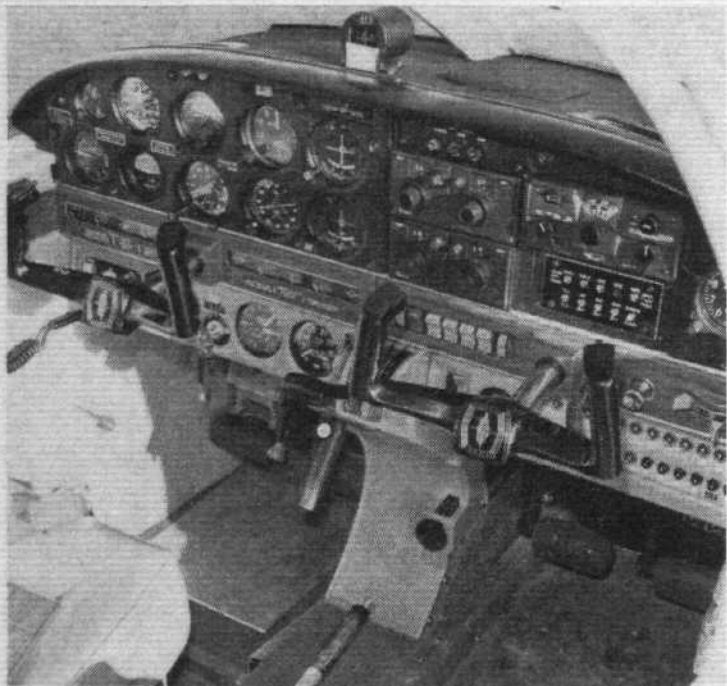




Above, the single entrance to the four-seat interior dictates that the rear seat passengers board first and leave last if both front seats are to be occupied. The 17 cu ft baggage bay is accessible from within the cabin as well as through the 20 x 22in hatch. Below, in comparison with previous Cherokees the Arrow has a greatly improved cockpit layout. The main engine gauges are on the left-side lower panel beside the new throttle quadrant



PIPER ARROW in the Air ...

regulating fuel pressure applied across a fuel-flow control. On the lower edge of the pilot's panel is a combination manifold-pressure and fuel-flow gauge flanked by an r.p.m. indicator. Powerplant controls are now of the lever type on a quadrant.

The retractable undercarriage is hydraulically actuated, the special system being driven by a reversible electric pump. In the event of complete electrical failure the gear is lowered by release of hydraulic pressure, permitting a free fall, with spring assistance on the nose leg. The gear-down protection system is triggered by ram air and static pressure sensings drawn from a special head located on the port side of the fuselage in the propeller slipstream. Thus, even with the gear selector on the panel in the "up" position, the undercarriage will remain down until at least 85 m.p.h. has been reached after take-off (to prevent premature retraction before climbing speed has been reached), and the gear will come down at air-speeds below 105 m.p.h. with the power off—still with the selector "up." The "brain" works on the differential of ram and static air pressures across a diaphragm, any variation from the pre-set values triggering the normal gear-lowering mechanism. The emergency lowering selector on the floor between the seats is also used to override the automatics.

Undercarriage suspension is by oleopneumatic struts. Powerful disc brakes on the main wheels are hydraulically actuated from toe pedals on the left set of rudder pedals (dual selection is optional) and there is a handbrake.

Fuel is stored in two 21 Imp gal tanks, one in each leading edge. The selector is on the wall next to the pilot's knee. An electric pump guards against engine pump failure.

Ample electrical power is provided by a 12V 60A engine-driven alternator; 30A is the maximum continuous load for night flight with all radios on. There is a battery in a stainless-steel box behind the luggage compartment. The main distribution busbar is behind the instrument panel and the circuit breakers are on the right-hand lower edge of the panel. Standard electrical accessories include a starter, fuel pump, stall warning indicator and horn, cigar lighter, voltmeter and ammeter. Provision is made for navigation and landing lights, anti-collision beacon, instrument and cabin lighting, and comprehensive nav/com electronics.

Cabin heating is by ducting air through an engine exhaust muff and along separate ducts through flow controllers to demisting outlets at the base of the windscreen and to outlets at floor level. There is an ambient-air intake in each wing leading edge, with ducts to controllable louvres at floor level beside each occupant. A permanently open cabin-air exhaust is installed beneath the rear seat.

ILLUSTRATED WITH "FLIGHT" PHOTOGRAPHS

Accommodation The Arrow is a compact four-seater. Getting in through the single door to starboard (it opens almost down to walkway level) is, perhaps, a little easier than it first seems. To give access to the rear seats the right-hand front seat must be well forward, and it is best if this is occupied last and vacated first. Rear seat knee-room is minimal for tall people. Up to 200lb may be carried in the 17 cu ft baggage space, reached either through a 20in x 22in eternal hatch or over the rear seats.

Weight and balance The basic standard Arrow has a typical empty weight of 1,380lb. Within the permitted gross weight of 2,500lb this means that, with full tanks, the aircraft can carry four 12-stoners plus a total of over 135lb of luggage—in other words, just about the total volumetric capacity of the aircraft. The comprehensive list of extras on 'XF, however, added 152lb to the empty weight, with consequent limitations on loading potential. With the capacity load of four grown occupants and 200lb permitted baggage possible within the c.g. envelope, 'XF would be limited to uplifting only 12 Imp gal.

Payload-range As will be detailed later in this report, the recorded cruising speeds of the Arrow at 3,000ft and medium weight were the same as, or slightly better than, the handbook figures at gross weight. The evaluation flight was not of sufficient duration to check fuel consumption. Assuming handbook figures for speed and consumption, the Arrow promises a full-tanks absolute range of 950 miles on 55 per cent power at 10,000ft in ISA, still-air, conditions (true airspeed would be 138-140 m.p.h. with a fuel consumption of 6½ Imp gal/hr). At 75 per cent of maximum continuous power the range potential under the same conditions drops to 860 miles, with a true airspeed of over 162 m.p.h. and a consumption of just under 8 Imp gal/hr. Flying at 2,000ft instead of the optimum altitude reduces the maximum range by around 100 miles.

As already noted, a well-equipped Arrow such as 'XF is limited with full fuel to four grown occupants. But with, say, 35lb of luggage to each occupant, the fuel uplift is halved and the practical still-air range (allowing some 45min reserve) is just over 400 miles at 55 per cent power, or about 350 miles on 75 per cent power.

Rather surprisingly there is no optional additional tankage; one would have thought it possible to offer the extended-tip tanks of the Cherokee Six.

Flying the Arrow Pre-flight external checks are routine. Fuel contents checking and replenishing are easy with the low wing (there are two water drains under the wing), and the engine-oil dipstick and filler are reached through a small flap. Starting this particular injection engine from cold begins with