

The Lancaster Bomber



During the 1930's few would have foreseen that Britain would be as isolated and vulnerable as it became in 1940. Indeed, few people today understand how threatened the future of the entire free world was. The situation for the beleaguered island at this point in its history was bleak indeed.

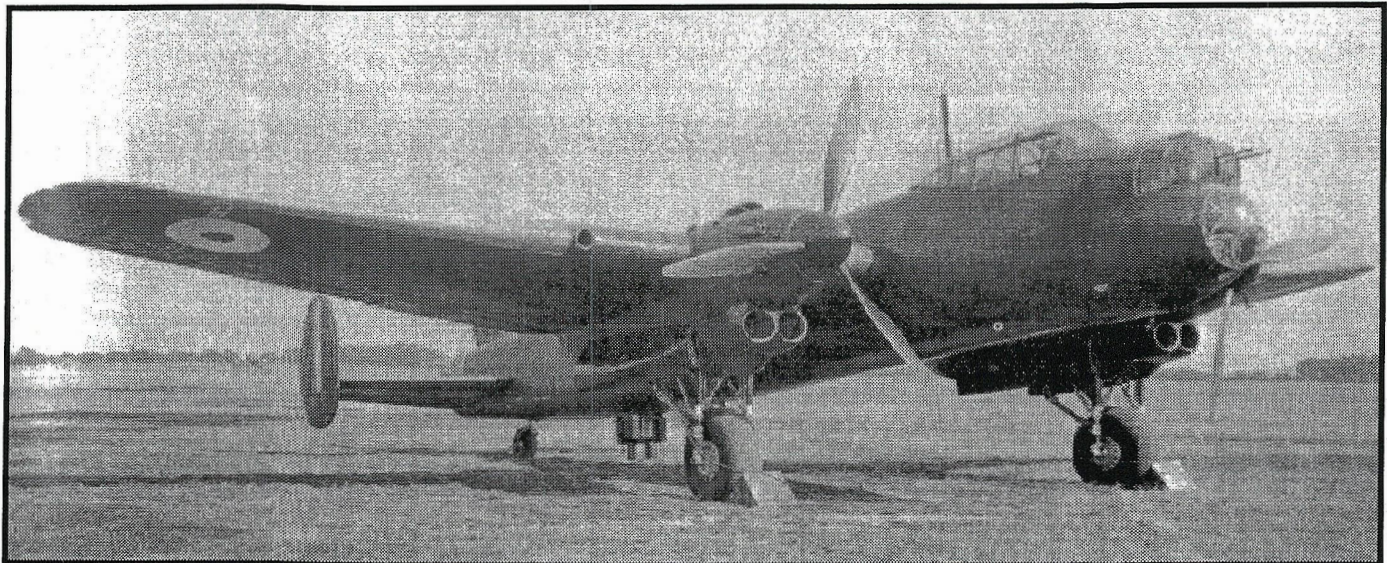
Offshore was an enemy held continent, and that enemy was bent on conquering the British Isles. The British army had been defeated in France, supplies from North America were being cut off by the enemy's fleet of submarines, and Britain was suffering heavy air attack. Furthermore, although Canada had declared war on Germany one week after the British declaration, the United States continued to remain neutral and showed little indication that it would become involved.

Faced with this situation during the

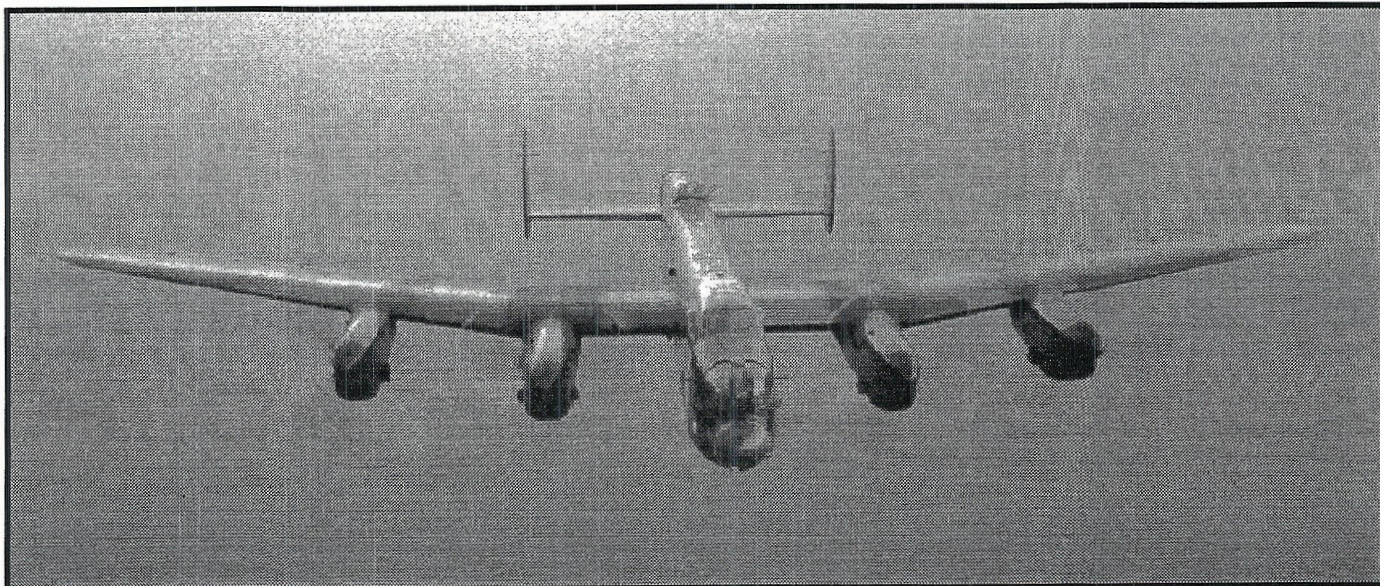
summer of 1940, British Prime Minister Winston Churchill threw his support behind the defensive power of the Royal Air Force's Fighter Command and the development of Bomber Command with the words: "The Navy can lose us the war, but only the Air Force can win it. Therefore our supreme effort must be to gain overwhelming mastery in the air. The Fighters are our salvation, but the Bombers alone provide the means of victory." With this decision a massive effort was begun towards the production of heavy bombers and the training of aircrew to fly them.

The Avro Lancaster evolved from Britain's concerns regarding the deteriorating international situation during the late 1930's. The Handley-Page Halifax, Short Stirling, and Avro Manchester were all in the planning stages as the war began in 1939. The prototype twin-engined Manchester flew in 1939 but was plagued by instability and problems with its complex, 24 cylinder Rolls Royce Vulture engines. Of the 202 Manchesters built more were lost to engine failure than enemy action.

But even before the Manchester flew on operations, the aircraft's designer, Roy



Avro Manchester



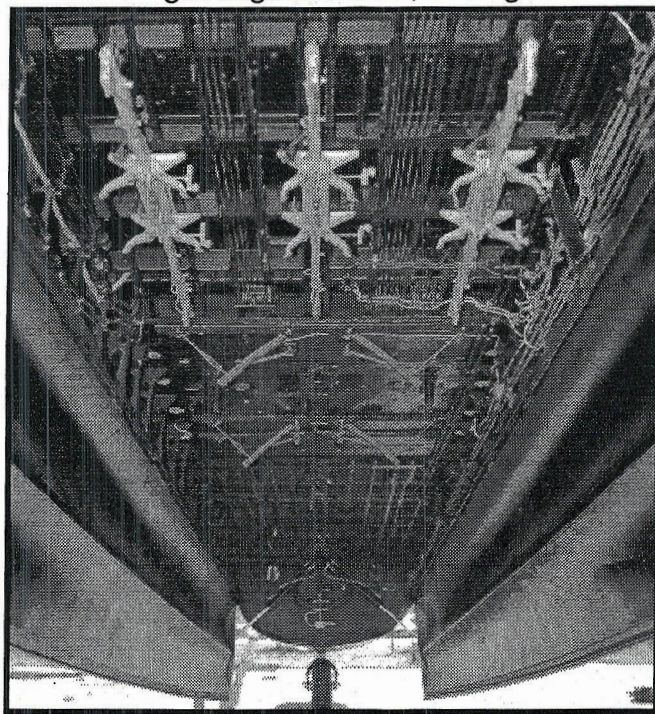
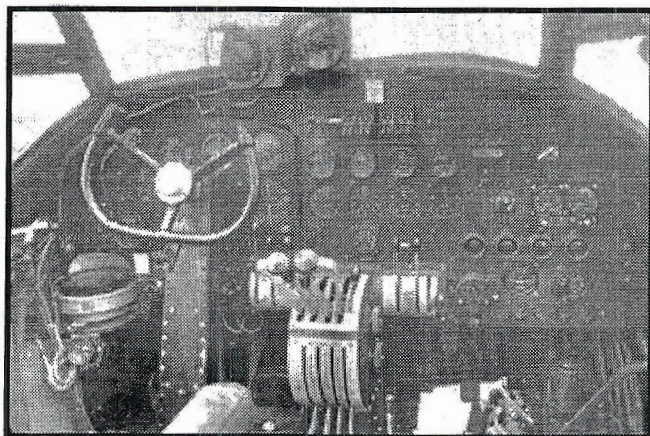
Chadwick, realized that the aircraft would have serious shortcomings and made plans for its modification. He added twelve feet to the wingspan and replaced the two troublesome Vulture engines with four of the proven Rolls Royce Merlins V-12's and the result was the Lancaster which made its maiden flight in January, 1941. A colleague later wrote that Chadwick, "showed himself to be a most resourceful and courageous designer, ultimately snatching success from failure in the most ingenious way with a superlatively successful operational aircraft."

The new bomber was immediately regarded as a success and large production orders were placed. Avro's production facilities were soon overwhelmed, and numerous other companies and contractors joined the effort to produce Lancasters. Consisting of 55 000 separate parts, it has been estimated that half a million different manufacturing operations

were involved to produce just one aircraft. Peak production was achieved during August 1944 when 293 aircraft were produced.

The proven Rolls Royce Merlin engines were much in demand for many types of aircraft. For this reason a version of the aircraft was produced which made use of Bristol Hercules radial engines.

Lancasters first flew operationally in March, 1942 and were well received by the RAF aircrew. It was regarded as "a pilot's airplane" which inspired confidence. Evidence of this is the story of a Lanc flight engineer who, having feathered



The Lancaster's 33 foot long bombay

two engines and facing the prospect of flying over several hundred miles of cold, unfriendly ocean, turned to his pilot and said, "I suppose this means we shall be bloody late for breakfast!"

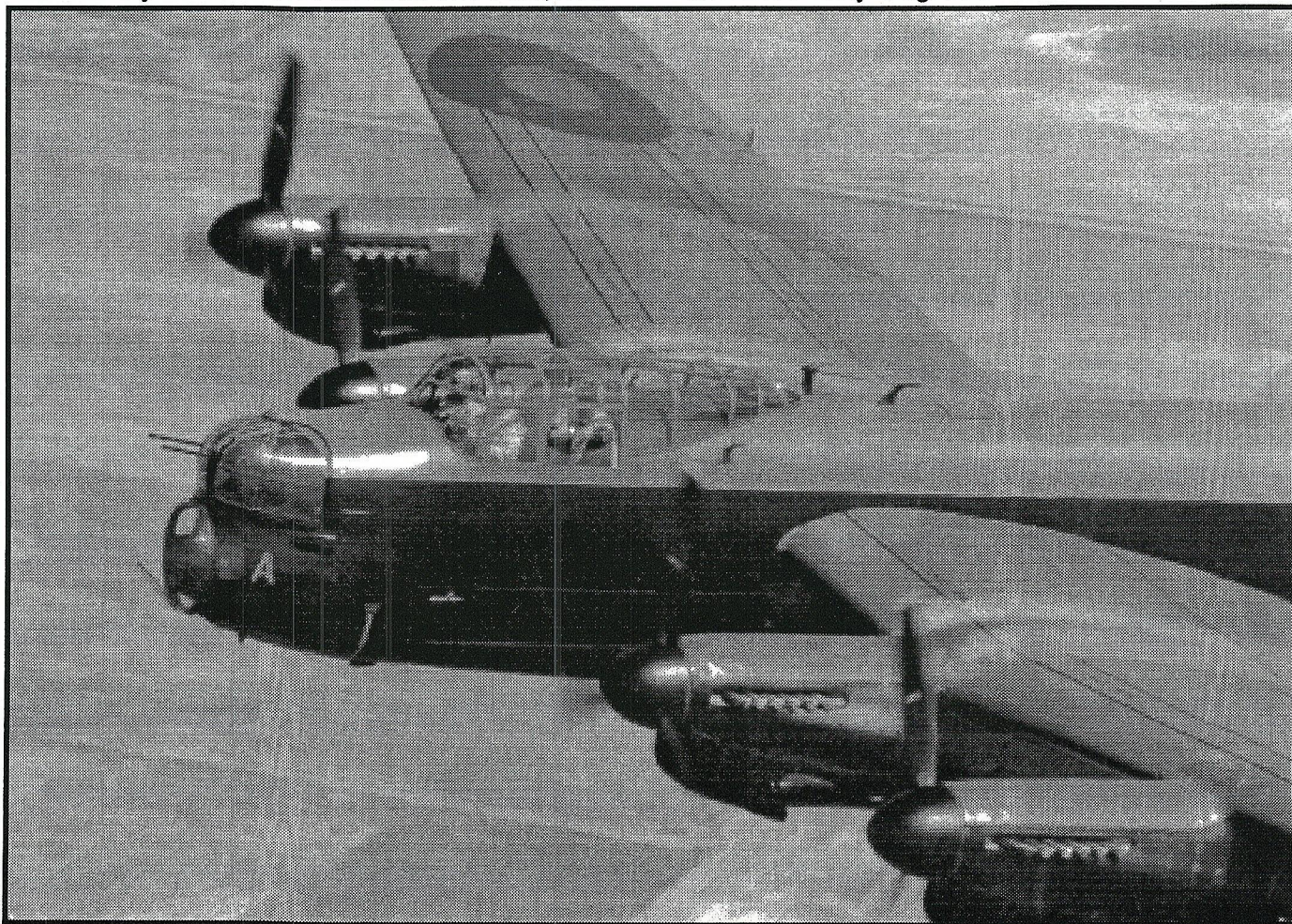
The Lanc had speed, ceiling, and lifting power that no other aircraft of the day could match. Weighing 36,900 pounds empty, the Lancaster was capable of taking off with an additional 33,100 pounds of fuel and bombs; in other words it could almost carry its own weight again. The "Grand Slam", a 22,000 pound special purpose bomb designed to penetrate concrete and explode below the surface to create an earthquake effect, could only be delivered by the Lancaster.

Lancasters were built to accomplish their specific purpose and crew comfort and security was clearly a secondary consideration. Generally flying under the cover of darkness, the Lancaster had virtually no defensive armour. The front, mid-

upper, and rear gun turrets were hydraulically powered and carried a total of eight .303 calibre machine guns for defence against enemy aircraft.

The Lanc's massive bomb bay stretched for 33 feet and, unlike other bombers, was one continuous uninterrupted space. Partly for this reason, the Lanc had the versatility to undertake raids with large, specialized weapons. However, this meant that the main wing spars became obstacles to movement within the aircraft, particularly for airmen wearing heavy clothing and flight boots.

The crew worked in cramped conditions, particularly the air gunners who remained at their posts for the entire flight. Some had to place their flight boots into the turrets before climbing in, and then put their boots on. At night and at 20,000 feet the temperature in the turrets frequently fell to minus forty degrees and frostbite was not



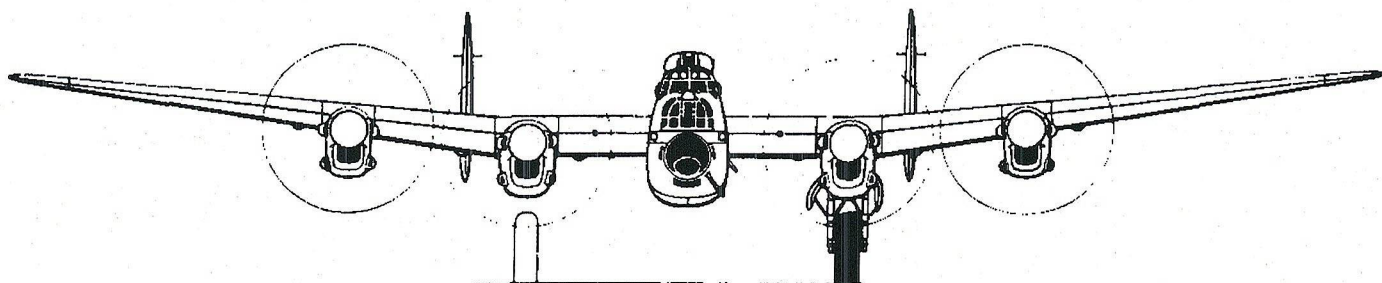
**Canada's only flying Lancaster did a "flypast" at the Nanton Museum in 1989
The Society assisted in the restoration of this aircraft by supplying necessary parts.**

uncommon.

Of the total of 7377 Lancasters built, 3932 were lost in action. During the war Lancasters flew a total of 156 000 sorties and dropped 608,612 tons of bombs.

What is probably the finest tribute to the aircraft was written by Marshall of the Royal Air Force Sir Arthur Harris, wartime chief of Bomber Command: "The finest bomber of the war! Its

efficiency was almost incredible, both in performance and in the way it could be saddled with ever-increasing loads without breaking the camel's back. The Lancaster far surpassed all the other types of heavy bombers. Not only could it take heavier bomb loads, not only was it easier to handle, and not only were there fewer accidents than with other types, the casualty rate was also consistently below those of other types."



AVRO LANCASTER SPECIFICATIONS

Engines: four Rolls Royce Merlin V-12's
(Mks. I, III, and X)
four Bristol-Mercury VI radials (Mk. II)
Wing Span: 102 feet
Wing Area: 1300 square feet
Length: 69 feet 6 inches
Maximum speed: 275 miles per hour
Cruising speed: 185 to 225 miles per hour
Service ceiling: 20,000 feet (maximum weight)

Maximum weight: 70,000 pounds
Empty Weight: 36,900 pounds
Fuel Capacity: 2154 Imperial gallons
Range: 2530 miles with 7000 pound bomb load
1730 miles with 12,000 pound bomb load
1550 miles with 22,000 pound bomb load
Armament: Front gun turret (two .303 calibre)
Mid-upper gun turret (two .303 calibre)
Rear gun turret (four .303 calibre)

