

The American Eaglet

Ultralight monoplane was one of a new breed of low-powered, bare-minimum aircraft developed during depression years for low-cost training and sport flying

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■ A new breed of airplane began to appear on the general aviation scene in 1929 and 1930. This was the ultralight monoplane, powered with new engines in the 25 to 45 h.p. range. These were virtually powered gliders and were intended to be bare-minimum flying machines for training and sport flying at the lowest possible cost.

Pioneered by the 30 h.p. single-seat Aeronca C-2 of 1929, these were novelties at the time and were not intended to replace the heavier standard models, mostly biplanes, that were the mainstays of the industry. However, after the depression killed the market for the heavy types, great emphasis was placed on the ultralights by the manufacturers. Those already in production were improved, and other manufacturers quickly developed new models in a desperate attempt to survive by catching a few of the customers' dollars that were still available.

Unfortunately, the new breed did not prove to be a lifesaver for some of the

old-line firms that switched to it. Although some of the builders of ultralights failed during the depression, the basic design had become well established and was continued until a trend toward higher power for a given airplane began shortly before World War II, when the most famous of the light-planes, the Taylor/Piper *Cub*, went from 40, through 50, to 65 h.p.

Typical of what could be called a second-generation ultralight was the *Eaglet*, introduced by the American Eagle Aircraft Corporation of Kansas City, Kan., in 1930. The author calls the *Eaglet* and its immediate successors second-generation designs because they were considerable structural and aerodynamic advances over the Aeronca C-2 (developed from a 1924 homebuilt), which had the ultralight field to itself in 1929.

Like the C-2, the original *Eaglets* were single-seaters with provision for a passenger who could be carried under favorable conditions. Known as the

American Eagle Model A-130, the *Eaglet* was powered with a two-cylinder, two-cycle Cleone engine reputed to deliver 25 h.p. This would seem to be the ideal powerplant for an airplane that weighed less than 500 pounds empty. However, although two-cycle engines have been tried in airplanes since the early 1900s, they have never lived up to their potential. Their high power-to-weight ratio and mechanical simplicity are more than offset by other disadvantages that include high fuel consumption and poor throttling characteristics. Of all the two-cycles tried in aircraft, only one—the 44 h.p. Nelson of the late 1940s—has ever won an Approved Type Certificate (ATC). Even so, this is used today only in powered gliders.

The *Eaglet* itself was as simple as it could be, within the acceptable limits of the prevailing state-of-the-art. Fuselage and tail surfaces were welded-steel tubing, fabric covered. As a weight-saving measure, the four-longeron forward-fuselage structure changed to three longerons aft of the cockpit, with the single longeron on the bottom to form an inverted-triangle cross section. The one-piece wing used wood spars and ribs, and was also fabric covered. It was held above the fuselage, in the parasol position, by steel-tube struts. The landing gear was steel tubing, with rubber donut shock absorbers and Goodyear Airwheels. No brakes were fitted, drag being supplied by a tailskid with rubber shock cord springing.

The 25 h.p. *Eaglet*, selling for \$995, was strictly a fair-weather bird. Pilot protection in the original models was nil, either ahead or at the sides. Because of the relatively small size of the airplane and the location of the wing directly above the cockpit, a drop door was fitted to the left side of the fuselage to simplify entry problems.

After the Cleone engine proved inadequate, it was replaced by a 30 h.p. Szekely SR-3L three-cylinder, four-cycle radial engine. (The engine was named for its Hungarian designer, O. A. Szekely. This is correctly pronounced "Say-Kai," but is pronounced by most users and historians as "Zee-Klee.") The extra power was sufficient to permit the *Eaglet* to operate as a bona fide two-seater, so some other minor improve-

An American Eagle *Eaglet* A-231, using the 40 h.p. French Salmson engine in place of the 30 h.p. Szekely SR-3L of the *Eaglet* A-230. The pilot comfort features of the 230s were improved over the original Model 130 by the addition of a tiny windshield between the forward cabane struts.

Photo by John C. Collins



The *Eaglet* B-31, with revised vertical tail and 45 h.p. Szekely SR-3-0 engine. Note the long exhaust stack on the No. 1 cylinder to keep the fumes out of the two-seat "bathtub" cockpit. This photo was taken before the cables were added to the engine to keep the cylinders on.

Photo by Fred E. Bamberger, Jr.



ments—including dual controls, changing the door to the right side, and a price increase to \$1,395—were made. These resulted in a new model number, A-230. While two full seats and dual controls were now provided, there was only a single “bathtub” cockpit, with all instruments on a panel ahead of the front seat.

The first 33 Szekely-powered *Eaglet* 230s were licensed under Memo 2-303, a memo approval being commercially acceptable but not the equivalent of a full Approved Type Certificate. Subsequent 230s were built under ATC-380, issued in December 1930. A minor variant fitted with a 40 h.p. French Salmson nine-cylinder radial was designated Model A-231. This one took a little getting used to, because the Salmson drove a left-hand propeller, which was opposite to the American standard and called for the pilot to hold left instead of right rudder during takeoff and climb.

In the meantime, the few Cleone-powered A-130s were converted to Szekelys and became 230s. Also, the performance of the 230s could be improved by converting the SR-3L engines to 35 h.p. SR-3s.

When the improved 45 h.p. SR-3-0 Szekely with overhead valves became available in 1931, it was put in the *Eaglet*. This resulted in enough of a weight and performance change to justify another model number, B-31, a new ATC, No. 450, and a price tag of \$1,475. The new four-cylinder flat Continental A.40, which developed 37 h.p. in its original single-ignition versions, was also tried, but with little success. This is surprising from the standpoint of historical hindsight, since the A.40 went on to become famous for its reliability in the Taylor and Piper *Cubs* and in the Taylorcraft “A” of the late 1930s. The Salmson, being an import, had a spare-parts problem, along with others, while the Szekely was a chronic troublemaker. For one thing, it had a bad habit of cracking the cylinders off just above the mounting flanges. This led FAA’s predecessor, the Bureau of Air Commerce, to issue a mandatory directive that installed a strong cable and turnbuckle assembly around the heads of the three cylinders to hold one on

in case it cracked in flight.

By the time the B-31 *Eaglet* was flying, the depression had hit the industry hard. American Eagle merged with the Lincoln-Page Aircraft Company of Lincoln, Neb., and consolidated operations in Kansas City under the new name of American Eagle—Lincoln. However, it was a losing battle; production ended after approximately 90 *Eaglets* of various models had been built. Ironically, Douglas Webber, one of the two principal designers of the *Eaglet*, was laid off even before the plant closed. He went to work for the rival firm of Rearwin Airplanes, Inc., in the same city (actually on the same airport) and then designed a near-duplicate of the *Eaglet* that was produced as the Rearwin *Junior*.

SPECIFICATIONS AND PERFORMANCE— EAGLET B-31

Span	34 ft. 4 in.
Length	21 ft. 7¼ in.
Wing area	164.4 sq. ft.
Powerplant	Szekely SR-3-0 45 h.p.
Empty weight	509 lbs.
Gross weight	922 lbs.
High speed	90 m.p.h.
Cruising speed	75 m.p.h.
Climb	700 ft. /min.
Service ceiling	14,500 ft.

Rearwin, like American Eagle, had been in production on relatively big biplanes and switched to ultralights after the depression started. It was a smaller and more flexible organization, able to survive the depression and prosper afterward with a line of light monoplanes that developed from the *Junior*.

However, the fact that the *Eaglet* was orphaned when American Eagle—Lincoln shut down did not kill off the little bird. One of its other designers, Noel Hockaday, also designed a near-duplicate for another organization. This was known as the *Wyandotte Pup*, but did not go into production. However, when Hockaday was employed by former American Eagle Sales Manager Ed Porterfield in the new Porterfield Air-

craft Company in 1934, he designed an improved full-cabin version of the *Eaglet* and *Pup* that became the Porterfield *Flyabout*. This was the cornerstone of a line that continued until World War II.

While the Rearwin and Porterfield developments of the *Eaglet* had evolved into considerably different models, and production at American Eagle—Lincoln had ended, the basic design still did not disappear. A new firm, American Eaglecraft of Fort Worth, Tex., bought the design rights to the *Eaglet* from Victor Roos, former president of American Eagle—Lincoln, and modified an existing *Eaglet* into the prototype of what was expected to become a new production model. This was powered with a 50 h.p. Continental A.50 engine and was designated Model A-31-1B. The new test program began in 1942 but was interrupted by World War II. Memo Approval 2-583 was finally granted in July 1946, but the revamped *Eaglet* could not compete in the postwar market.

Ownership of the design changed hands later, and an attempt was made to sell plans and parts to amateur builders after the homebuilt movement got under way. A new owner of the design moved it to Everett, Wash., but nothing is known of it since his death a few years ago in a P-51 crash.

A few *Eaglets* are still around, property of the antique airplane buffs, or “antiquers,” as they prefer to be called. These people follow two routes in the restoration of their old airplanes, and their *Eaglets* have gone both ways. The purists prefer absolute authenticity in restoration—balky old engines, tailskids, wheels without brakes—and accept all the limitations that these put on present-day operations. The other group tolerates a considerable degree of modification, including more modern engines, brakes, and steerable tailwheels that allow the old birds to fit into modern airport operations while retaining most of the appearance and flight sensations of the old days. However, it would take a complete redesign, and virtual loss of identity, to improve some of the basic characteristics of the oldies, particularly the slow and heavy aileron action of the *Eaglet*. □

Only the presence of registration numbers on the fuselage and jets in the background give this away as a photo of a mint *Eaglet* restoration made in the late 1950s. The FAA has since revised the marking regulations to allow pre-1933 antiques and certain other types to use the old wing and rudder marking locations, and even to use the pre-1948 “NC” prefix letters.

Photo by Peter M. Bowers

The opposite course with a restored antique—this *Eaglet* 230 has been modified to include a 65 h.p. Continental engine, modern wheels with brakes, and a steerable tailwheel. The registration is in the old locations, but with “N” instead of the original “NC” ahead of the numbers.

Photo by Peter M. Bowers

