

# “L” for “LANC”

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*(In December 1953, under the title "Obituary", we published a history of the Wellington, then recently "demobbed" from the R.A.F. The story of the Halifax followed a year later, and we now have the story of the aircraft which many war-time aircrew still regard as the noblest of them all. The author, who graduated from Service Flying Training School at Uplands in May 1943, was attached to the R.A.F. in England, where he flew all three of the above-mentioned types of aircraft. He completed a tour of operations with No. 101 Squadron at the end 1944, was awarded the D.F.C., and left the Service in the spring of 1945.—Editor.)*

I BELIEVE it was Air Chief Marshal Sir Arthur Harris who referred to the *Lancaster* bomber as the "greatest single factor in winning the war". Be that as it may, it is an undeniable fact that the mighty *Lanc* was the outstanding heavy bomber to thunder its way across the pages of history in the Second World War. Together with its smaller cousins, the amazing *Mosquito* and the indomitable *Spitfire*, it led the field in the respective spheres of heavy, medium, and light military combat aircraft.

Avro's *Lancaster* was the four-engined development of the twin-engined *Manchester*, the biggest twin-engined bomber of its day, and both aircraft were the result of the efforts of that master designer, the late Mr. Roy Chadwick. Unfortunately, trouble was experienced with the 2000-h.p. Rolls-Royce *Vulture* engines of the *Manchester*. It was said that several were lost due to engine fires. With typical ingenuity, the wings of the *Manchester* were lengthened and four of the rugged Rolls-Royce *Merlin* engines, which had proven themselves in (among others) the *Hurricanes*, *Spitfires*, *Wellingtons*, *Whitleys*, *Defiants*, and *Halifaxes*, were installed. Thus, early in 1942, the peerless *Lancaster* was born.

The early *Lancaster Mark I* utilized four *Merlin XX* engines of around 1280 h.p. each. Later Mark Is had *Merlin XXII*s and *XXIV*s, each of 1280 h.p., the latter being fitted with paddle-bladed propellers which resulted in improved performance at take-off and at high altitude — and also gave rise to the nickname of "Paddle-Steamer" bestowed by the crews who flew the aircraft. The *Lancaster II*s were fitted with Bristol *Hercules* radial sleeve-valve engines of 1600 h.p. The Mark IIIs used Packard-built *Merlin XXVIII*s, with which coolant difficulties were experienced, and Packard *Merlin XXXVIII*s, which were right up to Rolls-Royce standards. Both these Packard-built engines delivered 1280 horsepower. There were other Marks produced, including the Canadian-built *Lancaster X* which utilized the Packard *Merlins* and with which several Canadian bomber squadrons were equipped.

The *Lancaster* possessed one very important point in its favour (a point which unfortunately too many British bombers lacked), that of being designed for mass production. Component parts were manufactured in myriad small factories all over the United Kingdom and were shipped to other factories for assembly. As a result, once the *Lancs* were put into production, they began rolling out in ever-increasing numbers, to the relief of the R.A.F., hard-pressed as it was for really heavy bombers to carry the war to Germany *en masse*. True, the *Stirlings*, *Halifaxes*, and *Wellingtons* were doing yeoman service, but the numbers needed were sadly lacking.

To compare the *Lancaster* with its chief rivals in the heavy bomber field — the *Fortress*, *Liberator*, *Halifax*, and *Stirling* — is rather interesting, although, in the case of the first two mentioned, no comparison should be drawn, for they were designed essentially as heavily-armed long-range daylight bombers, whereas the *Lancaster* was primarily a night bomber, despite the fact it carried out some completely devastating daylight attacks.

In operational cruising speeds the *Lancaster*, *Halifax*, and *Stirling* were almost on a par, the *Halifax Mark III* and *VII* having a slight edge over the other two at medium and low altitudes. The average operational cruising speed, with bomb-load, of the *Lanc* at 15,000 feet was about 180 m.p.h. I.A.S.; for the *Halifax*, it was a little better. However, above 18,000 feet the *Lanc* had the edge. The *Lanc* also overtook the *Hally* in rate of climb at about 18,000 feet. Its operational ceiling was from 22,000 to 24,000 feet, depending on the aircraft and the pilot. The *Halifax's* ceiling was slightly less, and the *Stirling* was left far below at around 15,000 feet. The average operational cruising speed of the *Fortress* was in the neighbourhood of 160 miles per hour I.A.S. and the *Liberator* was slightly slower, but both these machines did most of their bombing at close to 30,000 feet, almost 10,000 feet higher than the two British aircraft.

In bomb-load the *Lanc* was the unquestioned leader, its closest rival in the European theatre being the *Stirling*, which carried up to 17,000 pounds of bombs on short trips. Even the B-29 *Super-Fortress*, which operated against Japan only toward the end of the war, although of greater dimensions and all-up weight, did not carry a bomb-load equal to the *Lancaster's*. The earliest *Lancasters* carried eight tons in various combinations of bombs which included the 4000-pound "Cookie" or "Block-Buster", or the 8000-pounder. Early in 1945, the *Lancasters* were the aircraft that toted the huge 22,000-pound "Grand Slam" which destroyed the Bielefeld Viaduct and was Barnes Wallis's masterpiece of destruction. It was the greatest man-made "bang" until the advent of the atomic bomb. The *Halifax* was content to carry on with its six tons, and the *Fortress* and *Liberator* trailed with an operational load of around three tons; on long trips such as Berlin raids the best they could do was 3,000 pounds. This, of course, was necessitated by the additional weight of their numerous guns and extra ammunition and fuel.

The American 'planes carried about twelve .50 calibre and one 303 calibre machine-guns as against the British aircraft's eight or nine .303s. It was not until the summer of 1944 that the Rose rear turret, with two .50 calibre machine-guns, was installed in the *Lancaster*. The heavy guns were for daylight use, as the limited visibility at night made their longer range ineffective compared to the more rapid fire of the .303 Brownings.

In handling-properties, the *Lanc*, like the *Fortress*, was an extremely docile aircraft, neither having any wicked characteristics. The *Lanc*, empty, could be put into a steep turn of about 75 to 80 degrees of bank with one hand. Heavy loads made a minimum of difference in its handling. It could take off fully loaded with yards to spare on a 1450-yard runway in very light wind conditions, and, strangely enough, it would float on landing, while fully loaded, as though it was copying its little brother the *Anson*. It was capable of maintaining height at low altitudes, without load, on one engine; loaded, it could do so with two engines feathered on one side. In this latter condition it could almost be trimmed to fly hands-off, and on three engines it could actually gain height.

The *Lancaster* made what might be termed its public debut on April 17th, 1942, when two formations, numbering twelve *Lancs* in all, thundered at hedge-level across France and Germany to bomb the great M.A.N. Maschinenfabrik A.G. diesel-engine factory at Augsburg. Flying in tight formation, they were engaged by twenty-five to thirty German fighters over France. Four of the leading formation were shot down, but the remainder carried on, despite formidable opposition from anti-aircraft fire, to attack their objective successfully with delayed-action bombs. Three more were

shot down after they had dropped their load, but the remaining five, all damaged, returned to base safely. This was carried out without fighter escort, and one V.C. and nineteen other awards were handed out to the members of the crews for their gallant effort.

On July 11th of the same year, *Lancasters* made what was the longest daylight raid of the war up to that time by a successful assault on the submarine base at Danzig and the shipyards at Flensburg. These raids were carried out at comparatively low level, and only three aircraft were lost.

Italy received its first daylight raid of the war on October 24th, when British-based *Lancasters* crossed the Alps to attack Milan. Thus the *Lancs*, with their mighty partners the *Hallies*, carried on their devastating work through the remaining years of the war. They led the great mass night-assaults of 1943 and 1944. Berlin and the Ruhr valley were favourite targets, but Stuttgart, Hamburg, Bremen, Kiel, Karlsruhe, and Frankfurt, were not overlooked. More remote targets were struck hard — Munich of beer-hall fame; Nurnberg, from which, on one night, ninety-four aircraft failed to return; and the Baltic port of Stettin, and Konigsberg in East Prussia. Only the *Lanc* among British heavies had the range to attack some of these distant targets from England. The Munich and Konigsberg assaults entailed over ten hours of steady flying.

During the summer and autumn of 1944 an increased number of fighter-escorted daylight attacks were carried out. The cities and towns of the Ruhr — Cologne, Essen, Dusseldorf, Duisburg, Wanne Eickel, and Dortmund — were among those hit. Buzz-bomb sites and aerodromes in France and the Low Countries were visited frequently, and many tactical attacks were carried out in co-operation with the ground forces. Oil stores at Pauillac and Blaye, near Bordeaux, were raided successfully in daylight by several hundred low-flying *Lancs* in August 1944 on two successive days. One of their last offensive operations was the destruction of Hitler's mountain retreat at Berchtesgaden.

At the end of the war in the European theatre, the trusty *Lancs* had dropped a far greater weight of bombs than any other aircraft, but that was not their only duty. When the Pathfinder Force was formed in August 1942, *Lancasters* were the heavy aircraft chosen for this important duty, and it was *Lancasters* which carried out the famous destruction of the Moehne and Eder dams on May 17th, 1943, for which Wing Commander Guy Gibson was awarded the V.C. Their record of service included also special duties such as jamming enemy radio, mine-laying, ferrying freed prisoners of war home, and dropping food to Dutch civilians.

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At the time of writing, *Lancasters* are still carrying on in the vital, if less spectacular, work of the R.C.A.F.'s search and rescue squadrons and Maritime Command; and I imagine that there are still many of us around who look up at them with nostalgia, remembering the old aircraft's days of glory. .

Yes, old friend, you were unbeatable in your time, but you are in your declining years now. Amazing-looking aircraft are screaming through the air at speeds which you in your prime could not even have dreamed about. But those of us who knew you intimately, those whom you bore so faithfully through skies that were not all friendly, will remember well the all-engulfing snore of your four Merlins and the pale blue flickering flame from your exhausts in the blackness on either side.

Who could ever forget the pictures your wind-screen framed? — the dark woolly puffs among the sunlit clouds, the deadly sparkles in the dark among the weaving searchlights, or the finest picture of all, the black line of the English coast looming ahead with its pale, still, vertical fingers of light, and the red pundits flashing their letters.

You have droned your way into the immortality of history; and when your work finally is finished, your epitaph may well be:

High-flying in paths of sunlight,  
O'er clouds the moon had kissed,  
Black in the blood-red sunset,  
Or grey in the morning mist—  
Target or load or distance  
Were all the same to you:  
Through hell and flak you roar'd, and back  
Above the stratocu.