

## Yesterday's Wings

# The Cessna Model 'A'

Clyde Cessna's long battle on behalf of the monoplane resulted in a cantilever-wing pioneer that outshone all contemporaries (but Lockheed's famous Vega) in clean, advanced design

by PETER M. BOWERS / AOPA 54408

■ The Cessna "A" series of 1928 is a fine example of a truly advanced monoplane that can be considered a pioneer in the field of general aviation. It exerted a strong influence on subsequent designs and completely vindicated the philosophy of its designer, who had been promoting the advantages of the monoplane for a decade and a half in what was then a biplane world.

Clyde V. Cessna was a "monoplane man" from the time he turned out his first homebuilt airplane, based on the French Bleriot, in 1911. While his battle on behalf of the monoplane was a lonely one for a long time, progress eventually became his ally. The monoplane was just beginning to achieve a significant place in civil aviation prior to Lindbergh's transatlantic flight in May 1927. However, most of the available monoplane designs were relatively high-drag, strut-braced types. A few were bona fide cabin types, with the pilot and passengers inside, but others were either open-cockpit, like the biplanes, or a combination. The "Spirit of St. Louis" itself was only a slight departure from the norm; its special features were in-

Clyde Cessna in the open cockpit of his 1927 prototype, powered by a 10-cylinder French Anzani engine.

Cessna Aircraft photo

corporated only to increase its range.

The Cessna "A" of 1928-29 was a much cleaner and more advanced design than all of its contemporaries but the Lockheed *Vega*, which appeared at the same time as the "A's" prototype. Unlike some pioneers of the time, the "A" and its successors were recognized in their time and enjoyed good production runs. Although the "A" went out of production during the depression, the basic design was revived in later Cessnas—the "C's" and *Airmasters* of 1933-41 and the 190 and 195 models of 1945-53.

Clyde Cessna had turned out some 15 different designs, as an individual or in partnership, before he became involved in a major aircraft manufacturing operation. In 1924, he was one of the founders of the Travel Air Manufacturing Corporation of Wichita, Kan. The other founders were Walter Beech and Lloyd Stearman, both of whom had just left the famous Swallow Aircraft Company, also of Wichita. The reason they left was a strong difference of opinion with the management over airplane construction. Beech and Stearman wanted to advance to steel-tube fuselages; management wanted to stay with wood.

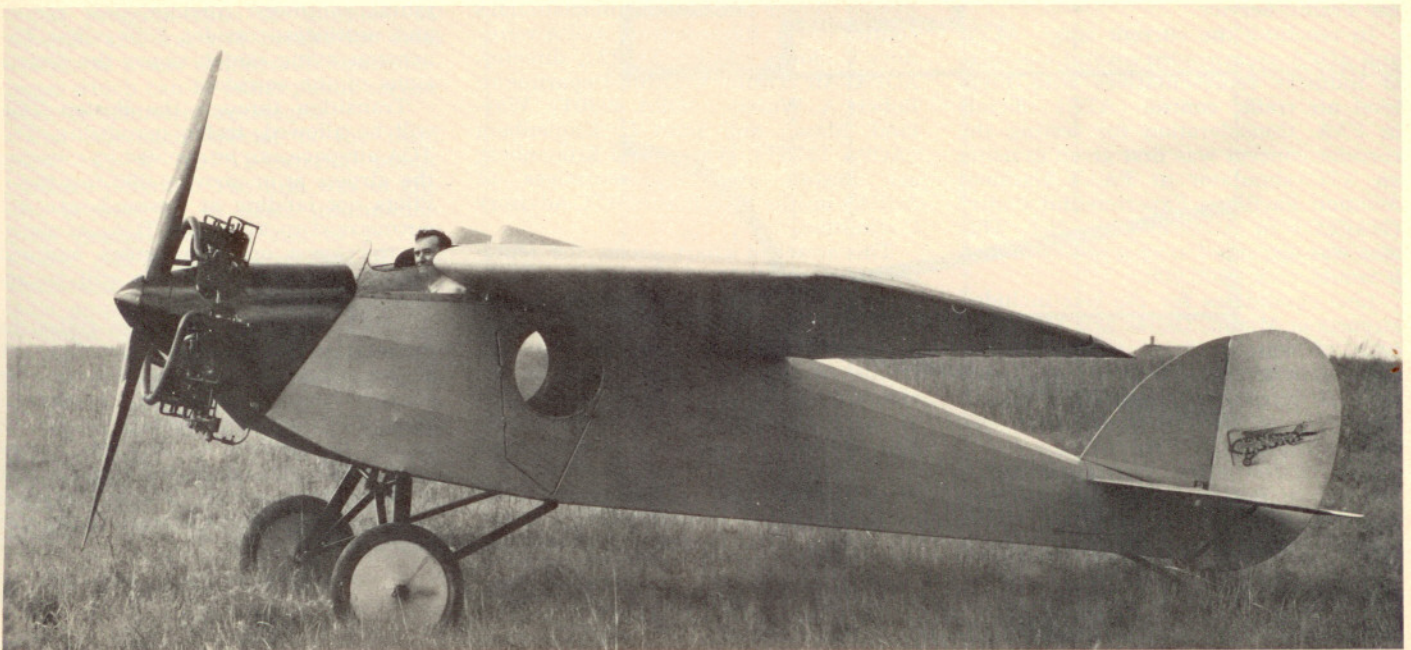
## SPECIFICATIONS AND PERFORMANCE

	Cessna AW	Piper Cherokee 140B
Span	40 ft.	30 ft.
Length	24 ft. 9 in.	23 ft. 3 in.
Wing area	224 sq. ft.	160 sq. ft.
Aspect ratio	7.1	5.6
Powerplant	Warner Scarab 110 h.p. @ 1,850 r.p.m.	Lycoming O-320-E2A 150 h.p. @ 2,700 r.p.m.
Empty weight	1,225 lbs.	1,201 lbs.
Gross weight	2,260 lbs.	2,150 lbs.
Fuel	40 gallons	36 gallons (normal)
High speed	125 m.p.h.	142 m.p.h.
Cruise speed	105 m.p.h.	135 m.p.h.
Landing speed	42 m.p.h. (no flaps)	54 m.p.h. (flaps)
Climb	620 ft./min.	690 ft./min.
Service ceiling	12,000 ft.	14,900 ft.
Range	630 miles	535 miles (36gals) 725 miles (50 gals)
Price	\$6,900	\$9,600

The original Travel Airs were conventional biplanes and were money-makers from the start. Cessna, who was president of the new firm, kept pushing for a new monoplane. Beech, though, was an adamant supporter of the biplane (and remained so into the 1930s). His resistance to design advances in monoplane form put Cessna in somewhat the same position at Travel Air as Beech himself had been in at Swallow when he was advocating steel-tube fuselages.

Stymied on monoplane work at the plant, Cessna worked out a conventional design on his own and financed the building of a prototype in a small Wichita shop. Even though this was a boxy, strut-braced design, it did prove many of Cessna's claims for monoplane efficiency. Spurred by a requirement from National Air Transport for some mail-and-passenger monoplanes, Travel Air went into production on an improved version of the Cessna design that was known as the Travel Air M-A, later redesignated Model 5000.

Although he won his battle to have Travel Air build monoplanes, Cessna lost the more important one—the development of a really advanced monoplane



that could capitalize on the design efficiencies that were then possible. In order to achieve this goal, he had to emulate the Beech-Stearman tactics and leave Travel Air. Again on his own, he developed a sleek, four-place monoplane that first flew in the summer of 1927.

The new Cessna was a sensation. Powered with a 10-cylinder, 100 h.p. air-cooled French Anzani engine, it could carry four at 110 m.p.h. and cruise at 90. However, it did not deliver its full potential because the pilots sat in a drag-producing open cockpit ahead of the wing.

The fuselage and tail were conventional welded-steel-tube structures; the only unconventional feature was the wing construction. The wing was a tapered cantilever with two parallel wooden box spars. However, where the few other cantilever wings in use were covered with plywood for torsional stiffness, the Cessna wing was fabric-covered. The necessary stiffness was obtained by a unique system of flat steel straps and turnbuckles, crossed between

compression ribs in the manner of conventional internal bracing, but lying in two planes coinciding with the tops and bottoms of the spars. These, in effect, made torsionally rigid boxes of the space between the spars, and did the job at a much lower cost than plywood, with less weight and fabrication time, and with greatly simplified access to the interior of the wing for inspection and maintenance.

Since the new monoplane had great commercial potential, Cessna interested Victor Roos in forming a partnership to manufacture it. The Cessna-Roos Aircraft Corporation, capitalized by \$200,000, was formed in August 1927. Roos soon pulled out to pursue other interests, and a successor firm, the Cessna Aircraft Company, was formed in December 1927.

In the meantime, the original airplane was cleaned up and fitted with a 200 h.p. Wright J-4 Whirlwind engine for racing. It was then modified further, with greatly improved cabin facilities and windows, and became the pre-

production prototype of the four-place Cessna Model "B". Following this, it had a 120 h.p. Anzani engine installed and became the pre-production prototype of the Cessna Model "A".

Since the "B" used the same airframe as the "A" but had a bigger 220 h.p. Wright J-5 engine, the Bureau of Air Commerce restricted the "B's" to three places for a while. Although eventually cleared for four seats, the "B" was phased out, after only 13 had been built, for a larger, four-to-six-place Model "C" with 185-220 h.p., and the still-larger 300 h.p. Model "D". The principal four-place Cessna model was the "A", with 78 built.

The Anzani engine proved to be a constant source of trouble, so other radial engines were made available as options. Distinction between these was made in the airplane designation as follows:

Model AA	120 h.p. Anzani	ATC-65	14 built
Model AC	150 h.p. Comet	—	1 built
Model AF	115 h.p. Floco*	Memo 2-237	3 built
Model AS	130 h.p. Siemens	Memo 2-8	4 built
Model AW	110 h.p. Warner	ATC-72	56 built

\* Later became Axelson

It should be noted that not all of these airplane-engine combinations qualified for a full Approved Type Certificate (ATC). Some of the new American radials of 1928 started out with great promise but never became significant. The only reason the Cessna Model AA was relatively popular was that the Cessna factory modified and extensively rebuilt the Anzani engine.

Even though it had a wingspan of 40 feet, the Cessna AW was a small airplane for a four-seater. Naturally, this smallness was most apparent in the cabin. The pilot and copilot sat high in front, with their heads between the front spar and the windshield, and the passengers were shoehorned into the lower back seat. However, the AW and the others made up for this shortcoming by turning in a remarkable performance on only 110 h.p.

The key to that performance was the cantilever wing—not merely because it was clean, but because the long span relative to the area resulted in an aspect ratio (AR) slightly over seven. This is high by both 1928 and subsequent standards, and adds greatly to wing efficiency. However, high AR isn't an easy route to high performance, since increasing the AR presents structural problems. The actual AR used on any design, therefore, is the result of an aerodynamic and structural trade-off by the design engineers.

With the full 40 gallons of fuel aboard, the payload of the AW was 550 pounds. This forced the pilot into his own trade-off between bodies, baggage, and gas—a situation that is still a feature of today's small four-seaters. Because of this, it is interesting to compare the specifications and performance of the 1928 AW with the closest equivalent in production 40 years later, the four-seat cantilever-wing Piper PA-28 Cherokee 140B. □



The 1927 Cessna modified for racing, with a 200 h.p. Wright J-4 engine and an enclosed cockpit. This was modified further to become pre-production prototype of the Cessna "B" model.

Cessna Aircraft photo



The original Cessna in its fourth configuration—with modified cabin and 120 h.p. Anzani engine that made it prototype of the Cessna "A" series. Registration number, X-1627, was later changed to 4165.

Cessna Aircraft photo

The Cessna AW was the most popular of the series, with a total of 58 built. This is one of two currently flying and is owned by Mr. E. D. "Skeeter" Carlson (AOPA 289708) of Spokane, Wash.

Peter M. Bowers photo, 1970

