The Porterfields

Start-up with an old design in the Depression's midst.

BY PETERS M. BOWERS

The name Porterfield was very prominent in aviation circles from the late 1920s to World War II. But most discussion of lightplanes in the immediate prewar years concentrates on the "big three" of Piper (ex-Taylor), Taylorcraft and Aeronca and overlooks the equivalent Porterfield models. While smaller production quantities have much to do with the dim memory of the name, the fact that Porterfield did not sell airplanes under his own name until 1935 also is a contributing factor.

Ed Porterfield was president of American Eagle, one of the major manufacturers of 90-150-hp biplanes from 1926 until the Depression terminated that product line and forced a merger between American Eagle and Lincoln-Page (*Pilot*, February, p. 105). Porterfield left the organization at that time, but did not lose interest or faith in the lightplane market. In the depths of the Depression he founded a new company, the Porterfield Aircraft Corporation, in Kansas City, Missouri.

The company's initial product was not a Porterfield design. It was an improved version of a tandem two-seater called the Wyandotte Pup that had been designed by Noel Hockaday and built by manual training students at a Kansas City high school in 1932. Hockaday had been a co-designer of American Eagle's Eaglet ultra-light in 1930 and adapted much of that model's structural detail to the 40-hp Pup.

By its cabin configuration and its timing, the Pup can be considered the true prototype of the modern lightplane. Manufacturers like Aeronca, Taylor and American Eagle-Lincoln were turning out bare-minimum planes in 1931 at the lowest possible price. Although they were all high-wing or parasol monoplanes, they reflected their open-cockpit ancestors by being open-sided. After Porterfield took over the Hockaday design and refined it, the others began to convert their established designs to cabin configuration. The increase in price that resulted was not as great a sales disadvantage as the appeal of greater comfort to spouses and influential passengers was a gain.

As rolled out in July 1934, the Porterfield Model 35 Flyabout was a conservative, high-wing, cabin monoplane with steel-tube fuselage and tail assembly and strut-braced, wood-frame monoplane wing. Seating was tandem at dual stick controls with all instrumentation on a panel ahead of the front seat. Entry was through a single full-depth door on the right side of the fuselage. A notable characteristic was the great depth of the fuselage relative to its width (a heritage of the old Eaglet) which through the Pup had had the sides of a standard open-cockpit fuselage built up to meet a parasol wing.

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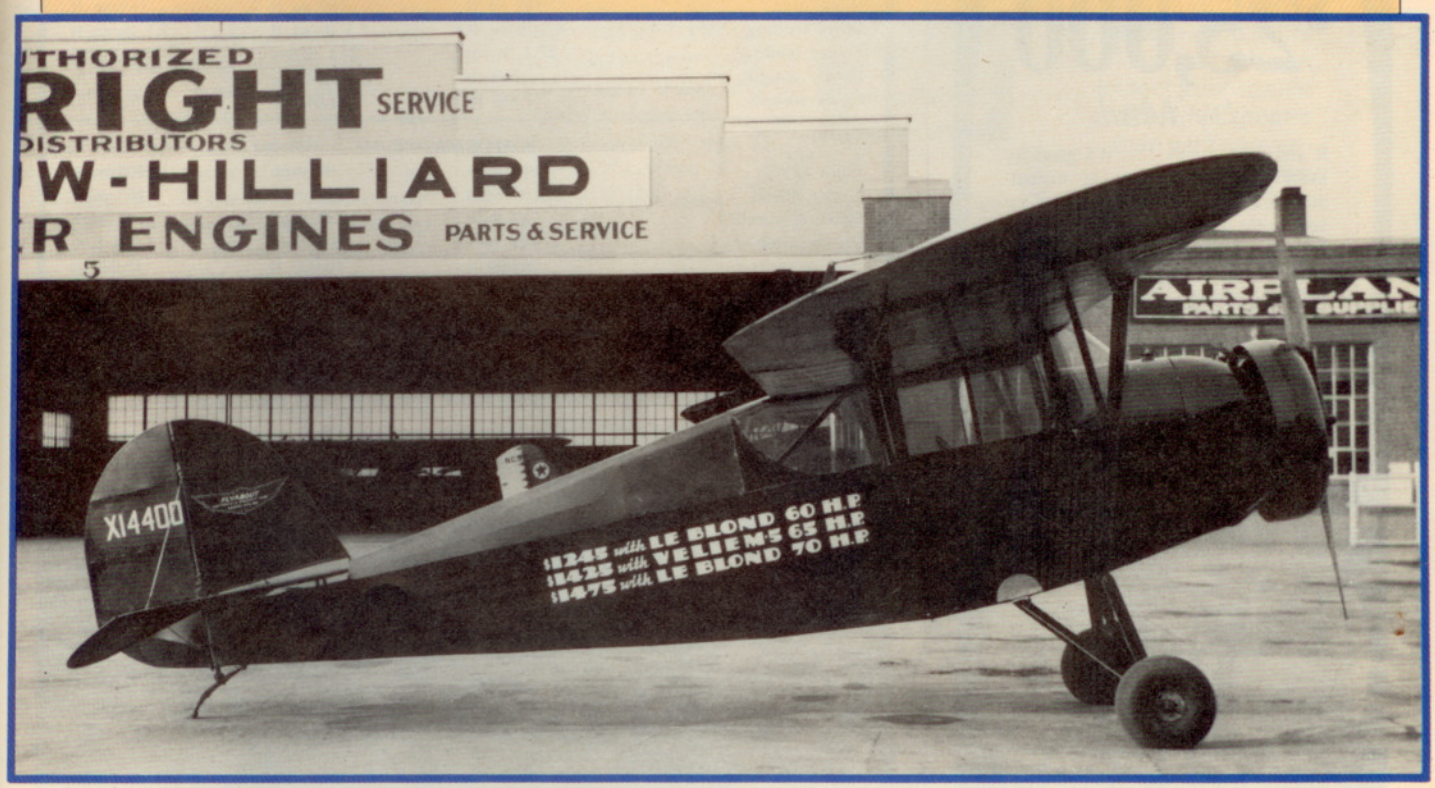
The prototype Porterfield Flyabout of 1934 was a conservative, high-wing, cabin monoplane. A notable characteristic of the design was the depth of the fuselage relative to its width. The original target prices for the three different engine installations are displayed.



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The initial powerplant for the Model 35 was the 60-hp LeBlond 5D. But when a supply of unused Velies became available—and at a good price—Porterfield made good use of them.

Intended primarily as a trainer, the Zephyr was devoid of frills. As a throwback to the basic Eaglet design, it was a lighter version of the Model 35, with more refined lines.

YESTERDAYS • WINGS

	35-70 FLYABOUT	CP-40 ZEPHYR	CP-65 COLLEGIATE
SPECIFICATIONS			
Powerplant	LeBlond 5E 75 hp @ 2,075 rpm	Continental A-40 37 hp @ 2,550 rpm	Continental A-65 65 hp @ 2,350 rpm
Span	32 ft 0 in	34 ft 8 in	34 ft 9 in
Length	20 ft 0 in	21 ft 7½ in	22 ft 8 in
Wing area	147 sq ft	169 sq ft	169 sq ft
Wing loading	8.9 lb/sq ft	6.1 lb/sq ft	7.1 lb/sq ft
Power loading	17.4 lb/hp	28.1 lb/hp	18.4 lb/hp
Empty weight	813 lb	1,040 lb	700 lb
Gross weight	1,310 lb	1,040 lb	1,200 lb
PERFORMANCE			
High speed	115 mph	85 mph	108 mph
Cruise speed	105 mph	75 mph	103 mph
Landing speed	40 mph	30 mph	40 mph
Initial climb	600 fpm	375 fpm	1,030 fpm
Service ceiling	20,000 ft	10,000 ft	18,000 ft
Range	336 mi (18 gal)	250 mi (9 gal)	300 mi (13.5 gal)

In spite of sizable sales, the Collegiates did not figure prominently in the private owner market. The airplanes were used just before World War II to train military pilots.

dial that usually was fitted with a narrow anti-drag wing. When fitted with the 70-hp LeBlond 5DE, the production Flyabout was identified as Model 35-70 and received Approved Type Certificate (ATC) No. 567 on May 9, 1935. The 60-hp model was included on the same ATC. The price quoted in 1934 publicity was $1,245 for the 60-hp model, but it was $1,695 in 1935 and rose to $2,095 for the 70-hp model by the time production ended in 1939.

Alternative powerplants were available: the 60-hp Velie radial in the Model 35V (ATC 601, May 18, 1936, price $1,795); the hot rod of the series, the Model 35-90, with a 90-hp Warner radial (ATC 611, July 11, 1936, price $2,695 in 1936 and $2,995 in 1939); and the final model, the 75-C, with 75-hp Continental flat-four under a completely enclosed cowling. In spite of a major engine change, the 75-C was on the same ATC as the 35-90.

The choice of the Velie was a bit odd, since it was an orphan 1927 engine, a development of an earlier make, that had become the Lambert in 1929. Actually, Porterfield found a supply of unused Velie engines and got them at a good price. The use of the 75-hp Continental in the 35-90 airframe was a matter of keeping up with the state of the art, the market and the engine manufacturing situation.

The little (115 cubic inches), air-cooled, flat-four engine had been a Continental exclusive in the early 1930s, but at 37 hp it was only for the bare-minimum ultralight airplanes. The need for more power for more refined airplanes resulted in the new Continental A-50 of 50 hp. This 171-cubic inch engine was upped to 65 hp and became the industry standard into the 1950s. As the flat-fours proliferated in the late 1930s, the radials phased out.

Several other manufacturers—Lycoming, Franklin and Menasco—entered the market with equivalent models. Continental tried to stay ahead of the field by increasing power for the same displacement through higher engine speeds to 75 hp in the A-75 and even to 80 in the A-80. The disadvantage of this technique was that propeller efficiency dropped off at the higher rpm. Lycoming was doing the same thing with its 145-cubic-inch engine that had started at 50 hp. When rpm went to 3,200 in the 75-hp version, the firm went to reduction gears to get more efficient propeller speeds but found that gearing was more trouble than it was worth on small engines. Continental then took another route and brought out a C-75 engine with 188-cubic inches that turned 2,275 rpm. This quickly was upped to 85 hp at 2,575 rpm and remained in production into the 1950s.

The Porterfield 75-C was the Model 35-90 adapted to the Continental A-75 because of the phase-out of the 90-hp Warner radial and the acquisition of the

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LeBlond by the competing Rearwin firm, which changed the name to Ken-Royce.

The radial-engined Flyabouts had a serious recognition problem throughout their careers. The Rearwin Sportster, built in the same city and on the same airport, was a very similar design. The main distinction between them was the wing struts. These were parallel on the Porterfield and formed a V on the Rearwin.

Porterfield sought to develop a lower-price trainer designed specifically for the new generation of flat-four engines, and, since Hockaday had departed, engaged Howard Barlow of the University of Michigan to develop it. Like the original Model 35, this too went back to the Eaglet for the basic design and ended up being a considerably lighter version of the Model 35 with more refined lines but the same construction. The new model was called the Zephyr. Since it was intended primarily as a trainer, it was devoid of frills and was downright Spartan inside. Fuel capacity was reduced to a nine-gallon nose tank to be compatible with the smaller Continental A-40 engine.

The choice of the 37-hp Continental A-40 engine was logical, since it was the only flat-four available early in 1936. However, that powerplant was near the end of the line. A 40-hp version with dual-ignition soon appeared to counter the 1937 ban on single ignition for new designs, but relatively few were in service before the A-50 model was introduced.

Distinguishing a radial-engined Flyabout and a Rearwin Sportster is difficult; the main difference is their wing struts.

Still, the new Zephyr, designated CP-40, went into production, and some 45 were built. However, performance was not up to full ATC standards, so the design had to settle for the lesser Category 2, or "Memo" Approval 2-530, early in 1937.

In the move to increased horsepower, the basic Zephyr underwent a little refinement, including a full cowling around the engine, at the hands of engineer Frank B. Johnson, who produced the CP-50 Collegiate model with the Continental A-50. This received ATC-690 on Oct. 7, 1939, and sold for $1,495 at the factory.

Following a new certification trend, the same airframe with alternative powerplants retained the original ATC instead of going through recertification for each change ahead of the firewall. The Collegiate then took on a whole string of new numbers: LP-50 with 50-hp Lycoming O-145-A1; CP-55 with the improved Continental A-50-8; LP-55 with the 55-hp Lycoming O-145-A3; CP-65 with the Continental A-65; LP-65 with the 65-hp Lycoming O-145-B1; and FP-65 with the 65-hp Franklin 4AC-171. The only significant change aft of the firewall was a larger fuel tank on the 65-hp models (13.5 gallons) to meet the minimum government requirements of fuel quantity relative to engine horsepower.

The Flyabout series wound down as the sales of Collegiates rose. Approximately 230 Model 35s, including the few 75-Cs mixed with the 35-90s to a combined total of 20, were sold compared to over 400 65-hp Collegiates, mostly the CP-65 model. In spite of their numbers, these did not figure prominently in the private owner market. They went mainly to flying schools participating in the Civil Pilot Training Program (CPTP) that started up just before World War II to train a reserve of military pilots.

U.S. entry into World War II ended the production of Porterfield airplanes and removed another famous name from the American aviation scene. Some 36 Porterfields survive today in the hands of the antiquers—one Zephyr, five Flyabouts and 30 Collegiates. □