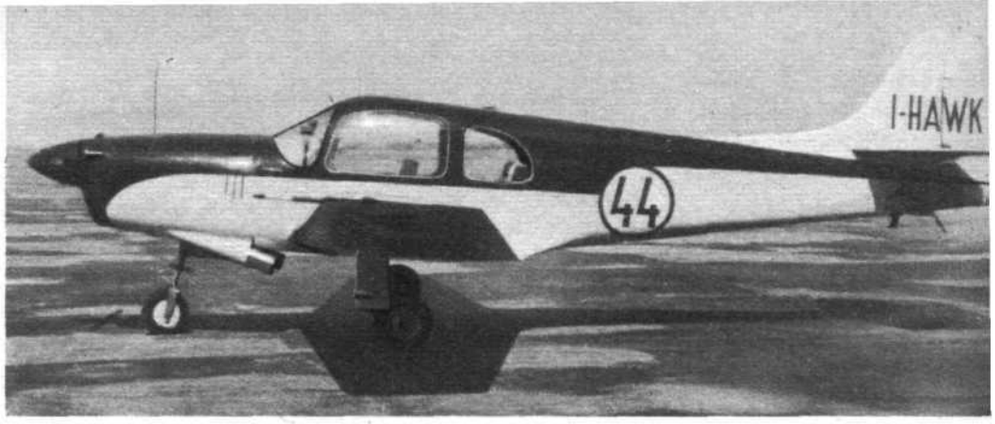

The Pasotti Sparviero F.9

Handling a New Italian Touring Aircraft

By VICO ROSASPINA

THE Sparviero F.9 is a single-engined, four-seat touring aircraft built by the Pasotti company of Brescia to a design of Ing. Stelio Frati. Its empty weight is 2,180 lb and the useful load is 1,165 lb. An eight-cylinder German Hirth engine of less than eight litres capacity and 240 h.p. is fitted in the prototype. The airframe is similar in most respects to that of the twin-engined Pasotti Airone F.6, from which it is derived and whose general dimensions it retains. The F.9 carries full blind-flying and night-flying equipment and has a V.H.F. radio, A.D.F. and I.L.S. The compass is of the electrically remote-indicating type.

Nosewheel undercarriage and flaps are hydraulically operated and the propeller is an electrically controlled constant-speed unit. Though it is still under test, I know the Sparviero very well because I have carried out all the flight tests and am so far the only pilot to have flown it. I have now completed the manufacturer's trials and am about to begin the official tests for a certificate of airworthiness.

If the Sparviero is put into production, the Hirth engine will be replaced by a Lycoming of 260 h.p., but there are no plans for production at the moment, since Pasotti are fully occupied with construction of the series of Airone F.6. The company, which has more than a hundred years' experience of woodworking, previously built Jodels under licence, and a number of Rondone F.4 two-seaters and F.7 three-seaters on behalf of Ambrosini.

The Sparviero cabin is comfortable and large. Visibility on the ground is adequate though a little obscured directly in front by the engine. With a Lycoming, visibility in this direction would be greatly improved. The parking brake is very good, and will easily hold the aircraft with the engine running at full power. Complete shoulder harness is provided and the pilots' seats are designed to accommodate parachutes. The entrance door, which can be jettisoned in emergency, has a simple and effective locking device. Control column, rudder pedals and brakes are well positioned, and movement is unobstructed. The instruments are logically arranged, and all can be easily read by the pilot. Even when securely strapped in he can reach all controls, switches and instruments without effort.

During taxying the Sparviero is docile and easy to control and, at speeds below 30 m.p.h., the brakes must be used for steering. Above this speed the rudder becomes effective and is sufficient to correct the swing induced by the engine at full power. All take-off checks are listed on a card stowed beside the first pilot's seat.

At full load, it is best to take-off with 15 to 20 deg of flap, and trim set neutral. The take-off run is about 330 yd and, after raising the nosewheel at 50 m.p.h., the machine unsticks at 80 m.p.h. Immediately after take-off, control in all three axes is effective, the visibility is good, and undercarriage and flaps can be retracted without undue trim changes. The best climbing speed, 120 m.p.h., is reached some 30 sec after unsticking.

Elevator trimming is very effective and the out-of-trim forces arising in any configuration can be easily cancelled out. For example, with the c.g. fully forward, flap and undercarriage down (both cause a slight nose-down trim change), and throttle closed, three-quarters of the elevator trim range is sufficient to set up a hands-off glide at less than 100 m.p.h. In this condition, the c.g. is at about 18 per cent. Elevator trim is, of course, also ample to cancel out the maximum nose-up tendency even during a dive at maximum permissible speed with a fully aft centre of gravity.

The elevator itself is very effective and the Sparviero can be precisely controlled in all flight conditions from take-off to landing. With the c.g. fully forward and flaps and undercarriage down, touch-down can be precisely controlled and, if desired, the nosewheel can be held off the ground for a good proportion of the landing run. The ailerons, on the other hand, are fairly heavy; but this characteristic was deliberately produced to the requirements of the customer, who is an ex-fighter pilot. Rudder control is not outstanding, but it is perfectly adequate to meet present international safety requirements.

Stability in all three axes is excellent. Statically there is a regular and normal pattern of stick force variations with variations in speed, which can also be ascertained by using the elevator trim. Dynamically, the damping out of longitudinal oscillations, even with a fully aft c.g., is rapid.

In any configuration, the stall is heralded by strong and increasing vibrations in airframe and controls some time before the stall is actually reached. An unaccelerated stall is marked by a nose-down pitch of about 60 deg, together with a 20 to 30 deg dip of the left wing. Immediately after pitching down, the aircraft recovers from the stall. The Sparviero is unwilling to spin. When forced to, it starts with a mild wing drop, the nose goes sharply down, the aircraft rolls slightly beyond the vertical and tries to recover after the first half-turn. If still held in the spin, it raises its nose in a very fast turn which is neither spin nor auto-rotation.

I would not like to express a final opinion upon the aircraft's characteristics before the official tests are complete. Nevertheless, it is safe to say that the maximum straight and level speed will be well over 185 m.p.h. In a dive, I have reached 236 m.p.h. without trouble; and, at the best climbing speed of 120 m.p.h., the rate of climb is over 1,200ft/min. Stalling speed is 65 to 70 m.p.h. and the aircraft climbs at full load to 15,000ft in under 40 min. The range at full load is about 1,000 km. (620 miles).

The Sparviero is strong and safe; it is easy to fly and can operate from very small airfields. Its ceiling and range performance and comprehensive instrumentation suit it for any kind of Continental touring flight, even in poor weather, though icing conditions should be avoided because neither propeller nor wing are de-iced. The Sparviero's speed should exceed that of any other aircraft in its class with the same power and, considering its excellent safety characteristics, it can be regarded as a most interesting aircraft.

Principal dimensions and load data are as follows: span, 32.8ft; length, 27.2ft; wing area, 158.2 sq ft; aspect ratio, 6.8:1; empty weight, 2,180 lb; useful load, 1,165 lb; total weight, 3,345 lb; wing loading, 20.9 lb/sq ft; power loading, 13.8 lb/hr.

FORTHCOMING EVENTS

Jan. 5. British Interplanetary Society: "Astronomy and Earth Satellites," by M. W. Ovenden, M.A., B.Sc., Ph.D., F.R.A.S.

Jan. 8. R.Ae.S.: Section Lecture: "Significance of Flow Separation in Three Dimensions," by E. C. Maskell, A.F.R.Ae.S.

Jan. 8-9. Institution of Production Engineers: Aircraft Production Conference, University of Southampton.

Jan. 10. R.Ae.S.: Presidential Address by E. T. Jones, C.B., O.B.E., F.R.Ae.S.

Jan. 11. Helicopter Association: "Analogue Computer Development with Reference to Helicopter Applications," by B. H. Venning, B.Sc. (Eng.), A.C.G.I., A.M.I.E.E.

Jan. 15. R.Ae.S.: Graduates and Students Section: N. E. Rowe Medal Competition: "Possible Flight Paths for Helicopters," by P. F. Sutherby. Fins, J. Wolkovitch.

Jan. 24. R.Ae.S.: Main Lecture: "Aeronautical Research in Holland," by Prof. Dr. Ir. H. J. van der Maas.

Jan. 29. R.Ae.S.: Section Lecture: "Design for Production," by E. D. Keen.

Feb. 2. British Interplanetary Society: "Accelerations in Flight," by W/C. F. Latham.

Feb. 7. R.Ae.S.: Main Lecture, at Halton: "Synthetic Training Methods in Aviation," by W. Makinson.

R.Ae.S. Branch Fixtures (to Jan. 17):—

Jan. 8, *Boscombe Down*, "Defence Policy," by Marshal of the Royal Air Force Sir John C. Slessor. *Belfast*, "Aircraft Inspection," by I. R. Smith. Jan. 9, *Luton*, Debate; *Weybridge*, Brains Trust; *Chester*, "Artificial Satellites and Space Travel," by C. A. Cross; *Gloucester*, "Design of the S.K.1 Light Aircraft," by H. Kendall. Jan. 10, *Bristol*, "Design Problems of Modern Wind Tunnels"; *Isle of Wight*, "Two Thousand Years of Aerodynamic Research," by J. L. Pritchard; *Merthyr Tydfil*, "Elements of the Aero Gas Turbine," by S. L. Bragg. Jan. 14, *Henlow*, "Aircraft Control," by Prof. G. A. Whitfield; *Southampton*, A.G.M. and Film Show. Jan. 16, *Christchurch*, "Problems and Prospects in Civil Air Transport," by P. G. Masefield; *Leicester*, "Agricultural Aviation," by J. E. Harper. Jan. 17, *Bristol*, "Wind Tunnel Instrumentation," by J. R. Anderson.