FRANCE'S LIGHT-AIRCRAFT INDUSTRY

Caught by Flight's camera at Tarbes, Socata's new TB.10 shows its new wing profile, pitot boom angled for low-speed tests, potentially retractable undercarriage and a cabin structure evidently designed for easy model changes. Bottom left, Rallye wing just spot-welded

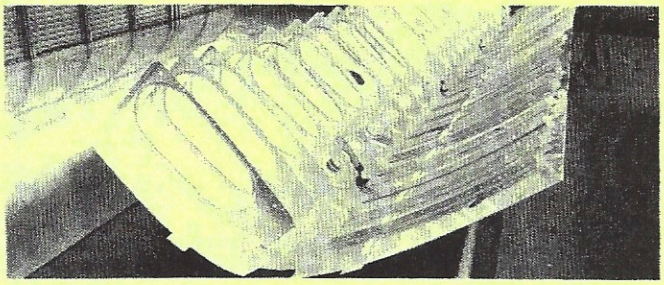
mighty wind-tunnel and aerodynamic research resources available in the large nationalised corporation.

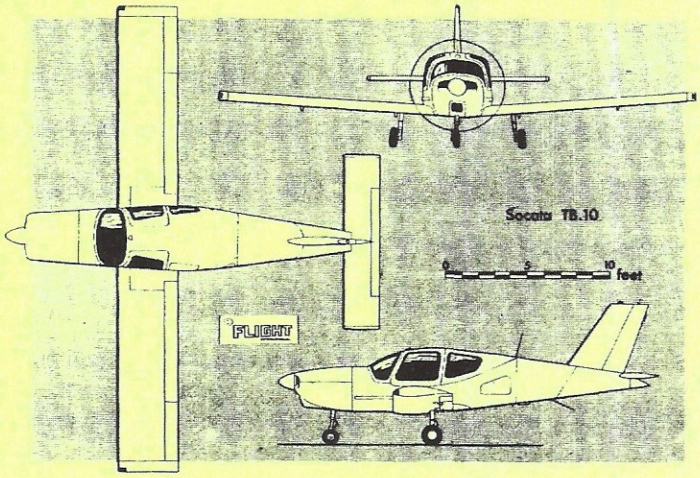
What new answers does the TB.10 offer? Socata chief of new products Philippe Stuckelberger tells *Flight* that a new aerofoil has been specially developed for the TB.10 to preserve as far as possible the Rallye's utterly docile handling while offering something altogether more nifty for touring purposes. There is also structural provision for an inward-retracting undercarriage. The TB.10 does not look nearly so ugly in real life as it did in its first publicity photographs.

The wing is the thing, and Aérospatiale's wind-tunnel resources, applied by its most experienced aerodynamicists, have resulted in a computer-developed, "supercritical" section. Designated RA163CW3, it is applied to a relatively small wing area of constant chord and reasonably high aspect ratio. CL_{MAX} is reckoned to be 1·8 clean and 2·3 with flaps extended, giving stalling speeds of 90 to 95km/hr (56 to 59 m.p.h.) clean at a weight of 1,000kg (2,200lb) and 82km/hr (51 m.p.h.) with flaps down. At the stall the airflow separates progressively outwards from the wing-root, preserving some aileron effectiveness.

The TB.10 departs from Rallye tradition in having a slab tailplane, and Socata also intends to clear the aircraft for three-turn spins in the normal or utility airworthiness categories. No major structural changes will be needed when retractable gear is introduced. In order to minimise development cost the TB.10 has been designed by a four-man team and the prototype constructed by a similar number.

The accompanying pictures were obtained when the TB.10 prototype unexpectedly taxied past *Flight*'s Seneca at Tarbes. But Socata will not even show the aircraft at the forthcoming Paris Show, so keen is the company not to play its hand before it is fully ready. It will be fascinating to see how well the technology of a nationalised corporation meets such a design challenge.





Wassmer

A FEW miles up the main valley splitting the Massif Central southwards from Clermont Ferrand lies Issoire, with its invitingly smooth grass airfield and its local aircraft manufacturer, Wassmer. The company built 350 Jodel D112s and D120s before 1968 and has produced a total of 571 gliders in its 65,000 sq ft factories in Issoire town and on the airfield. The workforce of 110 currently produces both powered aircraft and gliders, most of them all-plastics.

Wassmer's experience therefore covers wood-and-fabric, steel-tube structures, all-metal and glass-reinforced plastics for both gliders and powered light aircraft. The current glider is the WA.28 Espadon 15m sailplane, which sells for export at Fr58,000 (about £6,800). The powered aircraft include the 160 h.p. WA.52 Europa and 180 h.p. WA.54 Atlantic, the latter selling at Fr168,000 (about £19,800), not including 17·6 per cent French VAT. The 150 h.p. WA.51 Pacific is offered to special order.

At the same time, Wassmer has assembled the CE.43 Guepard all-metal 250 h.p. tourer for the Cerva company with which it is associated. Siren makes part of the Guepard. Eighteen Guepards were bought for communications flying by the French Government flight test centre, and eight went to the Government training organisation, Service de la Formation Aéronautique. The remainder of the 43 built were sold to private customers.

While 152 of the plastics Atlantics and Europas have

been sold, the real breakthrough seems to be the new WA.81 Piranha. In this type Wassmer claims to have established the right balance between structural mass and strength in plastics, producing the first plastics 100 h.p. aircraft without a structural weight handicap.

Piranha has achieved immediate sales success, with 20 orders placed in the first few months, and 13 have been delivered. French spinning clearance has just been obtained and Wassmer is concentrating on obtaining certification in Germany, the best market for plastics aircraft. Half of all Wassmer's recent sales have been in Germany, a few have been sold in Britain and the remainder in France.

The Cerva company, which designed the Guepard, has a factory at Argenton-sur-Creuse and a head office at Versailles. Guepard sub-assemblies are fabricated by Cerva and Siren and delivered to Wassmer for final assembly.

Piranha flight impressions

THE PIRANHA evolved from the T-tailed WA.70 project, now abandoned. The fuselage is generally similar to that of the four-seat Pacific, making it a very roomy two-seater. A 100 h.p. Continental hides under a two-piece cowling, and a long, awkward reach is needed to get at the oil cap through the access panel on top. The propeller is a plastic-covered wooden broad-chord Evra type. A landing light is carried on the nosewheel strut, and each wheel is wrapped around at the rear by a simple spade-like mudguard.

Radically different from that of the Europa and Atlantic is the maingear, which consists of a one-piece laminated polyester-resin spring with the mainwheels mounted inboard. Wassmer claims that the strut, which sits in a trench on the fuselage underside, can be bent without breaking until the Piranha's belly touches the ground.

The all-plastic structure gives a slippery-smooth finish, the leading edge of the wing being interrupted only by small stall strips. Ailerons are slightly inset, with foam-rubber gap seals, and, like the elevator, are operated by rods. Slotted, manual flaps have four positions. The elevator is hinged on its top surface, with a trim tab on the port side. Access to 19·75gal of fuel carried in the fuselage tank is via a flap aft of the left-hand upward-opening door.

These doors seem an unnecessary gimmick on an otherwise very practical aeroplane. While each door is latched by two fairly substantial pins close to the bottom edge, there would obviously be some excitement if one were to become unlatched in flight. There was once an incident to a Europa in which one pin became unlatched at about 130kt. The pilot opened it an inch or so, hoping to slam it shut, but it was ripped away.

With Wassmer pilot Gerard Burbau in the right-hand side, I stepped aboard and settled into a comfortable high-backed seat. The sticks are tall and slender, moving with negligible friction, and odd for a non-aerobatic aeroplane are the stirrup-hoops on each rudder pedal into which the foot can be firmly inserted. Flap lever and trim wheel are logically placed between the seats. A handle in the centre of the panel applies both brakes together, another knob on the far left locking them for parking. Panel layout was typically French and rather scattered, although there was clearly enough space to install a good range of avionics if required. Two-up and with fuel for over two hours our weight left some 180lb for passenger/baggage in the rear seat.

Take-off from the roughish grass at Issoire was uneventful, and a climb at 70kt produced an initial climb rate of 500ft/min. Levelling first at 1,000ft, I set 2,500 r.p.m. and recorded 90kt. Noise was average, and with the highish seating position visibility was good, the windscreen pillars not creating much of an obstruction.

French light aircraft have generally always been very pleasant to handle, and the classic qualities of the Piranha must be hard to beat. It has an excellent pair of ailerons, a positive elevator and an honest rudder. The only thing missing is aerobatic capability—it almost asks to be rolled.

Stalling was honest. Clean, the warning came at 60kt, with a gentle but definite break at 50kt, rolling slightly left. Full flap and 2,000 r.p.m. delayed the break to 45kt, preceded by a light buffet. Pulling hard into turns produced some unmistakable buffet long before the stall, followed by a roll out of the turn.

I flew my first approach at the recommended 65kt with two stages of flap, and found the trimmer to be very highly geared and reminiscent of the Rallye's. At this speed there was a moderate float with plenty of elevator response to hand. On a touch and go, unsticking with first-stage flap and still trimmed for the approach, I found a surprisingly high stick force that would evidently be very noticeable on a full-flap overshoot. Gerard Burbau ended the flight with a demonstration of the steep power-off descent possible with full flap. He came over the threshold at 400ft, closed the throttle, and with full flap and 60kt touched down in a little more than 1,000ft, obviously with ample elevator control. C.R.B.

WA.81 PIRANHA LEADING DATA

Span 30ft 10in, 9·4m; **Length** 24ft 7½in, 7·5m; **Height** 6ft 10¾in, 2·1m; **Empty weight** 1,102lb, 500kg; **Gross weight** 1,763lb, 800kg; **Engine** R-R-Continental O-200-A; **Fuel capacity** 19·75gal, 90lit; **Max cruise** 102kt, 190km/hr; **T/O to 50ft, 15m** 985ft, 300m; **Range with no reserves (75 per cent power)** 378 n.m., 700km.

Piranha is Wassmer's highly successful 100 h.p. plastics two-seater