

The future of the H.S.681

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IN THE CARPENTERS' shop at Avro Whitworth, Coventry, is a mock-up of an aircraft. The last time I saw it was a few months ago. Since that time, it has changed very little in external appearance. Beautifully fashioned, expertly carpentered, imaginatively conceived, it remains a dummy, incapable of being translated into a viable concept until the Government gives the go-ahead. It is the mock-up of the Hawker Siddeley 681, the STOL tactical transport which I believe to be one of the great aircraft of the future.

Will it ever be airborne? That remains a political decision, and like many other projects today it is a decision which is being conditioned by a number of powerful factors. The most important to the aircraft industry is whether the major projects of the future should be based on original British designs or whether they should be adaptations manufactured under licence primarily from the United States. There can be no question that one of the chief hindrances to the development of the H.S.681 has been the pressure by United States interests, supported by certain British consultants, for the Lockheed C-141 StarLifter to be manufactured under licence in Britain as a substitute for the H.S.681. It is not my purpose to criticise American aircraft, for which, generally speaking, I have a high regard. But I believe that the H.S.681, with its advanced design which makes the machine capable of operating from short rough strips, and its long range capability enabling it to fly in and out of forward areas with a heavy payload without refuelling, is the ideal aircraft for the R.A.F. and the Army tomorrow. With a hold designed to take the majority of air transport equipment intended for use by the Army for the next ten to fifteen years, it can also be used for paratrooping, supply dropping, casualty evacuation and, generally speaking, all the tasks now carried out by the Beverley and Hastings aircraft which it is designed to replace. In its conception, the R.A.F. and the Army have co-operated closely. In its technical development, it has utilised a great deal of the experience gained by the Avro Whitworth Division of Hawker Siddeley in the design of the Argosy C.1.

Yet the history of the H.S.681 is on the political side one of hesitation and indecision. If we consider the most recent case where rapid Army transport was required—the case of Cyprus—we can consider ourselves fortunate that we were able to do the job with the composite *ad hoc* force which we assembled. But our world-wide



commitments require today military transport aircraft which are geared to the nature of our operations. We need transport aircraft capable of operating in difficult country where adequate airfields may not be available. We need aircraft with a long range to compensate for our lack of bases. We need, in short, modern aircraft for a modern Army.

Let us look at the long-drawn-out history of the Beverley and Hastings replacement. In 1960 the Government invited the aircraft industry to submit proposals for such an aircraft. Known as the O.R.351, the requirement was for an extremely short take-off and landing design, to be capable of further development for VTOL. The detailed brochures were all in by May 1961. After much thought had been given in the Services and the Ministry of Aviation to the question of how advanced the design should be, bearing in mind the high cost of developing new techniques and equipment, Hawker Siddeley Aviation were eventually given the contract, in March 1963, to engage in a full design study.

Basically, the 681 transport proposal is for a high-wing aircraft with moderate sweepback, and with a high tailplane surmounting an upswept fuselage equipped with generous loading doors and a loading ramp. The aircraft would be powered by four jet engines mounted in pods below the wing. The pilot would be able to alter the direction of the thrust of these engines to give the total thrust available to the aircraft a significant vertical component. It was also decided to use boundary layer control to increase the aircraft's lift coefficient during the take-off and landing phases. The 681's boundary layer control calls for blown leading edges, blown flaps and blown ailerons.

This decision solves what has hitherto been an intractable problem of B.L.C.: during approach and landing, an aircraft's engines are normally required to be throttled down to low power, and it is therefore not easy to achieve sufficient mass flow of air to realise the full potential gain of B.L.C. In an aircraft such as the 681, on the other hand, the engines would be operating at very high power during the approach because much of the aircraft's lift is to be derived from the vertical com-

ponent of the downward-directed thrust. At this high power, there is an ample supply of air for B.L.C. so that the designer is able to get the benefit of both lift - producing expedients — downward - directed thrust and boundary layer control.

Beyond that, of course, there is the intention that the second phase of the aircraft's development would be a VTOL capability, achieved by the use of batteries of pure lift engines, to be mounted in two detachable under-wing pods.

From a tactical point of view, the great advantage of the 681 lies in the fact that it can combine the usefulness of a very long-range transport while operating from a home base and a conventional take-off with the advantages of a close-support aircraft operating from difficult forward areas.

The dilemma of the Government today is that if it makes prompt decisions about projects like the H.S.681, TSR-2 and P.1154, they may add up to a policy which will contradict the findings of the Aviation Review Committee, which it has appointed to produce a policy which can only be effective from about 1966. On the other hand, unless the Government makes pragmatic decisions now, the result may well be the disintegration of the aircraft industry, with the further result that no policy advocated by the Aviation Review Committee will be able to revive it.

In the long run, Members of Parliament, with the facts available to them, must make their recommendations accordingly. I believe myself that the H.S.681 is an admirable development both for the Services and the aircraft industry. It cannot fail, therefore, to fit into any reasonable policy which may result from the Review. The chief danger which the Government faces today is that, as a result of the hesitations brought about by this dilemma, we may find ourselves without either a policy or aircraft, and reduced ultimately to buying, and not even making, U.S. aircraft. That would be a sad day for the British aircraft industry, and an expensive day for the country. I hope that by giving a prompt decision to proceed with the H.S.681, the Government will show that it is its intention to make British and to fly British.