

The elliptical wing planform and the built-in wingtip slots of the diminutive Culver Cadet are quite evident here. The two metal cabin doors, one on each side, hinged forward.

# The Culver Cadet

by PETER M. BOWERS / AOPA 54408

In a day when the dollar went farther, \$2,000-plus could buy you an elliptical-winged little wonder with a mind of its own

■ ■ The lively little Culver Cadet of 1940-41 was the first (and so far only) successful attempt to produce a low-cost but relatively high performance two-seater for general aviation. With a cruising speed of 120 mph on only 75 hp, and a 1940 price tag of only \$2,395, the Cadet can be credited with achieving its goal.

The Cadet was designed by Al Mooney for Culver Aircraft Corp., of Columbus, Ohio. Culver had taken over the former Dart Manufacturing Corp. The latter company had itself been formed to take over the Monosport, which Mooney had designed for the Monocoupe Corp., and to manufacture it as the Dart.

The prototype Cadet was built in Columbus, after which Culver was invited to move to Wichita, Kan. Walter Beech and others helped with financial backing, and Beech became vice president of Culver after buying out the Culvers but retaining their name for the transplanted firm.

Many of the aerodynamic features of

the Dart were transferred to the Cadet, which was almost an anachronism in being a wooden airplane at a time when the industry was rapidly switching to all-metal structures. The Cadet obtained its speed from smallness, clean lines, and a retractable landing gear. The small size also made for rapid control response in all axes.

Although the Cadet looked like a frail model airplane, it inherited the Dart's aerobatic capabilities, which were diminished only in proportion to the reduced power. It should be mentioned that the Cadet wasn't quite an all-wood design—there was a husky steel torsion/drag truss inside the wing.

The Cadet's sharp, elliptical wingtips combined with a thin airfoil to produce very undesirable stall characteristics; however, these were largely overcome by the installation of fixed wingtip slots. Some latter-day owners tried to get more performance by taping the slots over—and promptly opened them up again.

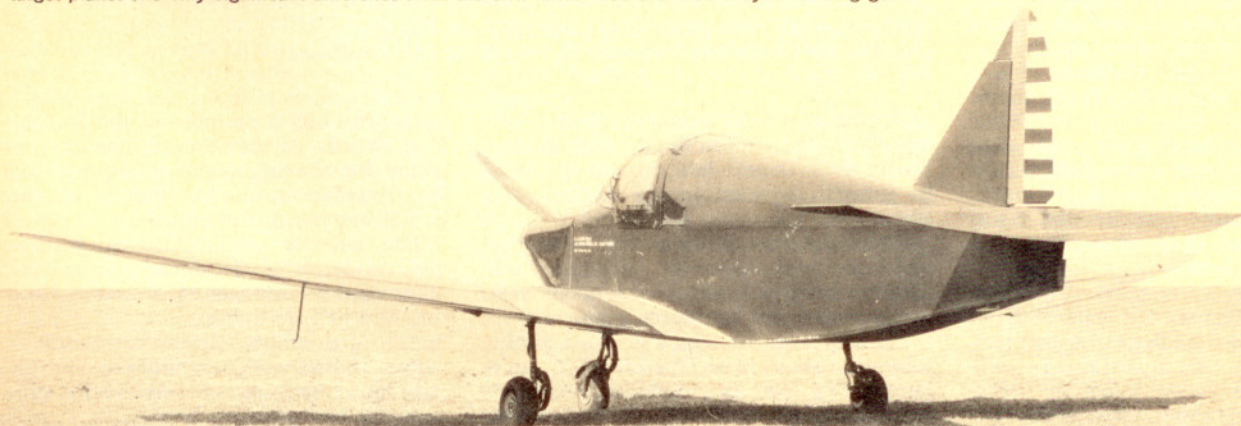
As an inevitable necessity for low cost

and minimum weight, the retractable landing gear was as simple as possible, and manually operated. Pilots found that they needed two hands to work the gear, so they quickly learned to hold the stick with their knees during these operations.

Perhaps due to oversimplification, the retractable gear had some problems. A worn uplock could allow the gear to fold during taxiing, and the safety device that kept the throttle setting from being brought below 1,700 rpm while the gear was up could get reversed if the gear was retracted when the throttle was below 1,700—then the throttle couldn't be opened.

The gear would also stick in the "up" position from such causes as slush or mud freezing in the wheel wells. This became so common in some areas that it was standard practice to fly over to another airport with suitable repair facilities and belly-land in front of the appropriate hangar. Damage was generally negligible, particularly on starter-

After civil production ended, the Cadet remained in production as the U.S. Army's PQ-8 radio-controlled target plane. The only significant difference from the civil model was the fixed tricycle landing gear.







Flight view of the Cadet shows off its clean lines and racy appearance with the landing gear retracted.

equipped models whose propellers could be nudged to a horizontal position.

The Cadet was about as lively on the ground as it was in the air. The castoring tailwheel was not steerable, and the rudder was ineffective when the tail was down, so ground steering was done with the hydraulic brakes. Latter-day owners have gotten approval for steerable tailwheels, but the small size of the mains still pretty much limits the Cadet to paved-runway operations. The single-leg landing-gear units were a marvel of simplicity—two telescoping tubes with semicircular external leaf springs for shock absorbers.

The Cadet was available in two models—the LCA, with a 75-hp Continental engine, and the LFA with an 80-hp Franklin. Both models were equipped with wooden fixed-pitch propellers, although the ground-adjustable Freedman-Burnham prop was available as an option. Latter-day owners have obtained

approval for metal props.

While the Cadet was a true pioneer in its field, it was also a victim of regulations that “froze” its many inadequacies. The aircraft had to be produced in the form in which it was initially certificated. Approval of desirable improvements called for extensive engineering analysis and flight and structural tests that cost more than the improvements were worth or than the small Culver organization could afford to absorb without raising the price of the aircraft.

Culver produced 360 Cadets before turning to war work in 1941; however, production of the same airplane continued for the Army. Fitted with fixed tricycle landing gear to improve the landing characteristics, 200 Cadets were built as PQ-8 radio-controlled target drones. A further 200, with 125-hp Lycoming engines, were built as the PQ-8A. Some of these were refurbished by Superior after the war and marketed as

#### CULVER CADET

##### Specifications and Performance

Span	26 ft 11 in
Length	17 ft 8 in
Wing area	120 sq ft
Powerplant	Continental A75 75 hp @ 2,650 rpm
Empty weight	720 lb
Gross weight	1,305 lb
High speed	140 mph
Cruising speed	120 mph
Rate of Climb	800 fpm
Service ceiling	17,500 ft
Range	600 mi
Price	\$2,395

piloted airplanes. The basic Cadet, with fixed tricycle gear and the 90-hp Continental, reappeared briefly in 1967 as the Helton Lark. Approximately 40 of the prewar Cadets are still active today. □