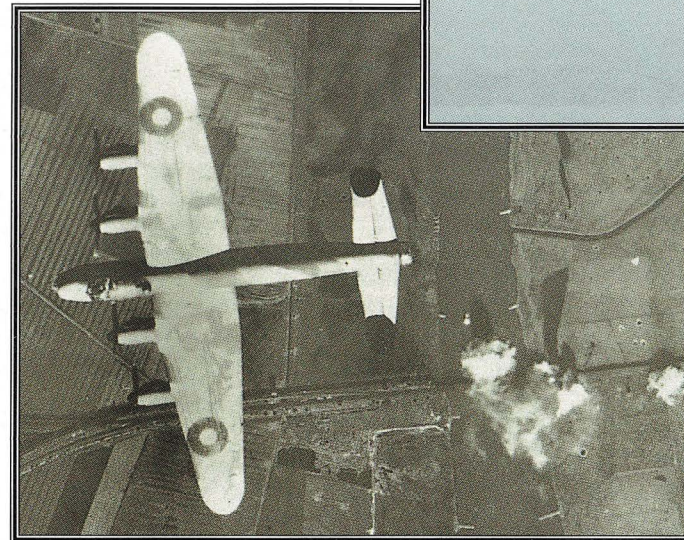
◀ **"Window"**  
An electronic warfare Lancaster drops metal strips known as "Window" to jam German radar.

**Tail-end Charlie** ▶  
Usually the first victim of a night fighter, rear gunners had an unenviable task and low survival rate.



### Low level ▶

The Lancaster was not just a night bomber. One of the first Lancaster missions was a daylight raid on the MAN works at Augsburg, flown at low level.



### ▼ Power turrets

The RAF fitted fast-acting power turrets to enable its bombers to defend themselves. Apart from an underside blindspot, the Lancaster was no easy meat for a fighter.



### ▲ Bridge buster supreme

The tough Bielefeld Viaduct survived many RAF attacks, but was finally smashed by Lancasters of the famous No. 617 Squadron, using 10-ton "Grand Slam" bombs.

## FACTS AND FIGURES

- ▶ The Lancaster on display at the RAF Museum at Hendon, near London, flew 137 combat missions over Europe.
- ▶ To bomb Japan, a long-range version with a 1,360-gal. "saddle" fuel tank atop its fuselage was tested but not needed.
- ▶ The first Lancaster, a rebuilt Manchester, flew on January 9, 1941.
- ▶ One "Lanc" was rebuilt with the Bristol B.17 dorsal gun turret.
- ▶ The "Lanc" could drop the huge 21,954-lb. "Grand Slam" earthquake bomb.
- ▶ France's Aeronavale was still flying maritime Lancasters into the 1950s.



# Britain's finest night-bomber

The Lancaster won immortality with the "Dambusters." Royal Air Force No. 617 Squadron, under Wing Commander Guy Gibson, used the new bomber for their March 21, 1943 low-level attacks on German dams using drum-like 9,230-lb. bombs designed by Sir Barnes Wallis.

But the Lancaster was much more than a one-mission wonder. Developed from the

unsatisfactory twin-engine Avro Manchester, it was one of the few warplanes in history to be "right" from the start. It was so well-designed that only minor changes were made as production surged ahead through World War II. While Flying Fortresses and Liberators pounded Hitler's "Fortress Europe" during the day, the Lancaster ruled the night. It was vulnerable to German fighters

from below, but it was also fast and heavily armed, and it usually got through to the target.

The Lancaster served well in postwar years, sometimes in civil duties. The final military user was Canada. Today, the Royal Air Force still maintains one flying Lancaster, alongside Spitfires and Hurricanes, in the Battle of Britain Memorial Flight.



*The Lancaster possessed all the features desired by the RAF. It had a good ceiling, long range and enormous load capacity. And combat experience showed that it was tough, reliable and had reasonable defensive armament.*

## SPECIFICATIONS Lancaster B.I

**Type:** Seven-seat heavy bomber.

**Powerplant:** Four 1,280-hp. Rolls-Royce Merlin XX, 1,557-hp. Merlin 22 or 1,750-hp. Merlin 24 inverted inline piston engines.

**Max speed:** 286 m.p.h. at 11,480 ft.

**Ceiling:** 24,492 ft.

**Range:** 2,480 mi. with 4,400-lb. bomb load; 1,674 mi. with 13,970-lb. bomb load.

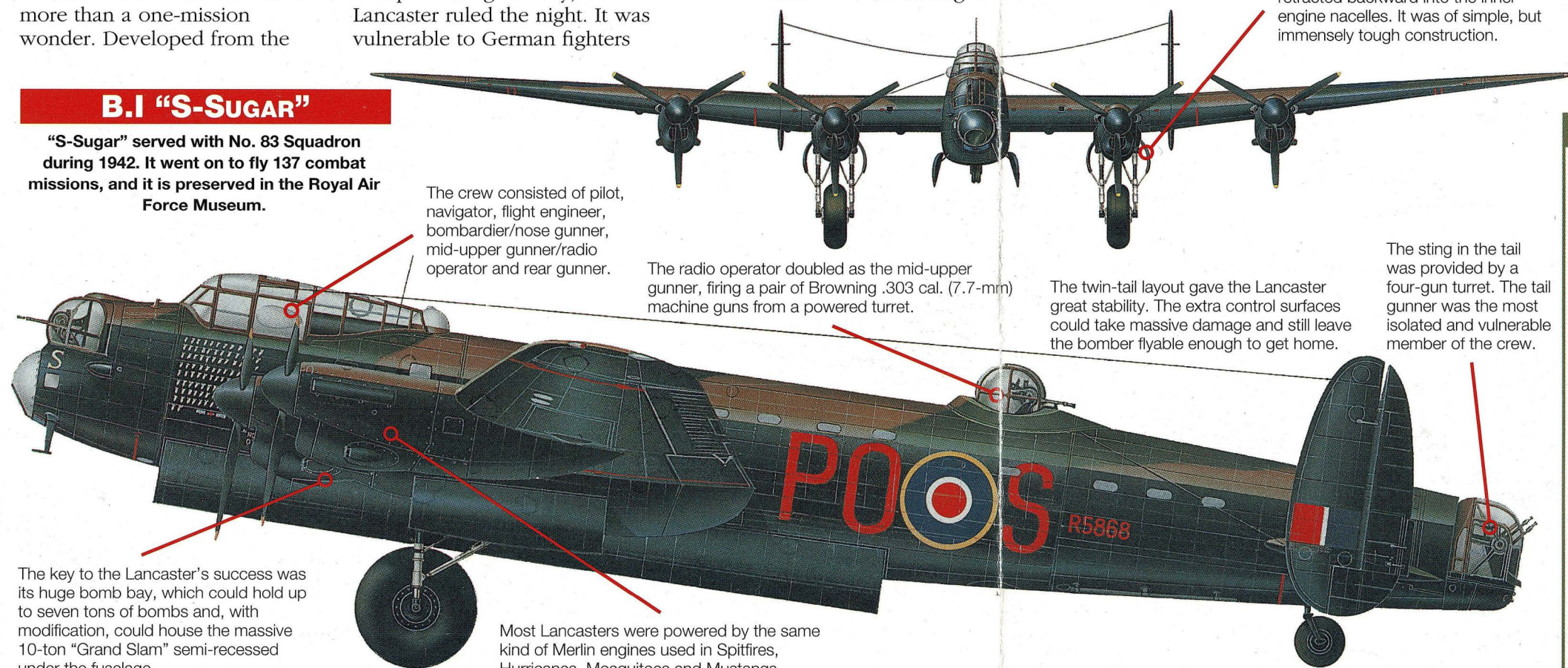
**Weights:** Empty 36,923 lb.; loaded 67,859 lb.

**Weapons:** Early production models had nine 7.7-mm Browning machine guns for defense, plus up to 4,954 lb. of bombs.

**Dimensions:** Span 102 ft.  
Length 69 ft.  
Height 20 ft.  
Wing area 1,296 sq. ft.

## B.I "S-SUGAR"

"S-Sugar" served with No. 83 Squadron during 1942. It went on to fly 137 combat missions, and it is preserved in the Royal Air Force Museum.



The crew consisted of pilot, navigator, flight engineer, bombardier/nose gunner, mid-upper gunner/radio operator and rear gunner.

The radio operator doubled as the mid-upper gunner, firing a pair of Browning .303 cal. (7.7-mm) machine guns from a powered turret.

The twin-tail layout gave the Lancaster great stability. The extra control surfaces could take massive damage and still leave the bomber flyable enough to get home.

The sting in the tail was provided by a four-gun turret. The tail gunner was the most isolated and vulnerable member of the crew.

The key to the Lancaster's success was its huge bomb bay, which could hold up to seven tons of bombs and, with modification, could house the massive 10-ton "Grand Slam" semi-recessed under the fuselage.

Most Lancasters were powered by the same kind of Merlin engines used in Spitfires, Hurricanes, Mosquitoes and Mustangs.

## ACTION DATA

### SPEED

LANCASTER 211 m.p.h.

B-17 248 m.p.h.

B-24 217 m.p.h.

Since American bombers were expected to operate by day, they were much more vulnerable to enemy defenses than the Lancaster. Every step was taken to reduce that vulnerability, from heavy armor and armament to a higher speed than their British equivalents.

### RANGE

LANCASTER 2,480 mi. with 4,400-lb. load

B-17 3,100 mi. with 2,200-lb. load

B-24 2,170 mi. with 5,500-lb. load

The Lancaster had exceptional range when carrying a heavy load. The B-17 could go farther, but could not deliver as powerful a punch. A "bombed-up" B-24 could not match the other two four-engine aircraft. However, with a light load and extra fuel, it could go the farthest of them all, regularly mounting anti-U-Boat patrols into the middle of the Atlantic.

### BOMB LOAD

LANCASTER 13,970 lb. B-17 5,995 lb. B-24 7,984 lb.

Lancasters routinely operated with heavier bomb loads than their contemporaries, and could carry the massive 21,954-lb. "Grand Slam" bomb. The B-17 Flying Fortress had a maximum bomb load almost as high as the Lancaster, but it rarely carried such weight, the USAAC preferred to use surplus power to lift extra armor and defensive guns.

## The Dambusters Raid

It was one of the most spectacular missions of World War II. In the dead of night, RAF bombers mounted an attack on the Ruhr dams, whose associated power-stations served Germany's greatest industrial complex. Smashing the Möhne and Sorpe Dams with the revolutionary bouncing bomb, designed by Barnes Wallis, the chosen crews of No. 617 Squadron performed a low-level night attack of unbelievable precision. But although it disrupted German war production for some months, the raid had little permanent effect, and it cost the lives of 56 British and Commonwealth crew members.



The bomb used to attack the dams was a rotating cylinder, 50 inches in diameter and weighing 9,231 lb. Bouncing across the water to hit the dam, the bomb then sank down the inner side of the structure, detonating well below the surface of the lake.

Precision flying was essential. The aircraft had to release its weapon between 1,214 and 1,345 feet from the target, while flying at exactly 249 m.p.h. and at a height of 60 feet above the water.