Yesterday's Wings

The Bowlus Baby Albatross

Third prototype Bowlus Baby Albatross. In addition to the pod-and-boom design, note the straight wing planform out to the aileron break, the straight-tapered leading edge, and the elliptical trailing edge. Photo by the author.

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■■ Back in 1938, the tiny American soaring movement was in a kind of "chicken or the egg" situation. The activity was slight because of the high cost of the few available sailplane designs, and the designs were few because there weren't enough customers to support an efficient industry. There were quite a few sailplanes around that had been designed and built by amateurs, but these were handicapped by having to operate on experimental licenses, since there was no such official recognition of "amateur" design as prevails today.

There was a clear need for a low-cost, yet efficient, utility sailplane in the "standard" category to give the movement a boost. Working over a two-year period, from 1936 into 1938, William Hawley Bowlus designed what was expected to be the answer. It was the Bowlus BA-100, named the "Baby Albatross."

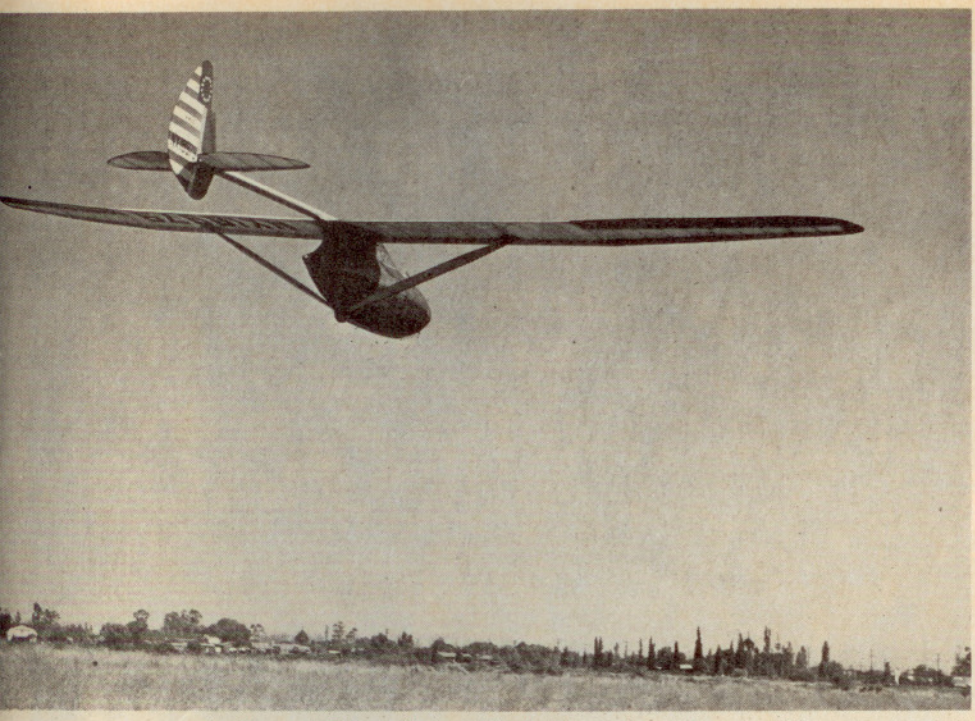
The name was derived from two other designs: the famous German Grunau Baby, which was then the standard training sailplane everywhere in the world but the United States, and Bowlus's own high-performance design of a few years before, the Bowlus-Dupont Albatross.

The 44-foot wing of the BA-100 was, externally, an exact copy of the Grunau wing. The fuselage, although differing greatly in appearance from the fuselage of the Albatross, used the same basic former rings.

Two things about the BA-100 were truly unique. One was the unusual "pod-and-boom" fuselage layout, which featured a short, streamlined pod that enclosed the pilot and supported the wing and single landing wheel. The tail surfaces were carried on a tubular boom. This arrangement saved weight and drag and cut down on construction time and cost. The material for the boom was readily available too—standard 4-inch aluminum irrigation tubes, 12 feet long.

The other unusual feature of the Baby Albatross was the way in which it was marketed. While factory-built models could be bought, most sales were kits for home construction. They were kits with a difference. Rather than receiving a big box of raw materials and a roll of blueprints, the buyer got ten separate factory-fabricated components. He didn't really build anything; he merely assembled the prefab parts. The result was a type-certificated sailplane that could be flown without restriction.

Actually, quite a few kits got out before the design was awarded its ATC,



Another early Baby, with the original wide wooden struts and a fully enclosed cockpit. Photo courtesy of Edgar Deigan.

and the sailplanes built from them had to operate as experimentals. The factory put out a list of modifications needed for these craft to qualify for the ATC.

All together, about 50 BA-100s are known to have been completed and flown before Pearl Harbor ended production.

The Baby Albatross was a fine little sailplane by the standards of the day and was designed to be as light as possible, under the "floater" concept that prevailed at the time. The principal type of activity was slope soaring, and minimum sink was the prime design consideration.

The design was originally open cockpit. To reduce drag, however, many builders added a removable "horsecollar" canopy that was put around the pilot's head and shoulders after he was seated, to reduce the cockpit cutout size and resultant drag. Still other builders developed fully enclosed canopies. The cockpit itself fit so snugly that there was no room for side-to-side movement of a stick to operate the ailerons; that action was controlled by a wheel.

On early versions, there was no aileron differential. This lack, combined with the usual weak rudder control of long-span sailplanes, produced very undesirable outside yaw in turns. Improved versions had at least a two-to-one differential, with the greater movement on the "up" aileron, and this greatly improved the situation.

The pod-and-boom layout resulted in a lopsided distribution of lateral area that made the Baby Albatross difficult to sideslip into short-field landings. Spoilers were not very common on light sailplanes at the time, but an approved system was developed and installed on some of the later Babies.

The separate elevators without fixed stabilizers, known as the "pendulum" or "flying tail" type, were common at the time; however, they had a notable disadvantage. With a bit too much balance area ahead of the torque-tube hinge, they had practically no "feel," and pilots could easily overcontrol.

As a partial remedy, the government insisted on installation of a spring system on the approved models. The fallacy of this, however, was that the resulting "feel" was strictly in proportion to control-column displacement and not to actual flight loads.

Flying tails are very popular today on general aviation airplanes, but the "feel" problem has been licked by installing resistance tabs on the trailing edge of the one-piece elevator to give it the proper proportional feel.

On the prototypes and the first few

BOWLUS BA-100 BABY ALBATROSS

Specifications and Performance

Span	44 ft 6 in
Length	18 ft 11 in
Wing area	150 sq ft
Empty weight	250 lb (advertised) 300 lb (actual)
Gross weight	450 lb (advertised) 505 lb (actual)
Wing loading	3.3 lb/sq ft
Glide angle	20:1
Sink speed	2.25 fps
Never-exceed speed	65 mph
Winch-tow speed	50 mph
Price	$750 complete $385 kit

Bowers in his Bowlus Baby. Note the "horsecollar" canopy, which is put on after the pilot is seated. Photo by Jim Larsen.

production models, the pods were built up of sheets of mahogany plywood bent over the elliptical formers. Subsequent models had the pod skins molded into two half-shells of multilayered mahogany veneer that were then joined over the formers. On all models, the fittings were something to give a modern stress engineer nightmares—sand-cast aluminum. One of the most significant changes in going from an experimental to a certificated model was the use of heavier castings with larger corner radii.

The Baby Albatross, as a floater, was fragile by today's standards but was quite satisfactory for its time. I bought the third prototype in 1952 and was surprised to find in its papers that it was restricted against airplane tow but approved for auto or winch tow. Since aerotowing is far easier on the sailplane than either of the other two methods, I spent some time trying to find the reason for the restriction.

Correspondence with CAA engineers and with Bowlus himself brought no confirmation of such a restriction. Finally, the answer turned up in the local CAA office. One of the inspectors, an old glider man himself, had put the restriction on that particular ship on his own authority. The Baby was owned at that time by several quite inexperienced pilots, and none of the few towplanes in the area could safely tow it since it had a limiting tow speed of 65 mph.

As mentioned, production of BA-100s ended after Pearl Harbor, and Bowlus never built another. In January 1944, the design was sold to Laister-Kauffman, then building military gliders. It was advertised again after the war, but there is no indication that any more Babies were built.

Of the 50 completed before the war, some 20 are still active today. They get no special attention as antiques from the soaring fraternity, but they are still fine little utility sailplanes within their obvious limitations—and are sometimes the only ships in the air after weak conditions have forced the hot, modern "lead sleds" to land early. □