Gyrodyne.

Jet Gyrodyne.

FAMILY OF FAIREYS . . .

ROTARY WINGS

Gyrodyne Fairey's entry into the rotary-wing field was marked by the first flight of the Gyrodyne on December 7th, 1947. This was a high performance 4/5-seater, designed along novel lines, and on June 28th, 1948, flown by S/L. Basil Arkell, it established a helicopter speed record of 124.3 m.p.h. Powered with an Alvis Leonides engine, the Gyrodyne had no anti-torque rotor, but instead a two-blade airscrew was mounted at the end of the starboard stub-wing. This same screw enabled the machine to be flown as an Autogiro and, as the main blades were always within the auto-rotative pitch range, engine failure would not entail rapid action on the pilot's part. The first prototype was destroyed in an accident and the second was converted to the Jet Gyrodyne (see below). Rotor diameter of the Gyrodyne was 52ft, empty weight 3,450 lb, gross weight 4,800 lb.

Jet Gyrodyne This conversion of the second Gyrodyne has been built to investigate problems associated with tip-jet propulsion. The original three-blade rotor has given place to a large two-blade structure, and the Leonides engine drives compressors which supply air through the hollow metal blades to Fairey pressure-jets at the tips. For cruising, the greater part of the power is transferred to two pusher airscrews at the tips of the stub wings.

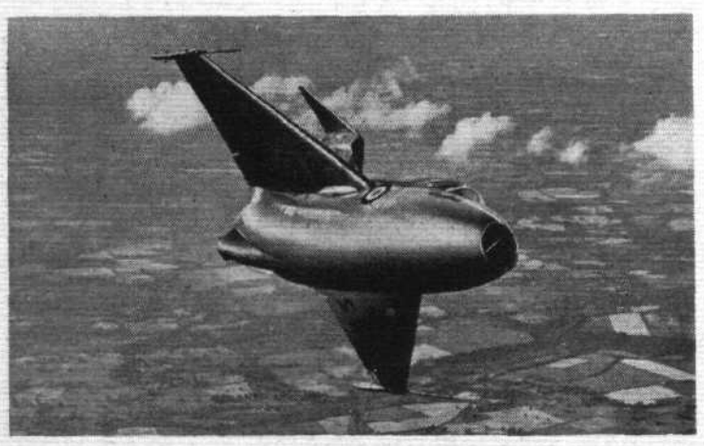
Rotodyne The Rotodyne is expected to offer "a direct transportation challenge to the Douglas Dakota." Two prototypes are under construction and each will be powered by two Napier Elands. The single rotor will be of 90ft diameter and have four blades with Fairey pressure-jet units. The fixed wing will be of 47ft span, economical speed at least 150 m.p.h., and still-air range about 250 nautical miles. It should be possible to maintain height at maximum weight with one engine stopped.

Model of Rotodyne.

DELTAS FOR RESEARCH

F.D.1 This tiny delta, first flown at Boscombe Down on March 12th, 1951, by G/C. R. Gordon Slade, was built to investigate the possibilities of V.T.O. fighters, though the F.D.1 itself has a retractable-wheel undercarriage. Powered with a single Rolls-Royce Derwent engine, it has provision also for rocket power, though this has never been fitted. A tailplane is carried on top of the large fin; elevons and air brakes are mounted on the wing; there is a drogue parachute to reduce landing speed; and provision for anti-spin parachutes at the wing-tips. An extremely high rate of roll is attained, due in part to the span of only 19ft 6½in. Length is 26ft. 3 in. On page 119 is a picture of the Fairey V.T.O. model, in all essentials a replica of the F.D.1. Power is supplied by two chambers of a Fairey Beta I liquid-fuel rocket unit.

F.D.2 Another research delta, though differing sharply in layout from the F.D.1, this machine has no tailplane, has a fuselage of extremely fine aerodynamic form, and is powered with a Rolls-Royce Avon turbojet with provision for reheat. Remarkable are the hinged nose (by means of which the pilot is assured of a good forward view for take-off, landing and taxying) and the retraction of the wheels into the extremely thin wing. The F.D.2 is capable of high supersonic speeds and at the moment is almost ready to fly again after an emergency landing by its pilot, Mr. Peter Twiss, at Boscombe Down in October last year.



Above, F.D.1.

Below, F.D.2.