

A turn in the training tide

Percival Provost

Complex for a basic trainer, the Provost is one of the most pleasant aircraft to handle, writes **David Ogilvy**



In 1953 the introduction of the Percival Provost into Royal Air Force service as the basic trainer brought about an entirely new concept in pilot courses. Ever since organised training had begun, British practice had supported the idea of a low-powered simple trainer with a minimum of frills. The Avro 504 and the Tiger Moth between them symbolised the instructional role for more than thirty years, but the Provost was quite different. In 1915 the 504K offered 110hp and the Tiger Moth followed with only 20 more, but this new machine from Luton confronted a pupil (who might never have touched an aeroplane before) with no fewer than 550 horses to be harnessed and tamed. Certainly in between came the Prentice (reviewed in GA, August 2005), but its career was brief and its performance far from sparkling.

Strangely, the Chipmunk joined the ranks of the RAF before the Provost was introduced; through its rugged economy it has outlived *all* trainers, for despite starting its working life with Oxford University Air Squadron in March 1950, two Chipmunks still earn their keep

with the Battle of Britain Memorial Flight as tailwheel conversion trainers; also, of course, many are in use in private or group ownership. However, because it retired first the Provost is generally considered to be an earlier type.

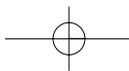
Not surprisingly, the Central Flying School was the first unit to receive Provosts, but the first station to offer basic tuition on the type was Ternhill, where No.6 Flying Training School operated these machines until after the other schools had exchanged them for Jet Provosts in 1961. This was largely because the relatively short runways at Ternhill were unsuitable for the later type. Unlike the Provost's predecessor, the Prentice, which with its three seats retired from the training role to serve a useful purpose on communications duties, the Provost offered space for only two occupants; nevertheless, a few specimens remained active for a further eight years serving as 'targets' for trainee controllers at the RAF's Central Air Traffic Control School at Shawbury.

At full weight the Provost registers 4,400 lbs on the scales, making a sharp contrast with

the 1,770 lbs of the Tiger Moth. Weight, power, bulk and layout offered an awesome presence to a student, but this accorded well with the current military theme; the design and comparative complexity of the cockpit set the mind to work on the right lines and eased the later transition to more advanced machinery. Clearly though, it put paid to the earlier concept of just flying rather than operating an aeroplane.

Adjustable seats and pedals, a lean-forward type harness, a handle for winding the canopy open or closed, a 24-volt electrical system, variable-pitch propeller, pneumatic brakes and flaps, windscreen wipers, cockpit heating and ventilation (the latter very necessary), an accelerometer, trimming facilities for rudder as well as elevators, ailerons with servo-tabs, oil-cooler control, three-position air-intake lever and so on combined to create an 'advanced' atmosphere for the beginner.

After carrying out external and internal checks that occupy nearly six pages in the Pilots Notes, the main points for starting are to



Left: the Shuttleworth Collection's Provost XF603 in a camouflage scheme not used in RAF service but applied for a ferry flight to a Middle East air force
Far left: the cover of Percival's sales brochure for 1953
Below: Percival's civil Provost demonstrator outside the factory at Luton Airport, then owned by Luton Corporation
Bottom: the prototype Provost which first flew with an Armstrong-Siddeley Cheetah engine before the Alvis Leonides was adopted as standard

fairly lengthy business, for if the pneumatic pressure is low, it is necessary to wait for a build-up to at least 220 lbs/sq.in for taxiing, while below this figure the flaps will not operate. As the flaps are lowered as part of the running down operation and therefore are down for starting, any pilot guilty of moving forward with reduced pressure may be accused unwittingly of taxiing with his flaps down! With the three-position lever in the up position, the flaps will raise themselves very smartly as soon as, but not before, the correct pressure is reached.

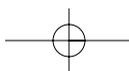
By this time the oil temperature should have reached the prescribed minimum of 200C for the engine check. After the usual dead-cut procedure, the throttle should be opened to static boost, for exercising the rpm fully twice and for checking the magnetos and plugs. The engine idles pleasantly at 600-800 rpm, but obviously this condition should be maintained only momentarily.

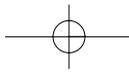
set the propeller at maximum rpm (fully forward), unlock the controls (lever down) and, as a personal preference, direct some air into the cockpit. After turning on the master switch, the fuel can be selected and checked audibly, for when the lever (on the central pedestal) is moved forward for 'on', the electric pump makes welcome sounds. With the oil cooler closed (lever out) and air intake at filter (up) we are ready to prime for 2-4 seconds. This is carried out by a pushbutton on the end of the starter lever which is pulled upwards to select and fire a cartridge. The lever, which incorporates a booster coil control, should be help up until the engine is running steadily.

Warming at about 1,200 rpm may be a



via Philip Jarrett





Above: John Lewis, at one time the Shuttleworth's senior pilot, makes a tight turn around the viewing enclose at Old Warden
Right: the 'works' of the Alvis Leonides seen during a test ground-run
Below: another view showing the non-standard combination of camouflage and RAF roundels



Unlike many closed-cockpit military machines, the Provost has its hood closed for take-off. This, apparently, is because of the width of the cabin which could cause considerable air flow difficulties. The swinging tendency is far less noticeable than might be expected with 550 horses aboard and from the start the rudder very effectively cures any inclination to wander from the straight and narrow path. However, a positive forward movement is needed to prevent a three-point unstick, and then the Provost needs lifting off at 60-65 knots IAS which it does very cleanly. The climb is sustained at 100 knots with 2,900 rpm and + 3 1/2 lbs boost, which

produces a very creditable ascent rate despite an enforced power reduction in the type's early life. Originally, the Alvis Leonides 9 cylinder radial operated to +9 lbs, but problems – mainly blown cylinder heads – caused the authorities to introduce a lower limit almost as soon as the type entered service. Before that the rate was considerably more than 2,000 feet in a minute. I had the one-off pleasure of experiencing this temporary but very enjoyable supply of surplus power, for whilst doing my then annual RAF Reserve fortnight with 187 (Ferry) Squadron at Aston Down, I collected the eighth production Provost from the factory and delivered it to Ternhill. There were no

Pilots Notes and, apart from help from a fitter on starting procedure, there was no-one to tell me anything about it. Fortunately, it was an almost perfect day weather-wise so, by trial and error, I had the chance to discover a few things before I stepped out at the other end. Such opportunities, alas, disappeared many years ago. Before my next contact with the type, the power reduction had been introduced.

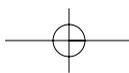
As soon as the Provost is on the move, its delightful handling characteristics show themselves. All three controls are remarkably light and, to add to the pleasure, very effective at all normal operating speeds right down to the stall, which occurs at 60 IAS with flaps at the slope, or 65 clean. The ailerons work efficiently even down to the break-away condition, which is preceded by about 5 knots with very mild buffeting on the elevators.

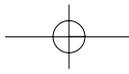
Normal cruise can be set up over a range of speeds and settings, with 2,000 rpm as the recommended minimum. This, with zero boost, consumes about 17 gph and produces an IAS at the lower end of about 110 knots; endurance speed is 85 and it is possible to

cruise as fast as 140 and remain within the advised power combination limits. Even at the lowest speeds handling is easy and comfortable, especially as partial flap may be used at anything below 125 knots.

One experienced industry test pilot, who at one time had instructed extensively on Provosts, described the type as the most pleasant machine to handle that he had ever flown. Whether on the circuit, in the cruise or on aerobatics, the well-balanced controls leave no cause for criticism; a strange personal memory is that the Provost's servo-tab ailerons feel uncannily similar to those of the later Meteors fitted with spring tabs.

For those who specialise in the aerobatic art the Provost offers a host of opportunities, but even for the rest of us it behaves encouragingly. It is possible to roll straight from a fast cruise of about 140 knots, but preferably with 2,600/+3 1/2 established on the engine dials. Not much rudder is needed and an excusable tendency is to apply more than is required, especially at the exit/roll-out stage, which then accentuates any proneness to a barrel effect. Power should remain constant throughout the aerobatic regime, for the fuel system provides a supply for brief periods of inverted flight, which eases the problem of effecting a genuine slow roll. Recommended entry speed for a loop is 165 knots, with an additional 10 at the start for a roll-off; the radius is sufficiently large to allow time for a





*Above: unlike many military types, the hood was closed for take-off
Below: the Provost sinks rapidly as speed decays
Bottom: the pupil's side of the cockpit, from the original brochure*

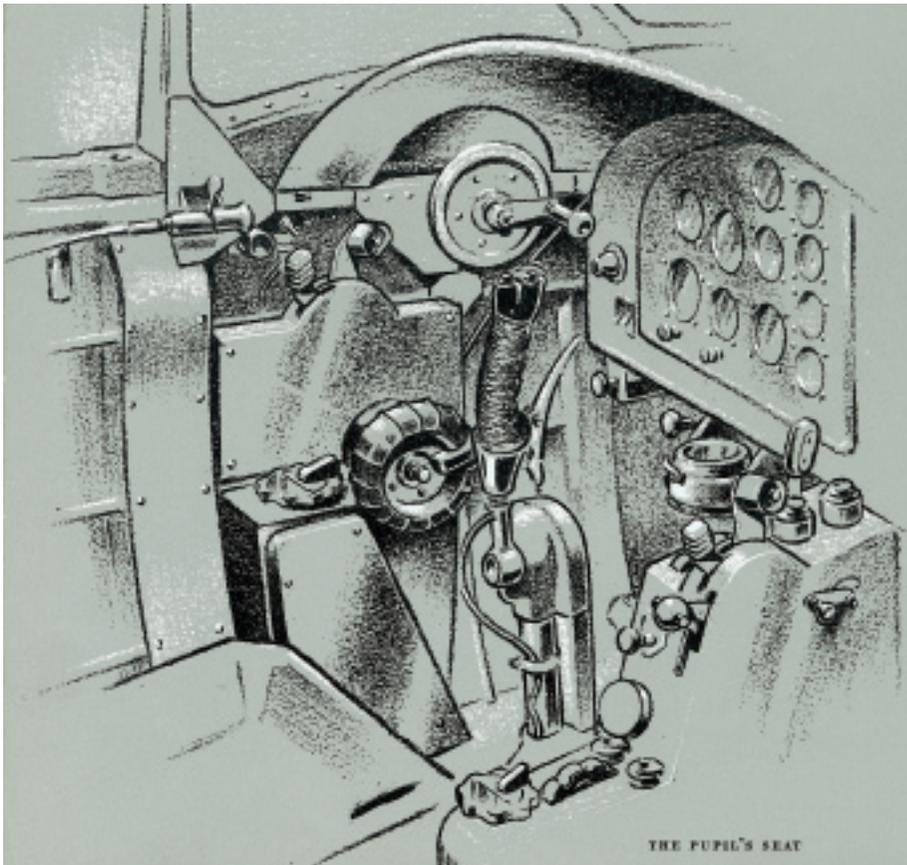
trainee – or an experienced pilot! – to commit directional errors on the way up.
In the circuit, filtered air should be selected and rpm set at 2,600, when half flap and 3 lbs boost will offer just over 100 knots IAS; about 90 is right for the final turn and, with full flap, about 75 over the fence for a powered approach. The Provost sinks rapidly as speed decays, especially from a slow run-in, and the touch-down is solid. Keeping straight presents no problems, while for an overshoot a climb-away IAS of 90 presents a healthy start on the rapid return journey to circuit height.
There are several peculiarities to remember and these accentuate the difference between the Provost and its predecessors; the throttle and rpm levers must be fully back before the control locks can be engaged, (intended, of course, as a safety device at the start of a flight

when it becomes impracticable to start the engine with the locks in position) and, before leaving the machine, the flaps should be selected and left down.
No doubt the introduction of this relatively complex machine made trainee pilots learn to establish completely new sets of values; on the Tiger Moth, balanced flight was impossible without generous use of the rudder, slight crosswinds created problems and called for handling skills, and the weather-related 'feel of flight' was a key feature. The Provost, on the other hand, would keep straight on take-off and landing with little help from the pilot, the rudder came into full play only on the ground or in spin recovery while wind conditions, within reasonable limits, presented few problems. However, the knobs, levers and checks associated with them made the later



pupil (known by then as a student) activate his mental processes from the very beginning.
Today, piston Provosts are scarce. However, there is a small nest of them at Brimpton, in Berkshire, where Alan House of Sylmar Aviation has become acknowledged as the professional specialist on the type. Three specimens are based there, all still with their military markings and serials; currently airworthy are XF 597 and XF 877, while XF 836 – which was acquired by the Shuttleworth Collection when it was the last Provost to be retired from RAF service in 1969, but subsequently sold – is just completing a major rebuild. Others include Shuttleworth's replacement machine XF603, one at North Weald and another at Shoreham. Although not surprisingly there are problems with spares, it is encouraging to report that this pleasantly powerful and sprightly machine remains alive and active, especially on the display circuit. ■

Below: three Provosts in the care of Sylmar Aviation at Brimpton



via Philip Jarrett

