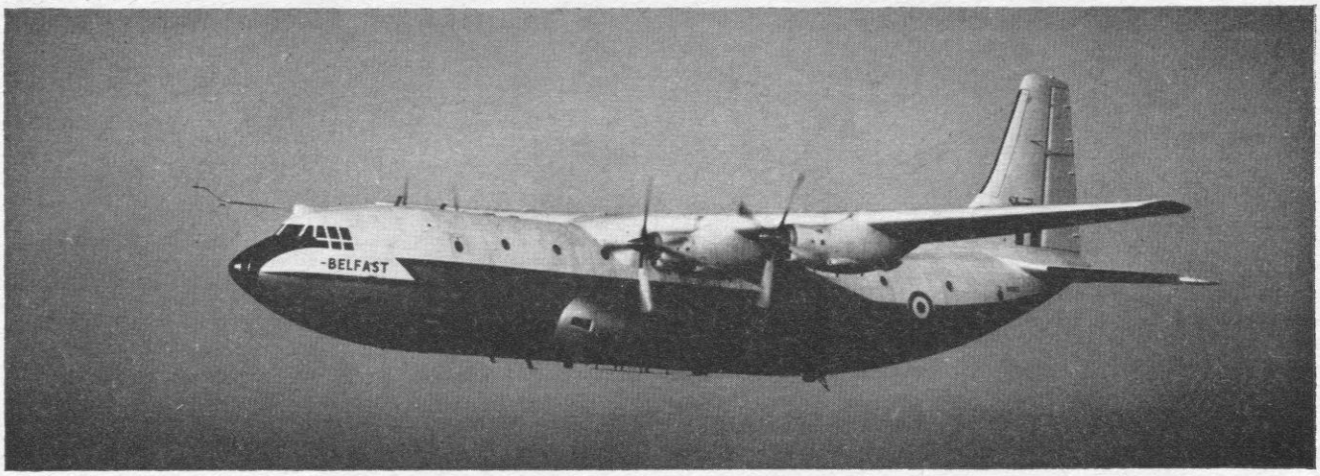


The prototype Belfast (XR362) during a recent test flight

Transports by Short's

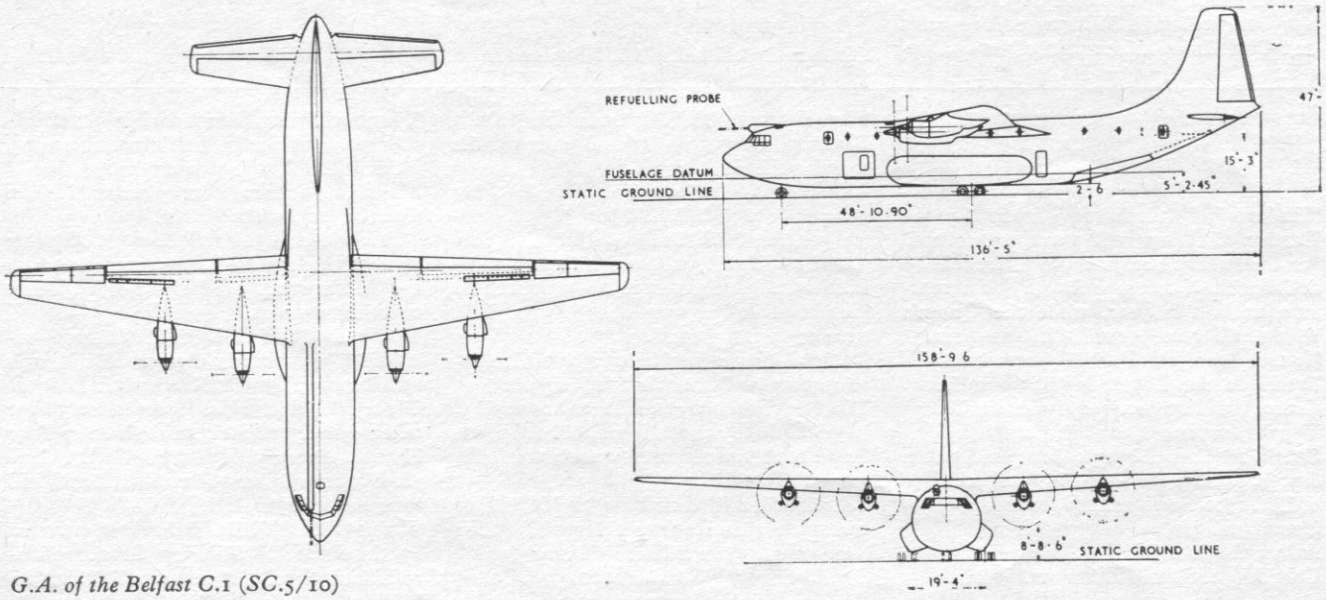
SHORT BROTHERS AND HARLAND'S transport types span almost the two extremities in this field: from the mighty Belfast able to carry loads of nearly 40 tons in its immense 11,000 cu. ft. hold, to the 2-ton-capacity Turbo-Skyvan, a promising attempt to produce a real truck of the air. In between, Short's have a project aimed directly at the "DC-3 replacement" market, the twin-jet PD.65, the existence of which was disclosed during a Press visit to the Belfast works last month.

Details of the Belfast—the R.A.F.'s first long-range strategic freighter — have appeared in previous issues (November 1963, February 1964), but it is worth emphasising here the importance of this aircraft in Britain's defence plans as overseas bases become fewer and farther apart. There are several types of transport in existence with the necessary range, but few that can carry a worthwhile payload over long stages; the Belfast C.1's capabilities are shown in the graph opposite, the company designation for the aircraft being SC.5/10.

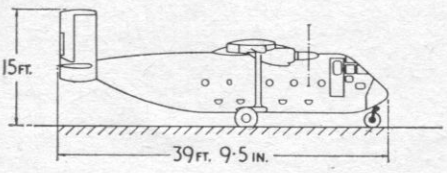
There are fewer transports still that combine great payload and range with the ability to carry large-sized and awkward-shaped objects, and load and unload them easily. The Belfast's hold, including the rear-loading ramp, is more than 80 ft. long with a maximum height of 13 ft. 4 in. and maximum width of 16 ft.; for 63 ft. of the length there is a clear space nowhere smaller than 12 ft. high by 12 ft. wide. The hold has, in fact, been designed to take virtually any type of Army vehicle, including tanks and, as one load, three six-wheeled armoured cars. Alternatively the Belfast can carry, partly dismantled, four Whirlwind or three Wessex helicopters. It can accommodate 140 fully armed troops on a single deck, and by putting in a second deck this figure can be raised to 200.

The R.A.F. will be getting good value in its purchase of ten Belfasts. Costs have been kept down by adhering to simple stringer and stressed-skin construction wherever possible and by using much of the Britannia's wing and tail unit; it will be recalled that 40 per cent of the Britannias were made at Short's. Furthermore, Short's have provided "built-in" development potential. The Belfast's engine mountings have been deliberately spaced rather far apart so that, if greater range is required, the latest Tynes with larger-diameter propellers can be installed, improving performance and allowing more fuel to be carried. These changes are relatively modest and can be retrospectively incorporated in the SC.5/10, turning it into the SC.5/13 whose payload/range characteristics are shown in the same graph.

Development flying of the first Belfast has been proceeding very satisfactorily—the only "mod." that seems likely is a slight increase in rudder area—and the



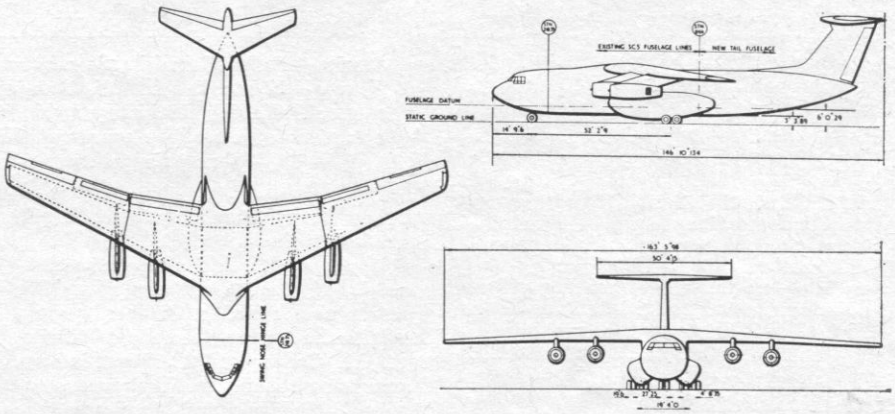
G.A. of the Belfast C.1 (SC.5/10)



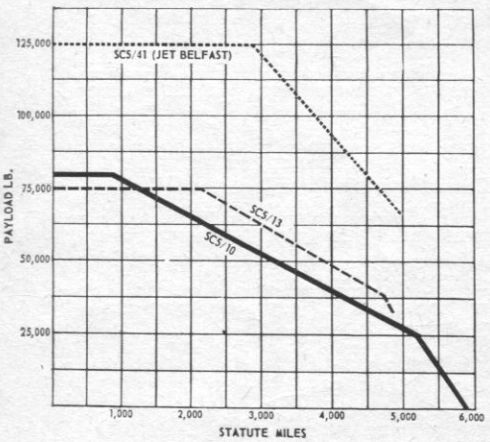
The production Turbo-Skyvan (drawing) will have a more pointed nose and lower tail than the prototype (RIGHT)

second aircraft is on the point of making its first flight. The fully triplexed automatic landing system will be installed for testing in the third machine, and it is expected that there will be three Belfasts at this year's Farnborough. An overseas civil customer has expressed interest in the Belfast, which should receive its C. of A. in mid-1965.

Inevitably the R.A.F. will need even more range, payload and speed; and Short's answer to this is the SC.5/41 Jet Belfast, powered by four Rolls-Royce RB.178 turbo-fan engines and designed to carry loads of up to 125,000 lb. at a cruising speed of over 500 m.p.h.; variation of payload with range is shown in the graph. Economies in producing this machine would be achieved by using the centre portion of the Belfast's fuselage, plus other components, and the aerodynamic shape of the Lockheed C-141 StarLifter's wing. B.O.A.C. are showing interest in the



Based on a StarLifter wing, the Jet Belfast has a swing-nose for loading



Payload/range of Belfast C.1 (SC.5/10), its SC.5/13 variant, and Jet Belfast

Jet Belfast—as an all-cargo vehicle for the rich North Atlantic route—and with the civil customer's preference in mind, a swing-nose for loading has been adopted; supply-dropping is not considered necessary in future military strategic transports.

Government backing (see April issue) for the Astazou-powered Turbo-Skyvan —which was begun as a private venture— will help to speed its development and the first production machine will fly in mid-1965. This will have a more pointed nose, improving aerodynamics, and tailplane lowered a few inches to save a bit of fuselage structure and weight (see drawing). Flight deck layout will also be revised.

In contrast to the angular Skyvan—itself in many respects an excellent DC-3 replacement—the projected PD.65 is a real beauty. Laid out for twenty-four passengers (or a maximum of thirty) in three-abreast rearward-facing seats, the PD.65 has been designed to carry a 7,000-lb. payload at 400 m.p.h. over stages of 500-600 nautical miles, with a maximum of 1,200 n. miles. Powerplant would consist of two rear-mounted 5,220-lb. s.t. Lycoming PLF1B-2 turbo-fans, or possibly new engines projected by Rolls-Royce and Bristol Siddeley. Jet engines have been selected because, apart from improving passenger comfort, it is felt that they will "sell seats" better than turboprops will.

The size of the PD.65, together with its payload and field performance, has been intentionally kept close to that of the DC-3. Weight empty is estimated at 19,000 lb. and all-up weight at 30,000 lb. (32,000 lb. maximum). With extensive Fowler flaps, and no other "frills", the PD.65 is designed to operate from 3,500-ft. strips; and its swept wing (20 deg. at quarter chord) allows higher cruising speeds to be achieved efficiently if more powerful engines of the right size become available later. Dimensions of the aircraft are 73 ft. 3 in. span, 68 ft. 8 in. length, and 19 ft. 8 in. height. Cabin interior height is 6 ft. and there is provision for a movable bulkhead between the passenger compartment and a freight hold aft to give scope for various passenger/freight combinations.

The price of the PD.65, at today's values, is suggested as being about £300,000. But the aircraft is a private venture and Short's, being 70 per cent Government-owned and with little capital of their own, will only be able to go ahead with the PD.65's development if they get Government backing; Short's estimate that they could do it for under £5 million.

Model of the PD.65, Short's 'DC-3 replacement'