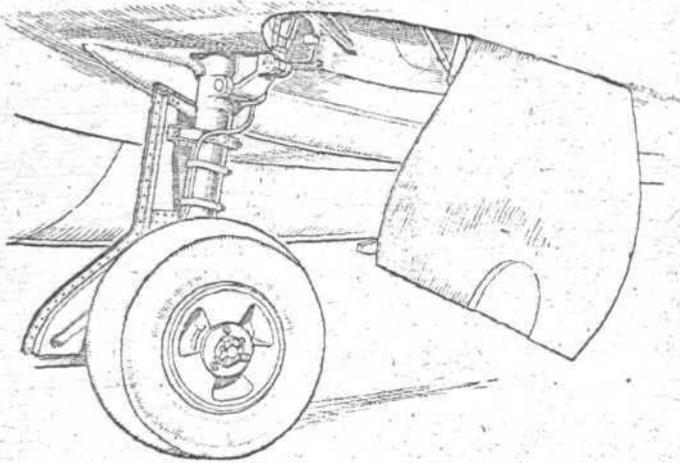


THE DE HAVILLAND VAMPIRE I (D.H.100)



Jet propulsion permits the use of a very short and light undercarriage, one of the main legs of which, with fairing and door, is shown.

of the gear, is carried out in a matter of $2\frac{1}{2}$ seconds.

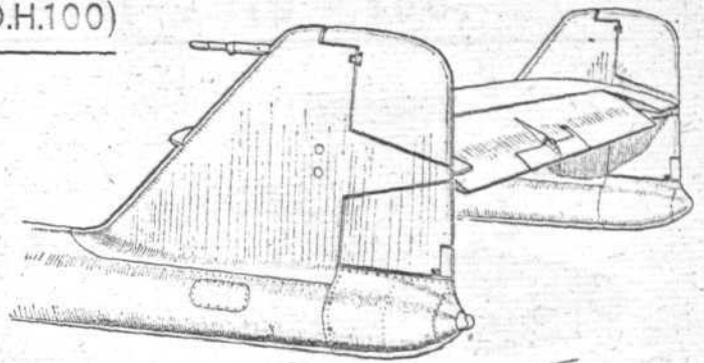
Unexpectedly enough, with such a high-speed type, there is nothing unusual about either the controls or the tab arrangements. A single-servo tab on the starboard side is used to balance the sealed-type round-nose ailerons; an adjustable servo tab is used for trimming and balancing the elevator; while, since there are no directional torque reaction effects, a small ground-adjustable non-servo tab only is fitted to each of the rudders. It may be remembered that, in the Vampire prototype, the rudders and fins were of a more recognisably "D.H." shape. It was found on initial tests that too much rudder surface had been provided, and these were consequently cut down to their present dimensions. The small rudder horns carry the necessary dynamic balances, while those for the elevator are exterior to the surface—something of an anachronism, however necessary in such a clean aircraft. All the controls are cable-operated through a system of pulleys.

Balanced Air Brakes

In four portions, the split flaps can be set at any angle up to 80 deg., while the air brakes, further outboard, can be applied at any speed up to 500 m.p.h. These brakes are interesting in that they are each formed by a single surface hinged centrally so that, while being operated, they are aerodynamically balanced. When retracted, the rear portion drops into a recess in the underside of the wing, leaving a flush surface. The deceleration provided by the brakes at high speed is of the order of $\frac{1}{2}$ G.

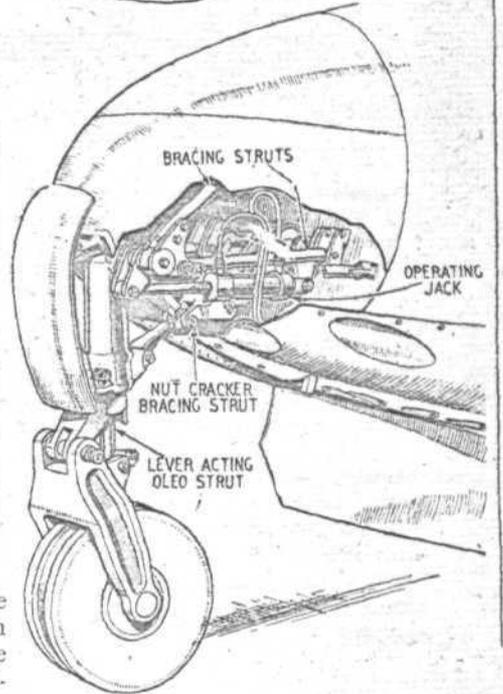
The power unit, placed as it is, and unencumbered by mounting side-members, can be easily reached for inspection purposes. It is held to its tubular steel mounting by only four bolts and a complete unit-change can be made, we are told, in a matter of forty minutes. The Goblin II jet unit has already been described in *Flight* (November 1st, 1945) and the only features which are of importance from the aircraft point of view are the fuel system and the cowlings.

Fuel, in the Mark I Vampire, is carried in three internal tanks—one in the nacelle between Nos. 1 and 2 bulkheads and one in each wing—and in two additional jettison tanks carried well inboard under the wing. These last can be either of the 50- or 100-gallon size and the fuel is transferred by means of pressure from the



Simple both in conception and construction is the tail unit (above). Notice the position of the pitot pressure head on the port fin.

The nose wheel of the Vampire (right) has no anti-shimmy damper, any tendencies to oscillate being damped out by the Marstrand tyre.



"reverse" side of the vacuum pump. These tanks are continuously pressurised and there

is no separate pressure control. The Mark II will have extra tankage provided by further wing tanks outboard of the undercarriage wells. All tanks feed into the collector-box below the fuselage tank, which also has a valved negative-G reservoir with a capacity of two gallons. Since all fuel is fed to the centre tank delivery there is need for only one "on-off" pressure cock in the cockpit, with an electric fuel booster pump in case of failure of the normal engine-driven pump. There is no oil tank as such since the small amount of lubricant required by the jet unit is carried in the latter's own sump.

The engine cowlings, in effect, taper the oval-section fuselage back to the jet orifice. All are, of course, removable, but for normal inspection there are two quickly detachable cowlings, one above and one below the unit, and four hinged doors, two above and two below the accessory section of the unit. Quick-action toggle fasteners are used both for the removable and the hinged cowlings, and the latter have stowed supporting struts.

Built into the tail pipe shroud is a heater muff, air being fed to it from an intake outside the main starboard air intake, heated in the muff and fed, as required, to the cockpit and guns. When necessary the muff can, of course, be by-passed to provide cold-air ventilation only. At the jet orifice a venturi has been arranged to cause a depression and so pass air over the unit itself.

On and after the manufacture of the fiftieth aircraft at the English Electric Works, Preston, the Vampire will be produced in pressurised-cabin form, a

