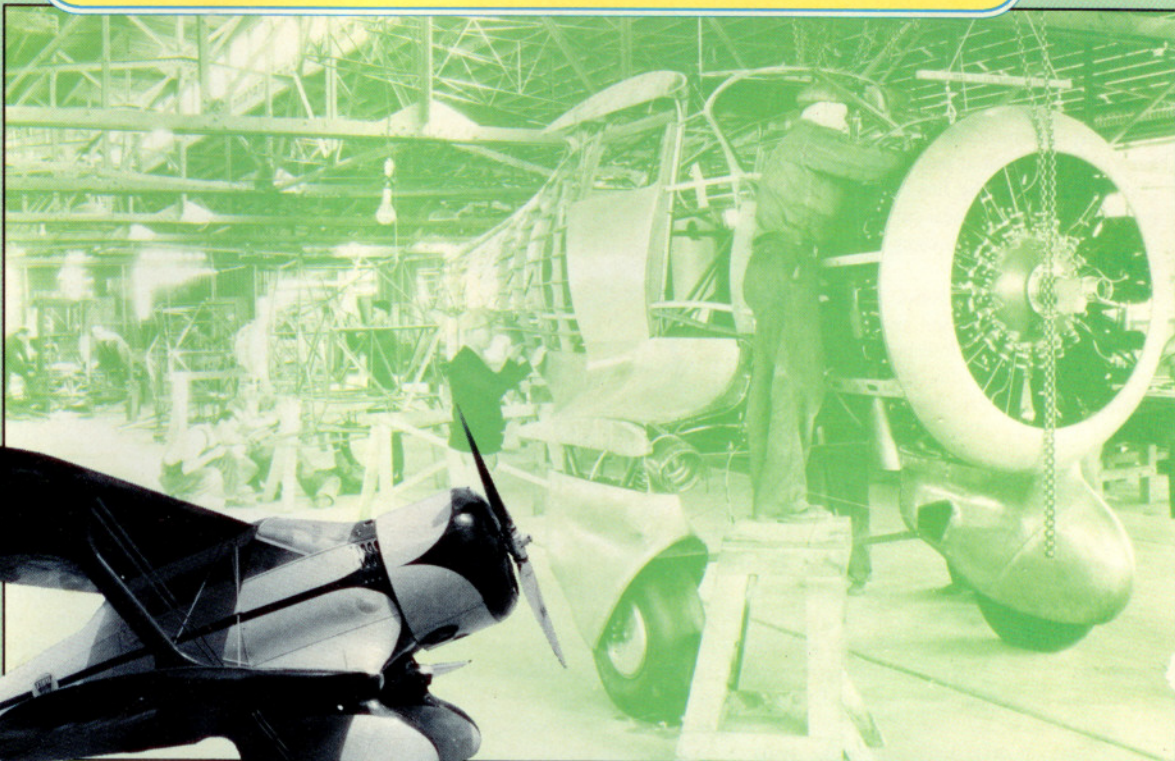


BEECH AIRCRAFT



The Beech 17s

The Staggerwing was the first of Beech's carriage-trade designs

BY PETER M. BOWERS

One of the all-time classic airplanes of American general aviation is the Beechcraft Model 17, universally known as the Staggerwing. It is notable on several counts—it was one of the first high-performance airplanes available to the public; it was introduced during the Depression and was a continuation of another company's aircraft; it had an unconventional configuration that resulted in an inaccurate but accepted name; and it had a remarkable production longevity for a biplane in the age of the monoplane.

The Model 17 originated during the period when many major aircraft production plants were either cutting back, changing the orientation of their product lines or shutting down completely and surrendering to the Depression.

By 1932, Walter H. Beech had built an impressive career in aviation. Starting with Swallow Aircraft in Wichita, he quit over a disagreement with the boss, J.M. Mollandick, on design philosophy and became one of the co-founders of the Travel Air Aircraft Company in the same city in late 1924. When the giant Curtiss-Wright conglomerate bought Travel Air in 1929, Beech, president of Travel Air, became a vice president of Curtiss-Wright. With the Depression really under way in 1930, Curtiss-Wright

closed its Travel Air division and moved much of the staff and tooling, including Beech, to its St. Louis plant. Here Beech was charged with carrying on some of the Travel Air models and establishing new low-cost models for the greatly reduced market. These did not sell well enough to justify continued production, so the St. Louis plant was closed in 1931.

Beech took advantage of this opportunity. He gathered a few of his former employees and founded Beech Aircraft Corporation on April 1, 1932, leasing a portion of the closed Cessna Aircraft plant in Wichita. (Clyde Cessna, who had quit Travel Air over another design dispute with Beech, was one of the three founders of Travel Air and still a good friend.) The object was to build a high-performance, deluxe four- to five-seat cabin biplane for the carriage trade, or what was left of it. Beech and one of his former Travel Air engineers, Ted Wells, had been doodling with the design in their spare time since 1930 and had hoped to get Curtiss-Wright to build it as a continuation of the Travel Air line. However, Waco was the major producer of 125- to 250-hp aircraft at that time—the company already had a near monopoly on the cabin biplane market, with its lower-powered and very boxy but

efficient C-series. So, Beech's effort was doubly daring in taking on both the Depression and the solidly established competition.

While Model 17 seems an odd number for the first product of a new company, the number was significant to Beech. Model CW-16 was the last of the old Travel Air line that was built in St. Louis and 17 was the next number. When the Curtiss plant reopened a year later, it advertised but did not build its own CW-17 model. But the company did carry on the sequence with Models CW-19 through CW-25.

Beech Model 17 was relatively conventional in overall structure. The welded-steel-tube fuselage was rounded out with wooden formers and stringers. The wings were rather innovative in using spars built up of steel-tube trusses, but they did retain wood-truss ribs. The fixed tail surfaces were wood, and the movable tail surfaces were steel tubing. The quality of the "Beechcraft finish" on the fabric covering became an industry legend. Access to the four- to five-place cabin was through a large, single door on the left side, with two pilots sharing a throw-over control wheel. The powerplant was the 420-hp Wright R-975-E2 Whirlwind under a snug NACA cowling. Cooling problems resulted in an odd modification—

The first Beechcraft, the 420-hp Model 17R (above), was born in 1932, despite the Depression and the challenges of an established competitor.

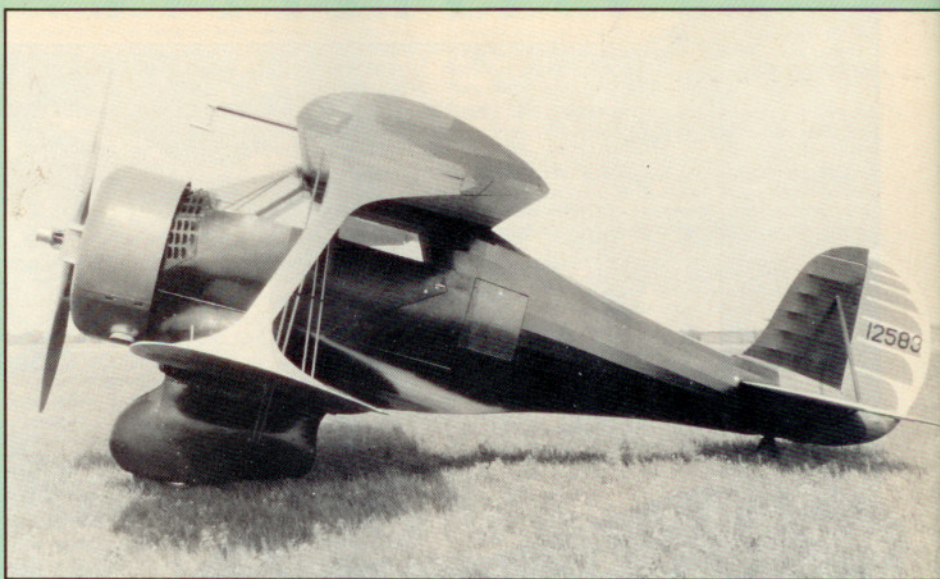
because the face of the cowling was closed, individual airscoops were provided for each of the nine cylinders.

Significant design features, actually innovations on that class of airplane, were: retractable landing gear (introduced on the third airplane built); a full NACA cowling for a variety of radial engines that was integrated fully into the lines of the airplane, instead of being an add-on as it had been with most preceding designs; and, eventually, wing flaps.

As a biplane, the Model 17 broke with tradition on four major counts. For one, Beech was one of the first biplane designer's to mount the wing directly on top of the fuselage instead of holding it above the fuselage on struts. (Waco was the only other manufacturer to use this significant advance in streamlining and structural simplification at the time.) The design's relatively high wing loading seemed to call for the use of conventional wing flaps, but Beech came up with something different. To serve as an air brake by adding drag, the rudder was split vertically to open toward both sides but still retain the rudder function. This short-lived innovation appeared only on the first two Model 17s built and soon was deleted from one in favor of drag flaps, added to the undersurface of the upper wing.

The most distinctive feature of the biplane was the arrangement of the wings relative to each other. On most biplanes, the upper wing is positioned some distance ahead of the lower in a configuration known as positive stagger. Since the Model 17 eventually was to have retractable landing gear, the only convenient place to mount and stow it was on the lower wing, as in some contemporary low-wing monoplanes. Since the lower wing would be too far aft in positive stagger, the arrangement was reversed, placing the lower wing ahead in the configuration known as negative stagger.

This feature was so conspicuous that the airplane was dubbed the negative-stagger Beech as soon as it appeared. (Actually, the statement was redundant because there was only one Beechcraft model and, therefore, no need for configuration distinction; the simple name "Beechcraft" would have been sufficient.) Since the name was a rather inconvenient mouthful, it soon was shortened



in popular usage to Staggerwing, without the distinction as to positive or negative. This quickly became a convenient substitute for the various Model 17 subdesignations when they appeared. Simply say Staggerwing and everyone knows what airplane you are talking about without needing the manufacturer's name or the model number.

A relatively minor feature that contributed to the racy lines of the airplane was a single I wing strut on each side instead of the traditional N struts. These had been used mostly on racers in the past and, therefore, were associated with speed.

The original landing gear were enclosed in large fairings that were referred to as spats. Though the gear appeared to be fixed, they actually were partly retractable. The wheels drew up into the spats slightly, leaving only a small portion projecting. Only four of the first 11 airplanes had this feature, all others had fully retractable gear that folded in toward the belly, flush with the lower wing and center section.

Since it was known that the airplane would be tricky on the ground, the tailwheel was fixed and nested partway into the fuselage. Though a definite asset on takeoff and during the landing roll, it made turns on the ground difficult. This feature was used only on the first two Model 17s

and was quickly deleted from one of them.

The first Staggerwing, Model 17R, made its initial flight on November 4, 1932. It performed as expected, and work began on a second 17R that differed only in minor detail, principally a wider-track landing gear.

The third Model 17 was notably different from the previous two models by having fully retractable landing gear, a revised wing-tip shape, a Clark-Y airfoil instead of the Navy N-22 section, solid-wood instead of steel-truss spars and other minor structural refinements. This was the B17 model—the baby of the Staggerwing line with a 225-hp Jacobs L-4 engine.

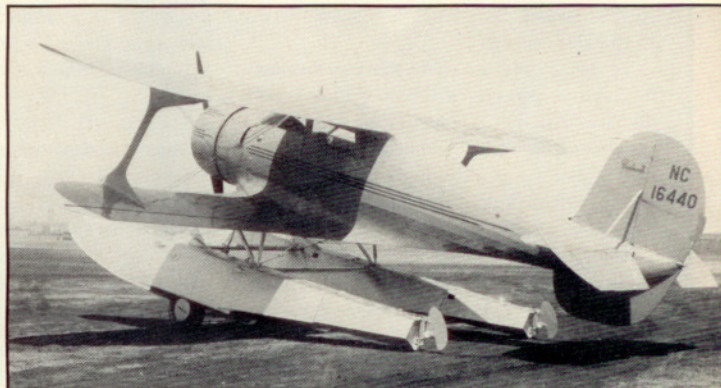
Two more fixed-gear models with the old wing structure but without the split rudder and fixed tailwheel were built as A17s; with 690- to 710-hp Wright Cyclone engines, they were the most powerful of all the Model 17s. Various combinations of drag-flap and aileron locations were used on subsequent production Staggerwings. From the D model on, the ailerons were on the upper wing; conventional, full-span flaps were on the lower; the fuselage was lengthened 13 inches; and the airfoil was changed to the NACA 23012.

Staggerwing prices ranged from a low of \$8,000 for the B17L to nearly \$20,000 for the A17s and the 450-hp models D through

The third Model 17 and, first production Beechcraft, Model B17L, was the baby of the Staggerwing line with the 225-hp Jacobs engine.



Many Beech 17s were put on floats and acquired the prefix S for seaplane. But this 1936 SC17B was the only model to have amphibious floats.



The heaviest, fastest and most powerful of all the Staggerwings (top photograph, facing page) was the single A17FS with a 710-hp Wright Cyclone engine.

Specifications	BEECH 17 STAGGERWING		
	A17FS	B17L	D17S
Powerplant	Wright R-1820-F3 Cyclone 710 hp @ 1,900 rpm	Jacobs L-4 225 hp @ 2,000 rpm	P&W Wasp Jr. SB 450 hp @ 2,300 rpm
Wingspan	34 ft 6 in	32 ft	32 ft
Length	24 ft 3 in	24 ft 6 in	25 ft 11 in
Total wing area	338 sq ft	273 sq ft	296 sq ft
Wing loading	15.4 lb/sq ft	11.6 lb/sq ft	14.2 lb/sq ft
Power loading	7.3 lb/hp	14 lb/hp	9.5 lb/hp
Airfoil	Navy 22	Clark Y	NACA 23012
Empty weight	3,285 lb	1,800 lb	2,540 lb
Gross weight	5,200 lb	3,150 lb	4,250 lb
Performance			
High speed	250 mph	175 mph	212 mph
Cruising speed	215 mph	162 mph	202 mph
Landing speed	65 mph	45 mph	55 mph
Initial climb	2,000 fpm	850 fpm	1,250 fpm
Service ceiling	20,000 ft	15,500 ft	20,000 ft
Range	750 sm	560 sm	800 sm
Fuel capacity	155 gal	50 gal	100 gal

ATC No.	Date	Model* (Military Designation)	Number Built	Powerplant
496	Dec. 30, 1932	17R	2	Wright R-975-E2, 420 hp
548	Aug. 8, 1934	A17F	1	Wright R-1820-F11, 690 hp
560	Dec. 4, 1934	B17L, B17B	47	Jacobs L-4, 225 hp and Jacobs L-5, 285 hp
566	May 9, 1935	B17E	4	Wright R-760-E1, 285 hp
577	July 6, 1935	A17FS	1	Wright SR-1820-F3, 710 hp
579	July 22, 1935	B17R (UC-43H)	16 (3)	Wright R-975-E2, 420 hp
602	April 16, 1936	C17L (UC-43J) C17B (UC-43G)	45 (13)	Jacobs L-4, 225 hp and Jacobs L-5, 285 hp
604	May 3, 1936	C17R (UC-43E)	17 (5)	Wright R-975-E2, 420 hp
615	July 1936	C17E	3	Wright R-760-E1, 285 hp
638	May 20, 1937	D17R (UC-43A)	28 (13)	Wright R-975-E3, 420 hp
641	May 22, 1937	E17L E17B (UC-43D)	48 (31)	Jacobs L-4, 225 hp and Jacobs L-5, 285 hp
649	July 16, 1937	D17S (UC-43B)	66** (13)	P&W R-985, 450 hp
689	Aug. 26, 1938	F17D (UC-43C)	56 (38)	Jacobs L-6, 330 hp
713	Nov. 7, 1939	D17A (UC-43F)	2 (1)	Wright R-760-E-2, 350 hp
779	Oct. 11, 1946	G17S	20	P&W R-985-AN-4, 450 hp

*Suffix letter identifies powerplant; **Plus 559 UC-43s, GB-1s, GB-2s

for Boeing. But his AA design contest.

ment to the American Embassy in London, repatriate Prince Bernhard of the Netherlands.

Earlier Staggerwings looked very much alike; but the G17S was distinctive with its new cowl-to-fuselage lines and landing-gear closure fairings.

