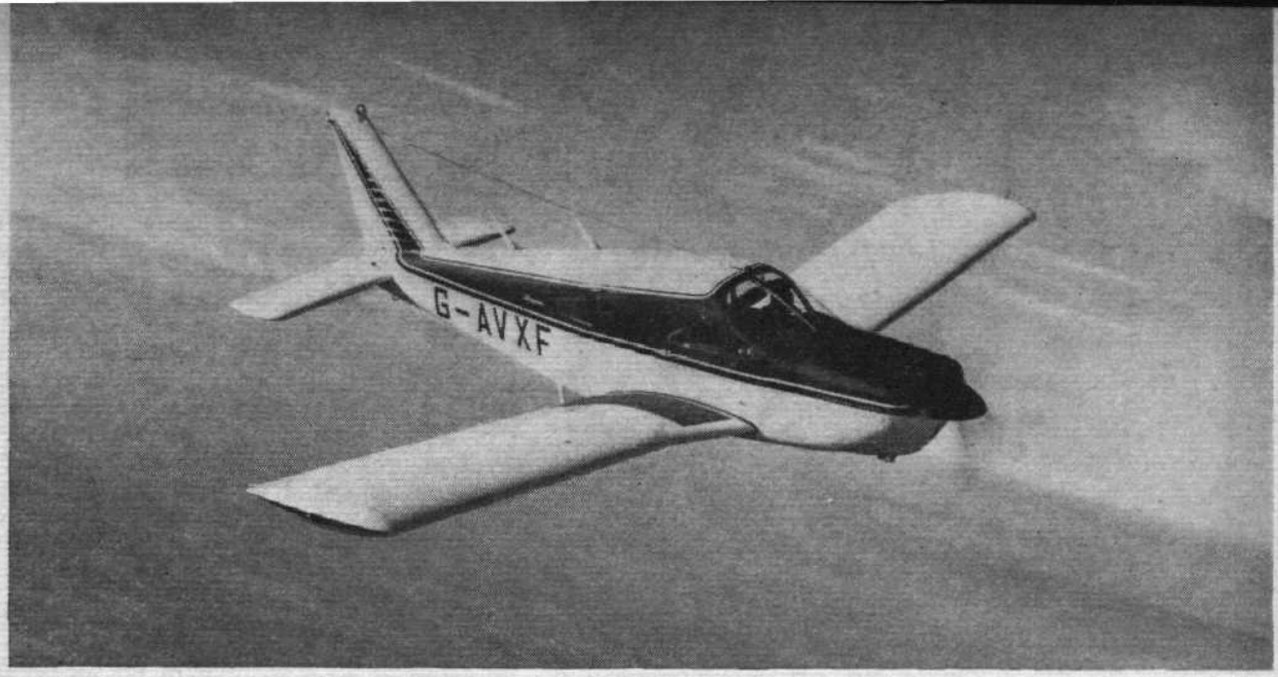


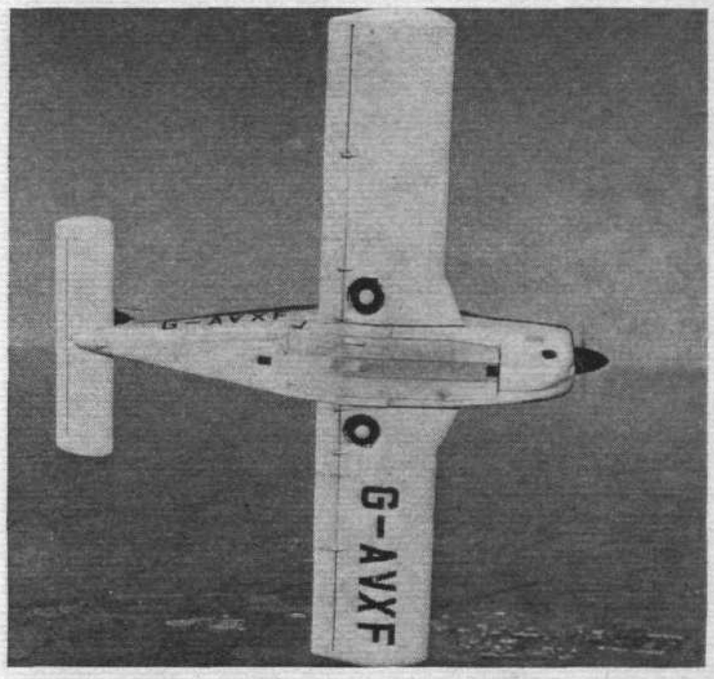
Good looks to go with a respectable performance and . . .

Devaluation has had a fearsome effect on the price of most light aircraft on the British market, and the only effective way to counter it is to get more utilisation out of individual aircraft. And there is, of course, only one sure way of achieving that objective—by having fully-IFR equipped aircraft and a big step-up by the Board of Trade, the BLAC and the various training establishments to encourage many more pilots to go for the instrument rating. The new class of aircraft in which the Arrow falls have a good performance and are capable of a low cost-per-seat-mile with a high degree of reliability and regularity when flown appropriately—important qualities in the years ahead.

Design Provision for a retractable undercarriage was made way back when the basic Cherokee layout was finalised. Cantilevering the main legs aft of the mid-set wing spar has allowed the leading-edge torsion box to remain unaffected. Retraction is inwards, with fixed fairings on the legs, and the wheels lie uncovered but flush in their wells (*à la* Boeing 737). To get the rearward-retracting nose leg aboard without too much intrusion into the cabin meant hanging the engine and leg pick-ups some 2in farther forward than on the Cherokee 180, and this gives the Arrow a distinctively sharper nose. An automatic device is built in to protect against premature retraction on take-off or failure to lower gear on landing. Statistics consistently reveal that improper use of retractable undercarriages is the major cause of damage to light aircraft; because of the protection device, US insurance companies are classing the Arrow in the fixed-gear category.

The choice of a fuel injection version of the 180 h.p. Lycoming (a shallower engine) was also more or less dictated by the space requirements of the undercarriage. In comparison with previous Cherokee four-seaters, detailed improvements include an entirely new and greatly improved layout of instruments and controls; an additional window on each side for better rearward view; and revised styling and finish inside and out. The Arrow is some 150lb heavier than the Cherokee 180 and, partly to compensate for this, the gross weight is higher by 100lb.

To recap briefly for readers who may not be familiar with the Cherokee's structure, which has been adapted virtually without change for the Arrow. The airframe is built from a carefully contrived minimum number of light-alloy sheet components (there are no double-curvature skin panels) assembled with round-headed rivets. The parallel-chord, laminar-flow-section wing (i.e., the point of maximum thickness is farther back than usual) has a single main spar, and each wing half is joined to a centre-section structure integral with the fuselage. The main-spar booms are spliced to the carry-through structure, and there are simple pin-joints picking up a rear spar and auxiliary front spar. A section of the leading-edge torsion box just inboard of the mid semi-span forms a load-carrying integral fuel tank attached by a multitude of bolts for simple removal.



. . . responsive controls. Note the mainwheels exposed in the retracted position, and the external stringers stabilising the centre-section skin

The parallel-chord all-moving tailplane has a wide-span trailing-edge balance-cum-trim tab. The gently swept fin and rudder are conventional.

The flying controls are actuated through cables from the dual handwheels and pedals. The geometry of the linkage actuating the tailplane balance tab is varied for trimming—there is a pitch trim wheel on the floor between the front seats, with an optional and additional electric system triggered by a convenient thumb-switch on the pilot's control wheel. To guard against a pitch-change runaway there is a push button disconnect on the panel (it would, at a pinch, be possible to override by holding the trim wheel). Differential aileron action minimises adverse yaw, and a simple screw-action bias works directly on to the rudder pedal mechanism for yaw trim. The single-slotted trailing-edge flaps are manually actuated from a central lever balanced by a spring for light operation and another for the return to the up position. There are three extended positions: 10°, 25° and 40°.

Powerplant is the Lycoming IO-360-B1E four-cylinder horizontally opposed, direct-drive fuel-injection engine, continuously rated to 180 h.p. A constant-speed controllable-pitch Hartzell two-bladed metal propeller is fitted. The Bendix fuel injection system measures airflow, using this to operate a servo valve