The Tiger Moth was the culmination of a series of light aircraft designs begun in 1924 with the D.H.51. The original idea was to develop a touring plane that was extremely simple and, more important, very economical. But the D.H.51 was not a great success. It was the D.H.60 Moth that was to catch on in 1925. The D.H.60 is rightly considered the legitimate founder of the line of biplanes that was ultimately to produce the Tiger Moth. Almost five hundred and fifty D.H.60s were built in a version that was equipped with a Renault engine; and more than six hundred were built in model G, which was powered by a new engine, the Gipsy, designed and built by the de Havilland company itself. It was F. B. Halford who designed this engine for the de Havilland company. Originally intended as a record-flight engine for competition flying, it became one of the most popular engines in the history of touring planes. Its simplicity, resilience, safety, and low cost made it the ideal engine for light aircraft.

The Tiger Moth made its maiden flight on October 26, 1931, and large-scale production began almost at once. The small two-seater biplane was built with a skeleton in wood and metal, while, except for the nose, it was entirely covered in fabric. The two wings were rectangular and equal in span and width and so angled that access to the forward cockpit was easy, and in case of emergency the pilot would have no trouble bailing out. Over the years, the Gipsy engine was increased in horsepower. The gas tank was installed in the middle of the upper wing, and a subsidiary tank could be installed in the forward cockpit.

Although most of the initial production was earmarked for the Royal Air Force, up until 1939 the de Havilland company managed to manufacture a number of aircraft for civil flying schools. By the time World War II broke out, some 1,400 aircraft had already been constructed. The war stimulated greater production, and Tiger Moths were built in Canada, Australia, and New Zealand by local affiliates of the de Havilland company. In Great Britain, the production of Tiger Moths was entrusted to Morris Motors Ltd., in order to make it possible for the de Havilland company to dedicate all its efforts to the development of combat planes, including the famous Mosquito.

The Tiger Moth found one unusual use during the war. It was used as a radio-controlled target for anti-aircraft artillery training.
was allotted the constructor's number sequences commencing at 3100 and later at 82000. Like the Moth Trainer, the Tiger Moth was offered in gunnery, bombing and photographic versions but only a small number of multi-purpose machines were ordered, the main demand being for ab initio and aerobatic trainers which sold in 25 countries including Brazil, Denmark, Persia, Portugal, Spain and Sweden. Productive effort was centred at first on contracts for the R.A.F. and foreign governments but included a number of civilian machines for the Elementary and Reserve Flying Schools, where R.A.F. pilots were taught under the Expansion Scheme before going to the Service Flying Training Schools. Civil Tiger Moths (which did not have mass balanced rudders and ailerons), were operated by the Bristol Aeroplane Co. Ltd. at Filton and Yatesbury; the de Havilland School of Flying Ltd., Hatfield (later Panshanger) and White Waltham; Brooklands Aviation Ltd., Sywell; the Phillips and Powis School of Flying, Woodley; Reid and Sigrist Ltd., Desford; Airwork Ltd., Perth; and Scottish Aviation Ltd., Prestwick. Few could be spared for normal civilian use but four, G-ABRC, 'UL, G-ACEZ and 'FA, were released to Sir Alan Cobham for aerobatics with National Aviation Day Displays, G-ACDY to the Scottish Motor Traction Co. Ltd., G-ADWG to C. W. A. Scott's Air Display and G-ABTB to Standard Telephones Ltd.

In 1934 the Air Ministry ordered 50 examples of an improved version to Specification T.26/33 which called for the new 130 h.p. Gipsy Major engine, plywood decking to the rear fuselage in place of time honoured fabric and stringers, and a blind flying hood over the rear cockpit. In this form it was known in the R.A.F. as the Tiger Moth II, but outside the Service its proper designation was D.H.82A Tiger Moth. In the following year further contracts were awarded to Specification T.7/35 and others were supplied to the Uruguayan Army and to the Air Forces of Brazil, Denmark, Iraq, South Africa, Persia and Spain. After 1937 production overtook military commitments, enabling Tiger Moths to replace the venerable Gipsy and Cirrus Moths in the flying clubs. Overseas civil orders were also accepted from clubs and private owners in Australia, Egypt, Greece, Holland, India, Lithuania, Mozambique, New Zealand, Southern Rhodesia and Switzerland, the largest customer being France which bought 17. In 1937 an order was placed with de Havilland Aircraft of Canada Ltd. for 25 Tiger Moths for the R.C.A.F. and a year later the firm was asked to supply 20 fuselages to the parent company but it evident that not all of these reached England. By the outbreak of war 1,150 had been built at Hatfield, 227 at Toronto, one at Wellington, New Zealand and three for the London Aeroplane Club by the de Havilland Aeronautical Technical School.

The majority of British and Commonwealth civil Tiger Moths were impressed into their respective air forces in 1939 when in common with their Service brethren they were fitted with Mod. 112, comprising anti-spinning strakes on each side of the rear fuselage. These were first fitted to R5129, tested at Farnborough in November 1941 during an investigation into spinning troubles which were cured by removing aileron mass balances. In England the civilian schools contributed 124 aircraft and under—

<table>
<thead>
<tr>
<th>E.F.T.S.</th>
<th>Base</th>
<th>Contract</th>
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<th>Impression Serials</th>
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<tr>
<td>No. 1</td>
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<td>A113012/40</td>
<td>30.10.40</td>
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<tr>
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<td>Desford</td>
<td>A113013/40</td>
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<td>BB815-BB819</td>
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<td>A113016/40</td>
<td>12.10.40</td>
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<tr>
<td>No. 12</td>
<td>Prestwick</td>
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</tbody>
</table>

The Bristol fleet operated with No. 2 E.F.T.S. Filton (Staverton from July 1940) and No. 10 E.F.T.S. Yatesbury, but on September 5, 1940 all but G-ACBA and 'ETP were taken over under Contract A109869/40 and shipped to India to become VT-ANU-OP. Another 41 Tigers were impressed from various flying clubs during the first eight months of 1940 and about 30 were exported to India, South Africa and elsewhere by W. S. Shackleton Ltd.

In 1940 all Hatfield factory space was required for the Mosquito, and Tiger Moth production was transferred to the assembly line of Morris Motors Ltd. at Cowley, Oxford so that total output to August 15, 1945 exceeded 8,000 aircraft, including 3,065 built by de Havilland at Hatfield, 3,214 by Morris at Cowley while the overseas companies contributed the remainder. Large numbers of Australian-built Tiger Moths were shipped to
Douglas DWC/0-5 World Cruiser

Around the world in 175 days! On April 6, 1924, four Douglas World Cruisers took off from Seattle, Washington, on a round-the-world flight that covered 27,553 miles (44,341 km). These four planes - the Seattle, the Chicago, the Boston, and the New Orleans - were adapted from a torpedo bomber that the Douglas company had built for the US Navy. All the military equipment was removed, the controls and the fuel tanks were modified and a radio direction-finder was installed. Only two of the aircraft completed the flight, arriving home on September 28, 1924. The Seattle was lost in Alaska on April 30, and the Boston went down over the Atlantic on August 3.

The progenitor of the DWC was the Douglas DT-1, the first military aircraft the Douglas company built (1921). It was a single-seat biplane, driven by a 400 hp Liberty engine. The plane had an undercarriage and two pontoons for coming down on water. After test flights, the navy asked for some modifications, and only one of the three prototypes ordered was actually completed. This was the DT-1. The other two aircraft were finished as two-seaters and had a single radiator installed in front of the engine, instead of the double radiator that was installed on the fuselage of the prototype. The production model was called the DT-2, and a total of 132 were manufactured. Delivery to the US Navy began in 1922. The plane could carry a torpedo weighing 1,830 pounds (830 kg). The wings of the plane could be folded up for easier carriage aboard ship. Because the plane could come down on land or sea, it became very popular in a variety of models. With the new radial engines that replaced the liquid-cooled Liberty, the plane was more reliable and easier to service.

In 1923 the US Army became interested in the plane. The army was looking for a plane to compete with five other countries in an around-the-world flight. The prototype of this plane, the Douglas DWC, was prepared in July and August, 1923, and four more planes were delivered in March 1924. After the flight, the army ordered five more DWCs in a reconnaissance model. These planes, the Douglas 0-5, were substantially like the DWC, except that their fuel capacity was lower and they carried military equipment and armament. These planes were manufactured as seaplanes for overseas duty.
Vickers–Supermarine Walrus (1933)

The Walrus amphibian was developed as a private venture under the name of Seagull V, more as a compliment to the faithful service rendered by the Seagull amphibians of the nineteen-twenties than as a fact, for there was little resemblance between the two machines. The true ancestor of the Walrus was the Sea King/Sea Lion of 1919, in combination with Vickers influence stemming from the Viking of 1919/21. It is of interest to note that Walrus production was later taken over by Saunders-Roe, yet another company well-versed in the design of amphibian aircraft. The prototype Seagull V, serialised initially N-J and later K4797, was powered by a pusher 635 h.p. Bristol Pegasus IIM.2 engine, driving a four-bladed wooden propeller. Originally, the engine was mounted parallel to the hull fore-aft axis, but problems associated with torque appeared and were simply disposed of by slewing the engine mount and nacelle a few degrees to starboard. Designed for shipboard use and stressed for catapulting from warships, the machine had an extremely rugged structure, consisting of a duralumin hull and of wood-metal combination flight surfaces covered with fabric. The single-bay mainplane layout was designed to ease the rigging problems arising from catapult stresses, and to reduce drag to a minimum the undercarriage wheels retracted into wells in the lower mainplane. A combined water-rudder/tailskid was fitted at the rear of the hull. An enclosed cabin was provided for the pilot, and there were gunners' cockpits in the bows and aft of the mainplanes, the latter being arranged to fold rearwards to facilitate stowage of the machine in confined spaces.

The prototype made its first flight on 21 June, 1933, and shortly afterwards an order for twenty-four machines arrived from the Australian Government. In this country, evaluation of the Seagull V was carried out by a Catapult Flight of No. 702 Squadron, Fleet Air Arm, aboard H.M.S. Nelson, resulting in an initial production contract for twelve aircraft being placed to Specification 2/35 in May 1935. The first machine of its type to be catapulted from a warship with a full military load, the Seagull V was the subject of further trials, following which further contracts were placed to Specification 37/36 for an additional two hundred and four machines, to be used as the standard Fleet 'spotter' on all catapult-equipped ships of the Royal Navy. In August 1935 the official adoption of the name Walrus was announced, the Australian machines retaining the Seagull nomenclature. The Mk. I Walrus entered service with the Fleet Air Arm in the summer of 1936, serving aboard battleships and cruisers, and in January 1940 formed the major part of the equipment of No. 700 Squadron, which embodied all catapult units aboard warships. Other Squadrons equipped with the Walrus were 711, 712, 714, and later 701, carrying out artillery spotting, anti-submarine, convoy patrol and communications duties, the latter including, on occasion, service as the Admiral's Barge. After the completion of two hundred and eighty-seven machines by the parent Company, production was transferred to Saunders-Roe, who manufactured a further four hundred and fifty-three machines.
before production ceased in January 1944. The Saunders–Roe version had a wooden hull and a 775 h.p. Bristol Pegasus engine, being known as the Walrus II, which entered service with the Royal Air Force in the air-sea rescue role in 1941. In this capacity the machine did sterling work in rescue of ditched aircrews, many of which will never forget the welcome rumble of the trusty Pegasus and the whistling of flying wires which gave the rescue Walrus an affectionate but totally unprintable nickname. Apart from service with no fewer than eleven R.A.F. squadrons for rescue work, the Walrus flew under widely differing conditions of weather and climate with an unrivalled reputation for reliability, with cargo varying from bombs and dripping wet aircrew to beer for thirsty infantrymen. Even the end of the war did not deter this great aircraft, for in August 1946 a civil Mk. II, G–AHFN, won the Folkestone Trophy Race at Lympne in the hands of John Grierson, and three more of the same Mark were usefully employed on whale-spotting duties aboard the S.S. *Balaena* in the Antarctic during 1947.

**SPECIFICATION**

<table>
<thead>
<tr>
<th>Power Plant</th>
<th>Mk. I—One 635 h.p. Bristol Pegasus IIM.2</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Mk. II—One 775 h.p. Bristol Pegasus VI</td>
</tr>
<tr>
<td>Span:</td>
<td>45 feet 10 inches</td>
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<tr>
<td>Length:</td>
<td>37 feet 7 inches</td>
</tr>
<tr>
<td>Weight Loaded:</td>
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</tr>
<tr>
<td>Total Area:</td>
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<tr>
<td>Max. Speed:</td>
<td>135 m.p.h. Cruise—95 m.p.h.</td>
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</tbody>
</table>

**Blackburn Perth (1933)**

While the Iris Mk. V, S1593, may be regarded as the prototype of the first production Perth, originally known as the Iris VI and designed to Ministry Specification 20/32, made its first flight in 1933, officially serialled K3580. Retaining many general features of the earlier machine, the Perth was powered by three 825 h.p. Rolls-Royce Buzzard IIMS engines. The structure was all-metal, fabric-covered, and the hull was plated with a ‘three-ply’ sheeting of duralumin and aluminium. The hull itself was shallower and of slightly broader beam than the Iris, but aft of the mainplane the two hulls were identical. A refinement was a glazed cabin for the flight crew, while the self-contained arrangement of the Iris III, with sleeping, cooking, and repair facilities was retained. The upper mainplane gravity tanks were increased capacity, the two outboard tanks being repositioned closer to the vertical centre-line, and radiators of improved aerodynamic form attached to the rear of the engine nacelles.

Four Perths, serialled K3580, '81, '82, and K4011, replaced the Iris lines of No. 209 Squadron, Royal Air Force Mount Batten, in 1934, and the distinction of being the largest flying-boats used by the R.A.F. of the biplane era, as well as the most heavily armed, with the C.O.W. 3-pound gun in the bows firing 14-pound shells at a rate of 100 rounds per minute, three Lewis guns, and a bomb load of 2,000 pounds. Perth K4011 differed from the other three machines in that it only had the two outboard fuel tanks and at one period was fitted with four-bladed propellers of experimental design, which had the included angles between the blades at 80 degrees and 100 degrees instead of the usual right angle. The 209 Squadron
de Havilland D.H.88 Comet

One of the finest racing planes ever built, the de Havilland D.H.88 Comet was created for one of the most important races of the 1930s. However, not only did the Comet win the England–Australia race (in 70 hours and 54 minutes flying time) but also it continued to establish a series of outstanding records for distance and endurance. One of its record-making flights took it from Gravesend, England, to Sydney, Australia, then on to Blenheim, New Zealand, and back again to England. The Comet flew over 25,000 miles in ten days, twenty-one hours and twenty-two minutes.

The Comet was an elegant two-engine monoplane, all wood in construction and powered by two 230 hp, Gipsy Six R engines. Each engine powered a two-blade propeller. The undercarriage was retractable, manually controlled, and the two crew members were housed in a long cabin with adjacent seats.

It was a very fast aircraft and had a long range. The three Comets - registered G-ACSP (Mr and Mrs Mollison), G-ACSR (Bernard Rubin), and G-ACSS (A. O. Edwards) - set out for the race on October 20, 1934, from Mildenhall.

The race had several dramatic moments. Rubin’s Comet (piloted by Owen Cathcart-Jones and Ken Walker) had to make a forced landing in Persia, while the D.H.88 flown by Jim and Amy Mollison (painted black and gold and called ‘Black Magic’) and the red Comet, ‘Grosvenor House’ (flown by C. W. A. Scott and Tom Campbell-Black) managed to reach Baghdad without a stop. Subsequently the Mollisons had engine trouble and had to withdraw from the race. Rubin’s green Comet, at first reported missing, set out again and made up for some of the time lost. But it was the ‘Grosvenor House’ that finally won the race, after fierce competition from the Americans. The second Comet arrived in fourth place. This latter aircraft was sold to the French government in April 1935, and another was ordered from the manufacturer. The Mollison’s D.H.88 was sold to Portugal for a flight from Lisbon to Rio de Janeiro. The fifth and last Comet to come off the production line was named ‘Boomerang’. It was ordered by a private citizen but was declared missing during an attempt to set a record time on a flight to Capetown.

The last achievement of the ‘Grosvenor House’ dates from March 15, 1938. Piloted by Clouston and Ricketts, it flew to Australia and back in ten days, twenty-one hours, and twenty-two minutes. This aircraft has been saved, and is being refurbished to flying condition by the Shuttleworth Trust.

Aircraft: de Havilland D.H.88 Comet
Manufacturer: The de Havilland Aircraft Ltd.
Type: Competition
Year: 1934
Engine: Two de Havilland Gipsy Six R. 6-cylinder in-line, air-cooled. 230 hp each
Wingspan: 44 ft (13.41 m)
Length: 29 ft (8.83 m)
Height: 10 ft (3.05 m)
Weight: 5,660 lb (2,519 kg)
Cruising speed: 220 mph (350 km/h)
Maximum speed: 237 mph (381 km/h)
Ceiling: 19,000 ft (5,800 m)
Range: 2,900 mile (4,700 km)
Crew: 2
Appearing in the immediate prewar period, and designed as an amphibious commercial aircraft, the twin-engined Grumman G-21 did not have time to have a wide use, because production of it was soon monopolized by military requirements. At the end of the war, however, many examples were declared to be surplus and placed on the civil market, where they enjoyed instant success as executive and light transport aircraft, particularly in the islands of Central America and in the lakes of Canada. However, in the postwar period Grumman developed another model from the G-21 (which had been christened the 'Goose'). This was the G-73 Mallard, which was slightly larger, and went into service in 1947. These two models were accompanied by the demilitarized models of another aircraft derived from the Goose, the G-44 Widgeon. This smaller aircraft was developed in the postwar years for reconnaissance and transportation.