Beefy in its Service guise, the Percival Proctor was more sprightly in civilian use but has suffered the fate of wooden aircraft everywhere, says ***David Ogilvy***

A common practice in the late thirties – when the Royal Air Force needed to expand rapidly prior to World War 2 – was for successful civil aircraft to be adapted for large scale military service. The Avro Anson and the Airspeed Oxford were well known in this context, while the much smaller Percival Proctor emerged from the Vega Gull, which was among the most 'developed' light aircraft of its time. It is not a type over which very many pilots enthused and some decidedly disliked it; however, it warrants a place here, for it served as a workhorse for a considerable period and has a distinctly sporting origin. Although its roots date even before the first Gull, the real development pattern started with the three-seat Percival P.1 Gull Four, the prototype of which, G-ABUR, averaged 142.37 mph in the 1932 Kings Cup Air Race behind a Cirrus Hermes IV; however, a year later, re-engined with the more powerful but not-so-reliable Napier Javelin, the type's performance potential really came to the fore.

Early Gull production is as complicated to follow, as were the designations of the many variants. However, the first 24 machines were built by George Parnall and Co at Yate, near Bristol, and these included specimens powered by the Javelin and the Gipsy Major, with the latter not surprisingly proving popular on a wider basis. Examples were sold to Japan and Brazil as well as to British owners and operators, while two Gulls were acquired by Indian National Airways for scheduled mail runs between Karachi and Lahore.

In 1934 Edgar Percival established his firm's own factory at Gravesend, where 22 more Gulls were produced. Logically the 130 hp Gipsy Major gave way to the 205 hp Gipsy Six and this version set about the task of breaking several records, for, with passenger seats removed, the available space and payload permitted extra tanks to be installed to offer a range in the region of 2,000 miles. Perhaps the two most well-known Gull feats were performed by women pilots; Jean Batten in G-ADPR won the Britannia Trophy with her solo flight to Brazil and later flew from Lympne to Australia in 5 days 21 hours and 3 minutes. Amy Mollison used another Gull Six, G-ADZO, to break the out-and-return record between England and the Cape, which she achieved in 7 days 22 hours and 45 minutes. G-ADPR survived the war and was preserved for several years with the Shuttleworth Collection at Old Warden, but now it resides in Australia as a museum exhibit.

Sporting development based on the Gull's success resulted in the single-seat Mew Gull, an attractive and speedy record breaker, which was covered in the April 2004 issue of *General Aviation*, but here we must revert to the sequence that led to the Proctor. The Percival P.10, the Vega Gull, was a logical step from the Gull Six; like its predecessor it remained a low-wing cantilever monoplane of all-wood construction, but the fuselage was lengthened and widened to make a four-seater. The prototype, G-AEAB, first flew late in 1935 and, although built together with a further handful at Gravesend, the subsequent production run centred on Mr. Percival's then new works at Luton.

Four Vega Gulls competed in the 1936 King's Cup Air Race, which was then a much longer affair than today's event, with an eliminating heat of more than 1,200 miles; these machines fought a challenging match with the team from the Miles brigade from Woodley, near Reading. Charles Gardner in Vega Gull G-AELE was first home to win at an average speed of 164.47 mph. However, commercial or business operation became a significant part of the type's field of activity with machines sold to such organisations as Smith's Aircraft Instruments, Air Service Training and, surprisingly (?) the de Havilland Aircraft Co.

This was the stage at which the Air Ministry became interested in a machine for the Royal Air Force, and a Service variant was introduced, specimens of which were used as personal 'hacks' by British Air Attaches in various parts of the world. Also, 18 civil Vega Gulls were impressed into RAF service at or soon after the outbreak of war in 1939, and on 8 October that year the first truly military Proctor 1 saw daylight under its wheels. As is usual with military requirements, to cope with the rough lives that Service aeroplanes tend to lead, the need was for more strength, so really the Proctor 1, 246 of which were built for communications purposes, was a beefed-up Vega Gull. However, due to the extra structure weight and various items of military equipment including the then-cumbersome radio sets, the first Proctors reverted to three-seat status. The Proctor 2 was broadly similar to the 1, but the 3 became the standard radio trainer for the RAF. 436 mark 3s were built.

From a pilot's viewpoint many aeroplanes – especially military ones – tend to go downhill as they are developed. The Proctor was no exception. Wider, deeper and longer, and therefore heavier than its predecessor, the Mark 4 was a very different aeroplane. 250 were built, mainly at Manchester, and these served on a mixture of radio training and, later, communications duties until the final serving specimens were declared redundant in 1955. Before this, however, the Mark 5 had appeared; essentially this was a civil 4, and 150 were built for the private and business market in 1946. These served with several large organisations such as Shell and Dunlop, while others operated with charter companies and flying clubs. At about the same time 225 earlier mark Proctors were 'demobbed' and several were raced. Perhaps the best-known of these was G-AHNA 'Nannie Ann', owned by ASK 'Buster' Paine, brother of Ron Paine, who was one of the founder Directors of BLAC as operators of AOPA UK. Among the later tasks undertaken by Proctors was for the Battle of Britain film, in which three – a mark 1, a 3 and a 5 – were reshaped with cranked wings and given German markings to represent Junkers Ju 87 dive bombers. In practice, the Proctor 1, 2 and 3 can be considered as one machine and the 4 and 5 as another. Many of the earlier marks were built by F. Hills and Sons of Manchester, while all mark 5s were constructed at Luton by the parent company.

Unfortunately, the Proctor was a major sufferer in the saga of wooden aeroplanes and

More glue please, Mr Percival

their alleged glue failures. In 1949, one specimen, in fact, did suffer structural failure in flight and others were found sick on subsequent inspection. The one major case, apparently, was not in any way due to a design shortcoming, but was the result of using unseasoned timber in the mainspar. It is indeed unfortunate that so many very sound aeroplanes of wood construction have been scrapped prematurely because of the ultra-stringent precautions and limitations that were imposed. If a batch of machines can be proved to be structurally unsound or a particular type has a proven serious defect, then clearly in the interest of safety some drastic action is essential; but in the main a wooden aeroplane tells someone when it is in need of attention. A conscientious inspection reveals a panel that may have parted from its main member, while known trouble spots such as sternposts can be rectified by generous use of the glue-pot. Towards the end of the Magister's active life, for example, it became a practical joke to ask for a load of glue to stuff into the rear post as part of the everyday pre-flight check! However, do metal parts, such as essential flap brackets which can cause justifiable cockpit alarm if one should fail on one side, always give prior notice of illness?

At this stage let us revert to the Proctor itself and look at it as a flying machine. My first contact with the type was in 1950, when I was in the RAF, resulting from a casual call on a Group communications flight, which had an Anson and a pair of Proctor 4s, when I asked the flight commander if I could fly one of the latter. We had not met before, but I showed him a logbook (it was mine!) and he said, "Good. You've saved my day. Jump into 157, do a couple of circuits and call back to pick up Group Captain … to take him to Hendon. I have some Pilot's Notes somewhere and by the time you come back I will have found them." Can anyone imagine this happening today? But for this enforced and hurried need for a pilot, I might not have met the Proctor in Service guise, but subsequently I carried out several trips and although my mind is bad at retaining information that matters, I can remember without effort such useless details as serials and clearly, more than half a century later, I still see NP157 and NP328 as the two machines on the strength of that flight.

Briefly, the Proctor was a low-wing cantilever monoplane, with the 210 hp Gipsy Queen II six-cylinder inverted in-line providing the power and a two-blade variable pitch propeller to absorb it. A walkway on each wing centre-section provided access to the cabin, which had forward-opening doors on each side. The two front seats were of the individual bucket-type to accept parachutes, but the later civil version (the 5) had these replaced by upholstery. The general impression within was quite business-like, with plenty of space for maps and other odd items; the only point that I can remember with mild disfavour was the spadegrip control column, which was too short.

Starting, with the centrally-mounted propeller control in full coarse, (which was foreign to my thinking, especially in relation to larger engines) was otherwise standard and the Queen uttered a comforting and fairly deep exhaust burble at low rpm. When the engine was running smoothly and the oil pressure had settled to about 50lbs/sq in, the propeller control could be moved to the full fine position, from which setting the pitch range was checked at 1,800 rpm. If all was well, a full power check produced 2,400 rpm and the boost gauge should normally show 0. Once on

B/W photos Philip Jarrett

The three-seat Percival P.1 Gull Four prototype which averaged 142.37 mph in the 1932 Kings Cup Air Race powered by a Cirrus Hermes IV

Percival P10 Vega Gull prototype G-AEAB (incorrectly marked as G-AEAD) during C of A trials at Martlesham Heath

Above: Jean Batten and her Gull, G-ADPR, at Basrah. Note the fuel tank occupying the rear seat
Below: G-ADPR was preserved for several years with the Shuttleworth Collection, but now resides in a museum in Australia

the move, adequate differential braking was available by setting the handbrake (the lever was between the front seats) two or three notches back.

At its maximum weight of 3,500 lbs, the Proctor 5 was quite a heavy aeroplane and certainly felt it on take-off. The book showed a run of only 250 yards at full load, but I would be prepared to challenge that claim. A crosswind from the left could be quite helpful, for one from the other side coupled with rapid throttle-opening and delayed foot-work could produce a more man-size swing than one might expect. It was an aeroplane that was happier (or its occupants were) with a fair ration of forward speed and the recommended climbing figure was as high as 95 mph IAS using initially 2,400 rpm and full throttle, reducing to 2,100 rpm when economy was the order of the day. 85 IAS and full power produced nearly 700 fpm when everything was favourable. In calm weather the Proctor offered very comfortable cruise conditions with trim facilities for both elevators and rudder. 2,100/-3 produced a weak mixture consumption of 10gph and, with two tanks totalling 40 gallons, an endurance of more than three hours was very practicable. So, at 135 mph, air distances of 500 miles were within scope, although in the main the Proctor was used for relatively short-range internal communications. In rough conditions it was not kind and at full load it suffered a slight longitudinal instability which could prove mildly aggravating.

Full throttle in level flight produced about 150 mph (the book quotes 157) and at the other end of the scale the flaps-up stall occurred at 68 mph IAS. This was preceded by vibration on the control column (an early stick shaker?) and a series of up-and-down nose oscillations, while the port wing took the lead over its opposite number in frequency of dropping. Planned spinning was not permitted, but on the 4 and 5 the tailplane was set slightly higher than on the earlier marks in order to improve chances of recovery. Aerobatics, too, were off the menu.

The Proctor was not a happy aeroplane at slow speeds and flap lowering was permissible at a comfortable 100 mph IAS. The lever offered three positions, with an intermediate setting for take-off, but it was slightly strange in that it was up when flaps were down and, of course, vice versa. Over-the-fence speeds of 75 and 80 were recommended for powered and glide approaches respectively, so by light aircraft yardsticks the Proctor was not a machine for the shortest of landing runs. On a mislanding, flaps were not to be raised below 400 feet and 90 mph IAS.

The landing itself suffered from the cushioning of ground effect and was not really crisp in bumpy or crosswind conditions. The Proctor could swing quite markedly in suitable conditions and particularly when the tail came down on a “wheeler”. I admit to one serious sin (fortunately with no VIP passenger on board) when I touched down on one runway, the tail came down at the conveniently placed intersection and I finished the run on the other runway! I was considerably more cautious after that.

Although some people disliked the Proctor and anyone seeking the type’s vices would have little difficulty in finding them, especially in relation to safety at low speeds, I enjoyed several trips flying 4s on communications work. I did not meet an early-mark Proctor in the Service, but flew a civil 3 some years later. Being slimmer and lighter, it was livelier and

Above: Cockpit of the Proctor 5
Below: G-AHNA 'Nannie Ann', owned by ASK 'Buster' Paine, brother of Ron Paine, who was one of the founder Directors of BLAC as operators of AOPA UK

more pleasant to fly, with the recommended approach speeds (and the stall) more than 5 mph slower. It was faster, too, with a cruise at 150 mph and a climb rate genuinely touching 1,000fpm, so altogether was more of a pilot's flying machine than its successor.

Over the years, wooden aeroplanes have suffered very seriously; in 1958 no fewer than 98 Proctors graced the pages of the British civil register, but by 1973 only a lone mark 1, a 3 and one 4 had current Certificates of Airworthiness. Today the situation is little different. Four Proctors remain on the register and two of these – mark 3 G-ALJF and mark 4 G-ANXR – are currently airworthy. Also, fortunately, Vega Gull G-AEZJ, built in 1937, remains on the active list, as does the earlier, famous, Mew Gull G-AEXF, so Mr Percival's products are far from forgotten. ■

Above: rear view clearly shows the walkways on the wing centre section

Below: Wing folded on a Proctor 2

Bottom: The sole Proctor 6 — sold to the Hudson's Bay Co in Canada as CF-EHF. Was this the only float equipped Proctor?