

## BRITAIN'S TEST PILOTS

for some reason he did not go, so T.-H. also stayed, and eventually brought the aircraft under control again. After landing it was found that many rivets had been loosened or torn out, the fairing between the body and wings broken, and all the ballast weights were loose. Even the safety cables underneath the bombs were broken. Despite its shaking, this Whitley was finally repaired and completed its trials at Martlesham. Turner-Hughes did the diving tests on this actual aircraft.

His closest go, however, was when testing a Lancaster II. While diving across an airfield a flock of plovers got up and one came right through the Perspex cockpit hood, hitting him in the face, breaking his nose and knocking him out. The Lanc. was then doing something in the region of 300 m.p.h., and he had no second pilot with him. The next thing Charles remembers was the flight engineer wiping the blood from his face with some very oily rags. Meanwhile the aircraft had flown itself for three-quarters of the airfield circuit and by then he was just able to see sufficiently through a haze of blood and oil to bring it in. After landing he promptly passed out again, and remembered no more until he was being stitched up in the surgery.

Now that he has left A. W.s, he intends only to do free lance test flying in addition to starting his own agriculture machinery supply and repair business in the Midlands. He has put in 20 years' good work, and his total "break-ages" amount to one airscrew and one Siskin. J.Y.



Turner-Hughes in the cockpit of the A.W. flying wing glider (52-G.) on which he made the first flights.

## JET PROPULSION FOR CIVIL AIRCRAFT

### THE DISCUSSION

(Continued from page 474)

OFFERING thanks for the paper the Chairman, Air Comdre. Whittle, said that Maj. Halford had put into words what he had himself been thinking but not daring to say. He felt that there was some psychological resistance to high-speed flight but that we should be used to it in ten years' time. He was not quite so certain that we should want transport aircraft so large as Maj. Halford had suggested. He invited Sir Roy Fedden to open the discussion which he did with the question whether we could afford pressure cabins on what he called the motorbus type of air transport—and if not could we hope for pure jets that could be efficient at lower speeds such as 400 m.p.h.? Maj. Halford, however, felt that if the speed must be dropped by 150-200 m.p.h. in order to avoid the expense of pressure cabins then the turbine-propeller unit would be more economical.

Air Marshal Sir James M. Robb, A.O.C. in C., Fighter Command, asked for his comments, said that the Royal Air Force already had the Vampire (Goblin II) and the Meteor in service and the transition to jets had been an easy one—in fact these aircraft were more pleasant and quieter than anything they had had before. Now the call is for more thrust for better climb, for they really need the same speed vertically as they have horizontally.

Maj. Bulman's comment was that on Maj. Halford's reputation as a prophet we could place faith in his prediction. In the first great war he had prophesied the aluminium monobloc and it had come to pass; he had prophesied motor car serviceability from the aero engine and had himself achieved it in the Gipsy; against expert opinion he had forecast the double-crankshaft, and it had worked; he had boldly ventured in the single-sided impeller, and it was a success. His jet transport would surely be realized.

Mr. Geoffrey Smith's opinion was that a rather smaller and slower aircraft would need to be tried out before the ambitious type envisaged in the paper. Compressibility and other problems needed solution before large 615 m.p.h. civil types were possible. Evolution was a gradual process; he admired the lecturer's enterprise. He particularly sought an opinion about the prospects of the really small turbine for light aircraft, and Maj. Halford replied that he would rather not prophesy concerning this more difficult size until further experience had been gained.

Mr. R. G. Worcester asked for a yardstick for comparing powers, to settle, for instance, the problem whether the Nene, Python or Ghost is the world's most powerful turbine today, but Maj. Halford could offer no simple measure and explained

that the overall picture of the aircraft, particularly the cost of its air ducting in regard to space, weight, and efficiency, must be taken into account.

Several speakers referred to the practical difficulties of engineering a satisfactory pressure cabin which, although not to be compared with the aerodynamic problems, might well retard the whole development. Sir James Robb asked what horsepower would be needed for the air pressurizing and conditioning of a fifty-passenger cabin and Mr. E. S. Moulton (Chief Engineer of the D.H. Engine Company) said that preliminary estimates suggested between 200 and 300 horsepower.

Concluding the discussion Air Comdre. Whittle considered that Maj. Halford had found in the meeting a greater measure of agreement with his forecast than either he or Air Comdre. Whittle had expected. This view of the future had needed stating.

The Air Comdre. gave his own opinion about a modern yardstick for powers. Because airscrew efficiencies might be as low as 53 per cent at 600 m.p.h. it was fictitious to speak of shaft horsepower. He suggested a gas horsepower equivalent to the kinetic energy in the jet. As a final comment he thought that Maj. Halford could well have assumed 94 per cent for turbine efficiency ten years hence as 90 per cent has been achieved already.

Sir Geoffrey de Havilland proposed thanks to the Chairman whom he said everyone knew was the father of the jet.

### FORTHCOMING EVENTS

- May 12th.—Society of Model Aeronautical Engineers Extraordinary General Meeting at 11 a.m., Waldorf Hotel, Aldwych, London.
- May 18th.—College of Automobiles and Aeronautical Engineering, Chelsea; Old Students' reunion dinner, Gt. Eastern Hotel.
- May 24th.—Cambridge U.A.S. 21st Anniversary dinner, University Arms Hotel.
- May 30th.—R.Ae.S. The 34th Wilbur Wright Lecture, by Mr. E. L. Relf (I.C.E. Gt., George St.).
- June 1st.—R.Ae.S. Reading and Dist Branch: Aeronautical Garden Party, Woodley.
- June 15th.—Old Cranwellian Assoc. reunion, R.A.F. College.
- June 15th.—No 150 Sqn R.A.F. Reunion dinner, Dorchester Hotel, 6.30 p.m.
- June 22nd.—Air Pageant, Southampton Airport.
- June 30th.—Northern Heights M.F.C. Gala day, Langley Airfield, Nr. Slough.