

■ ■ Competition between manufacturers of similar products has been one of the main factors enabling the American consumer to obtain good quality products at reasonable prices. This holds as true for airplanes as it does for automobiles, washing machines, and other consumer goods.

With airplanes, as with automobiles, the limitations of the existing state-of-the-art, cost considerations, uniformity of the human bodies they are to carry, and the conditioned taste of the consumer make some of the competing products look as though they had come down the same production line. This has been one of the basic facts of life in the aviation business throughout its existence. Some designs are similar because one is a near or outright copy of another while in others the similarities develop because of their being designed to the same tight customer requirements as to size, cost, and power plant by engineers who went to the same schools, consulted the same references, and are required to use the same materials and equipment.

While one manufacturer may introduce a "new" feature and make a success of it, it seldom remains exclusive with him unless it is something proprietary in the gadget class. New structural and aerodynamic features are most often the result of the advancing state-of-the-art or of Government or foundation research that is available to all. If one manufacturer makes a notable success of a new feature, the others are bound to follow with the same thing or something better if they are to remain competitive.

Since really new features don't come along too frequently in competitive fields, the aircraft industry has become almost like the automotive industry, sticking to basic models for years (would you believe 30 years, or even 22?) and coming up with little refinements on an annual basis.

A rare example of a real "development" competition that resulted in major product improvement over a short period of years is the rivalry that existed between Cessna and Luscombe in the two-place field shortly after World War II.

In 1934, the Luscombe Airplane Company of Trenton, N.J., entered the two-place market with the all-metal *Phantom* (PILOT Sept. 1967). This was virtually a metal *Monocoupe* due to designer Don Luscombe's previous position as Chief Engineer for the then-defunct *Monocoupe* firm. The outstanding feature of the *Phantom* was its semi-monocoque sheet metal fuselage. In the general aviation field, this was shared only by the contemporary Ryan Model S-T. The *Phantom* was a lot of airplane for just two people and did not win wide acceptance in spite of its advanced construction, so Luscombe designed a series of low-powered and low-cost trainer types along similar lines and with the same general construction.

The last of these, the Luscombe Model 8, was introduced in 1939 and was an immediate success. The original



The Luscombe 8C of 1940, identical to the 65 h.p. 8A model except for fuel-injection Continental A75 engine. Military markings do not mean that Luscombes were in the Army. The big U.S. on the fuselage and the star on the wing were required for general aviation aircraft flying near the West Coast after Pearl Harbor.

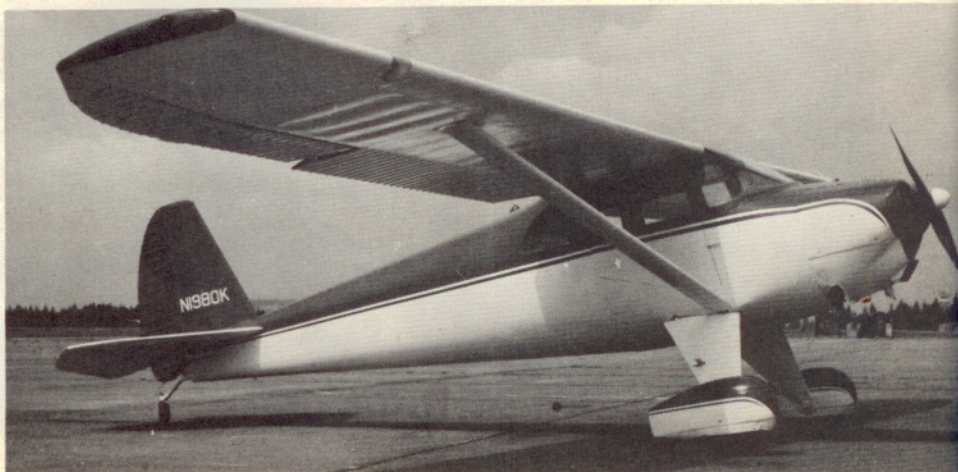
Yesterday's Wings:

The Cessna-Luscombe Competition

Rivalry between two manufacturers resulted in major developments in two-place planes in comparatively short time.

by PETER M. BOWERS / AOPA 54408

Luscombe's answer to the Cessna 140 was the 1947 Model 8E with 85 h.p. and an entirely new monospar wing with metal covering. New squared-off vertical fin appeared late in the 8E production run. The 65 h.p. Model 8A adopted metal-skinned wing late in 1946, older models later being distinguished by the appellation of "Ragwing."





The 85 h.p. Cessna 140, put on the market after WW II, drew heavily on the prewar Luscombe for structural and aerodynamic features. Its most interesting innovation was the single-leg spring steel landing gear that had been developed by Steve Wittman for use on his racing planes in the mid-1930's. Photos by the author

SPECIFICATIONS AND PERFORMANCE

	Luscombe 8A (1941)	Cessna 140 (1946)	Luscombe 8A DeLuxe (1947)
Span	35 ft.	32 ft. 10 in.	35 ft.
Length	20 ft.	20 ft. 11 $\frac{7}{8}$ in.	20 ft.
Height	6 ft. 3 in.	6 ft. 3 $\frac{1}{4}$ in.	6 ft. 3 in.
Wing Area	140 sq. ft.	159.3 sq. ft.	140 sq. ft.
Power Plant	Continental A65 65 h.p. at 2,300 r.p.m.	Continental C-85-12 85 h.p. at 2,575 r.p.m.	Continental C-85-12 85 h.p. at 2,575 r.p.m.
Empty Weight	650 lbs.	860 lbs.	870 lbs.
Gross Weight	1,200 lbs.	1,450 lbs.	1,400 lbs.
High Speed	110 m.p.h.	120 m.p.h.	125 m.p.h.
Cruising Speed	104 m.p.h.	100 m.p.h.	112 m.p.h.
Landing Speed	37 m.p.h.	41 m.p.h. (flaps)	48 m.p.h.
Rate of Climb	900 ft./min.	680 ft./min.	800 ft./min.
Service Ceiling	15,000 ft.	15,500 ft.	16,500 ft.
Range	350 mi. (15 gals.)	450 mi. (25 gals.)	600 mi. (30 gals.)

Cessna reacted to 85 h.p. Luscombe 8E and 90 h.p. 8F by introducing the Model 140A early in 1949. This also had 90 h.p. and a monospar metal-skinned wing. This basic wing, with taper outboard of the flaps, has been used on all subsequent Cessna designs using strut-braced wings.



power plant, a 50 h.p. Continental A50, proved to be rather marginal, so the 65 h.p. A65 was adopted for the Model 8A, which became the most widely produced of the entire series. Other power plants, none as popular as the A65, resulted in the Luscombe 8B with 65 h.p. Lycoming 8C with fuel-injected Continental A75, and the 8D with a conventional A75 engine and some additional features on the airplane.

The Model 8 series, later to become known as *Silvaire*, was a high-wing cabin monoplane with side-by-side seating. This was a carry-over from the *Phantom* and with the contemporary Taylorcraft broke the established tradition of tandem seating for trainers. However, the Model 8 retained the older features of stick control and heel-operated mechanical brakes. The 15-gallon fuel tank was in the top of the fuselage directly behind the cabin. Visibility from the cabin was good by the standards of the day, with windshield, skylight, and a single window on each side. Present-day pilots, trained in the current flying greenhouses, might consider an 8A Luscombe cabin a close relative of the Black Hole of Calcutta.

The sheet metal fuselage had by this time been adopted by several other light-planes but Luscombe was still ahead with a few other innovations. The fixed tail surfaces were cantilever construction with smooth metal skins but the movable tail surfaces and the ailerons were of lighter gauge material with a unique series of chordwise ridges bent into the sheet metal covering to stiffen it, a variation of the corrugated skin of the famous Ford trimotors. The two-piece wing with NACA 4412 airfoil used extruded metal spars, pressed aluminum ribs, and was fabric covered. Luscombe was one of the first to completely enclose the air-cooled flat-four engine in a pressure cowling.

The Luscombe had won a good share of the general aviation and trainer markets when the United States got into World War II. The builders of competing trainers, Taylorcraft, Aeronca and Piper, were able to adapt their tandem-seat designs to liaison types for the Army and remained in production. The Luscombe's side-by-seating and restricted visibility were against it in military eyes so production ended for the duration. It resumed right after V-J Day in a new plant in Dallas, Tex. The prewar contemporaries did the same—Taylorcraft revived its side-by-side BC-12 model and abandoned its tandem while Piper dropped the side-by-side *Cub Coupe* model but retained the tandem J-3 *Cub*. The *Ercoupe* reappeared unchanged and only Aeronca significantly updated its prewar models. The tandem *Defender* became the new *Champion* and the old *Chief* got a face-lifting but kept the original name.

However, the battle for the postwar lightplane market had some new contestants; the well-established Cessna Aircraft Company of Wichita, Kan., and Commonwealth Aircraft, Inc., of Valley Stream, Long Island (the prewar Rearwin firm of Kansas City). Both got into

the act with new side-by-side trainer/private owner types. The most significant of these was the Cessna.

The new Cessna was built in two versions, the "bare" Model 120 and more fully equipped Model 140, and was heavily influenced by the prewar Luscombe design almost to the point where it could be called a latter-day Luscombe. The basic structure was similar, with the semi-monocoque fuselage, fabric-covered metal wing with NACA 2412 airfoil, and the stiffened metal-covered control surfaces. However, there were enough refinements and new features to make the Cessna an entirely new airplane.

The principal differences were in the use of an 85 h.p. Continental C-85 engine, wheel control, hydraulic toe brakes; and on the 140, an electrical system, an extra side window on each side, and hydraulically-operated wing flaps. Both models carried the fuel in 12.5-gallon wing tanks. This left room at the rear of the cabin for a hat-throw shelf. As on the Luscombe, the seat back could be pulled forward for access to a baggage compartment.

The most notable new feature of the 120/140, however, was the unique spring steel landing gear that had been developed by famed race pilot Steve Wittman in the 1930's. Cessna bought the design, making it a proprietary item that for quite a few years was virtually a Cessna trademark. Naturally, since it was a newer airplane by nearly eight years, with a bigger engine and new features, the Cessna was a big improvement on the Luscombe and was an immediate sales success. The 120 sold for \$2,695 and the 140 for \$3,245.

Luscombe didn't take Cessna's improvements sitting down. Later in 1946 it produced a new single-spar metal-

skinned wing for the 8A, the only model it was producing at the time, and followed that with the 1947 Model 8E with a similar wing. This went to 85 h.p., two 12.5-gallon wing tanks (later increased to 15 gallons each), hat-throw shelf, additional side windows, and an electrical system as a direct response to the challenge of the 140. The old features of stick control and mechanical heel brakes were still retained. The 1948 Model 8F was a further refinement with the new 90 h.p. Continental C-90 engine, a new vertical tail shape, and the option of flaps. There was also a tandem-seat T8F *Observer* model with lots of extra window area that was intended for the pipeline patrol and similar markets, but it didn't catch on. The 8A picked up a few 8E and 8F details along the way and remained in production.

Cessna first met the 8E's challenge by offering a C-90 option in the 140 in 1948 and then introduced the Model 140A early in 1949. This was essentially the 140 with the C-90 engine and a single-spar metal-skinned wing with improved flaps. This wing was straight-chord in the flap area and then tapered slightly to the tips, a shape that has since become a trademark of all the high-wing Cessnas with strut bracing.

Luscombe was not able to top the 140A. The company got into difficulties and went bankrupt in 1949. A new company was formed with the same name, but this was a wholly-owned subsidiary of the Texas Engineering and Manufacturing Company (Temco), also of Dallas. Temco later built 50 8F's in its own plant. However, the two-place market was saturated by that time and demand was slight. Temco terminated *Silvaire* production in October 1950, after approximately 5,000

Model 8's of all versions had been built. Cessna finished its last 140A in March, 1951, after building 2,164 120's, 4,881 140's, and 525 140A's.

Cessna, with other popular models still in production to fall back on, continued to grow but the existing Luscombes became near-orphans. Temco provided support and spare parts for several years but finally sold the whole project to a new organization known as *Silvaire, Inc.*, of Fort Collins, Colo., in January 1955. *Silvaire* produced a few new airframes after September 1956, but did not keep it up. The design rights and tooling were eventually sold to Universal Aircraft Industries of Denver, Colo. (now Univair), which can still supply parts.

The old 140's, meanwhile, had become the mainstay of the flying schools. When "taildraggers" became obsolete, some 140's were converted to tricycle landing gear under the unofficial designation of Cessna 145. When a market for new two-seat trainers opened up in the late 1950's, Cessna was ready for it with a 100 h.p. tricycle gear follow-up to the 140/145 known as the 150. Over 10,000 150's have been sold since the first one was introduced in October 1958.

The advent of the 150 has done little to force the retirement of the venerable 140. There are still some 5,000 in service with schools or private owners. One of the amazing things about these old models, along with the Luscombes and others of like vintage, is how their price holds up in the used-plane market. Eighty-five h.p. Cessnas and Luscombes, in good condition with updated radio, sell in the \$2,500-\$3,500 range, which compares with what they cost when new.

Not bad at all for a 20-year-old work-horse airplane! □