

## Yesterday's Wings

'Chummy,' built in 1920's at Rochester, N.Y., was forerunner of the immortal 'Cub,' which became collective term applied by public to all lightplanes. Although plane usually associated with Piper, Taylor produced the early ones

# Mr. Taylor's Cubs

by PETER M. BOWERS / AOPA 54408

■ ■ The name "Piper Cub" is one of the best-known in American aviation. From before World War II until the middle 1950's it was a collective term used to identify light airplanes as a class. To a whole generation of Americans not really close to the scene, any small airplane was a "Cub."

The associated word is usually "Piper," but once in a while the words "Taylor Cub" appear. It so happens that the same airplane was built by two different firms. We'll call them "Mr. Taylor's Cubs" and "Mr. Piper's Cubs" and treat them in two separate articles in *The Pilot*.

It all started in the middle 1920's, when two brothers, C. Gilbert Taylor and Gordon Taylor, formed Taylor Brothers Aircraft Corporation in Rochester, N.Y. They designed a two-seat side-by-side parasol monoplane called the Taylor "Chummy," but even in the aviation boom years of 1928 and 1929 they had difficulties in building and selling it. After Gordon died in 1928, C. Gilbert moved the firm to a new plant in Bradford, Pa.

In the process of resettling there, he met William T. Piper, a local oilfield developer, who, with a partner, invested \$800 in the small company and became a director.

By the time the relocated plant was ready for business, the depression had arrived and wiped out the market for airplanes like the "Chummy." Taylor and Piper then decided that their future lay with small ultralight types, and Taylor set out to design one. Within 30 days he developed the basic design of the immortal "Cub."

This was a real "bare minimum" airplane. A parasol monoplane, it was essentially a scaled-down "Chummy," the major difference being that the seating was tandem in a single cockpit instead of side-by-side. While side-by-side seating would have simplified the balance problem between solo and dual flight, always a problem in small planes,

the necessarily wide fuselage wouldn't have been compatible with the chosen powerplant and its small propeller.

Although 975 pounds lighter than the "Chummy," the new model had a

greater wingspan and more wing area. A self-taught engineer, Taylor was sharp enough to realize that good flight characteristics with low power required light wing loading and an efficient high-

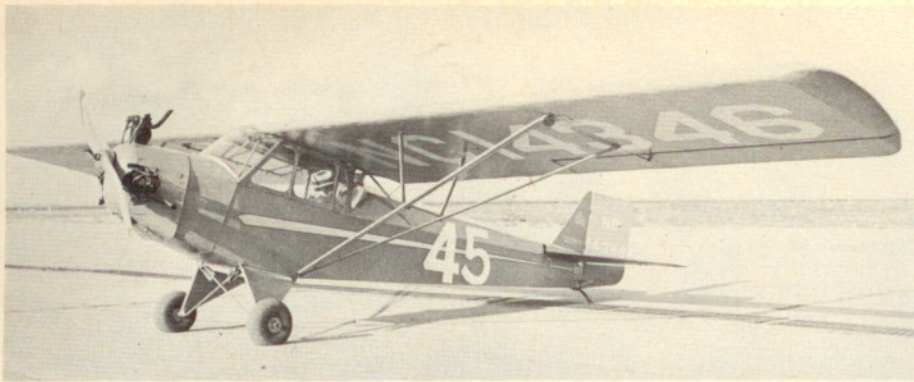


The prototype Taylor Cub with the French Salmson radial engine. Notice the drag wire from the wing to engine and the vane-type airspeed indicator on the right forward jury strut. Designer C. G. Taylor at left, test pilot Bud Havens at right. Photo courtesy of Gerald H. Balzer

Production Taylor E-2 Cub with 37 hp Continental A-40 engine. Note the hinge-down door and the open cabin sides. The drag wires and external airspeed indicator of the prototype have been eliminated. Photo courtesy of Gerald H. Balzer







Taylor F-2 Cub was identical to the 1935 E-2 except for the engine—a 40 hp Aeromarine AR-3-40. Three-cylinder radials like the Aeromarine and the Szekely ran rough and were hard on ultralight airplanes. The big advantage of the flat-four Continental A-40 was its smooth running.

Peter M. Bowers collection

Taylor J-2 Cub, introduced in 1936, was essentially the same airframe as the E-2 Cub with new wingtip and tail shapes and the aft fuselage superstructure raised to the wing to make a bona fide cabin model.

Gordon S. Williams photo



aspect-ratio wing. As a result, the new design could almost be considered a powered glider.

Since the wing was close to the fuselage, there was no room to climb into the cockpit over the top of the fuselage in the traditional way. The larger "Chummy" had used a conventional door opposite the seat, but the new model used a unique variation, a long narrow door that spanned both tandem seats and hinged downward on the right side of the fuselage instead of forward. The scant instrumentation was all on the single instrument panel ahead of the front seat (solo flight was from the rear seat). Of course, there were no brakes and tailwheels were as yet a rarity on lightplanes.

Fuselage and tail were built up of welded steel tubing while the wing used two wooden spars and ribs that were built up from strip aluminum formed into a T-section. Airfoil was the USA 35-B. Except for a post-WWII switch to metal spars, this construction is still used on the "Cubs" being built today. Piper still uses the USA 35-B on the Aztec twin and the Pawnee agplane.

The original powerplant was the 20 hp Brownbach Kitten, a two-cylinder two-cycle air-cooled design that couldn't quite get the airplane off the ground with the pilot alone. It was quickly replaced with a 40 hp French Salmson A.D. 9, a well-known nine-cylinder baby radial. The only lasting contribution that the Kitten made to the airplane was to inspire the name *Cub* that was

given to it. This was certainly one of the most suitable names ever bestowed on any airplane. It is interesting to consider, at this point in time, what the sales of the *Cub* would have been had it had a less appropriate name or had it been marketed only under the Taylor model numbers.

The Salmson engine made a fine little airplane out of the *Cub*, by contemporary standards, but it had problems of its own. Its foreign origin, plus

the fact that it was out of production at the time, precluded its use on a production American plane. As an alternate, therefore, Taylor installed the new Continental A-40, a four-cylinder air-cooled flat-four that was itself the originator of a famous line. The single-ignition A-40, generally referred to in later years as the "40-horse Continental," actually delivered only 37. Not until later models went to dual ignition did the A-40 deliver 40 hp. Fitted with the A-40, the *Cub* was given the Taylor model designation of E-2. Approved Type Certificate (ATC) No. 455 was issued in November 1931.

Before production of the *Cub* got under way, Taylor Brothers Aircraft went bankrupt, another victim of the depression. Piper then purchased the assets and reorganized the firm as the Taylor Aircraft Company with Taylor as president and himself as Secretary-Treasurer. This reorganization put the *Cub* on the market and 24 were sold in the remainder of 1931. Sales dropped slightly to 22 in 1932 and even farther to 16 in 1933, but rose to a total of 70 in 1934.

As was customary with many production airplanes of the period, the *Cub* was offered with alternate engines. The F-2 model (ATC 525) used the Aeromarine AR-3-40, a 40 hp three-cylinder radial that later became the Lenape "Papoose," and the H-2 (ATC 572) used the three-cylinder 40 hp Szekely SR-3-40 radial. Taylor even tried an engine of his own design in a G-2 model, but this never got out of the experimental stage. Sales of the *Cub* variants were minor and are not separated from E-2 sales in company figures.

The year 1935 saw changes both in the *Cub* and the company. Since the competition was introducing bona fide cabin models, Taylor enclosed the cockpit of the E-2 with a light framework and plastic windows, an easy adaptation since the single windshield already fitted between the fuselage and the wing. The access problem was resolved by matching the hinge-down door with a hinge-up window on the same side. Sales of the E-2 reached 212 in 1935 and ended with seven in 1936.

Also in 1935, Piper bought out Taylor and became president of the company. Taylor departed and formed a new company in 1936, but that's another story. Piper soon stepped out of the presidency and T. V. Wold became president.

As the E-2 phased out in 1936, a new *Cub* model was introduced and was actually advertised for a while as the *New Cub*. This was the J-2 (ATC 595), which was basically a refined E-2. The aft fuselage superstructure was raised to the wing to produce a true cabin design, but the up-and-down window-door combination was retained. The overall appearance was changed greatly by rounding off the wingtips and horizontal tail and installing an entirely new fin-rudder combination. The clean-up so improved the performance that with the same A-40 engine the J-2 could operate on floats. Land gear was still the old tailskid and brakeless wheels.

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## SPECIFICATIONS AND PERFORMANCE

### Taylor Cubs

	E-2	J-2
Span	35 ft. 2 in.	35 ft. 2½ in.
Length	22 ft. 6 in.	22 ft. 5 in.
Wing area	184 sq. ft.	178 sq. ft.
Powerplant	Continental A-40	Continental A-40
	37 hp	37 hp
Empty weight	525 lbs.	563 lbs.
Gross weight	925 lbs.	970 lbs.
High speed	78 mph	87 mph
Cruise speed	65 mph	74 mph
Climb	450 ft./min.	450 ft./min.
Range	220 mi.	210 mi.
Price	\$1,325-\$1,495	\$1,470



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A feature of the J-2 carried over from some late E-2s was a removable engine mount, but this did not mean that optional engines were offered. Actually, the feature frustrated some latter-day owners who hoped to be able to install 65 hp Continental engines in their J-2s. The removable mount should have made that job easy, but it couldn't be done. It turns out that the J-2 fuselage just couldn't take the extra weight and power—it was not built of SAE 4130 tubing and FAA engineering would not buy a power increase.

The J-2 was just the right airplane

at the right time. With the country now well out of the depression, the J-2 easily maintained and increased the E-2's lead in lightplane sales, with 550 sold in 1936. Although Taylor was out of the company when the J-2 appeared, the company still had the same name and the airplanes were still "Taylor Cubs." The 1936 models were all Taylors, but it cannot be determined how many of the 658 J-2s built in 1937 were "Taylor Cubs" and how many were "Piper Cubs," built by the successor organization. The 23 J-2s built in 1938 were obviously Pipers.

The E-2 and J-2 *Cubs* are rare birds today. The FAA listed 191 E-2/F-2 models and 814 J-2s in 1947 but the latest figures show only 22 E-2s/F-2s and 98 J-2s on hand today.

The end of the Taylor Aircraft Company itself came in 1937, when the Bradford factory burned down. The company was then reorganized as the Piper Aircraft Corporation. A new factory was established in an old silk mill in Lock Haven, Pa., and Piper became president again. □

[*"Mr. Piper's Cubs" will be discussed next month.—Ed.*]