

A nostalgic link to modeling's past

by Hal deBolt

The first Airfoiler was created in 1940, and the updated design presented here is legal for Society of Antique Modelers (SAM) competition. The second one was born in wartime. It was quite different in design and was kitted by Dmeco in 1947. In the prewar years, I was deeply into free flight. I had outgrown my '37-'38 Blitzkrieg when Carl Goldberg impressed me with his

RC-ASSIST AIRFOILER REPLICA

Valkyrie. I had lost several Blitzs for lack of a proper dethermalizer. At the time, spoilers were the only known lift reducers. So with Carl's influence and a need for a new design, I designed the Thunderbolt. The spoilers did the trick; the T-Bolts kept on ticking. Winning contests without losing models gave me more time to look for things to improve.

Believing that a wider wing chord would perform better, I used a 5:1 aspect ratio with the T-Bolts. I did, however,



The Airfoiler is a replica of a model Hal deBolt designed and flew in free-flight competition in 1940. Legal for SAM RC-assist flying, the Airfoiler has much antique appeal.

have a desire to compare a higher ratio wing with the one I was using. Obviously, investigations do not require an exotic model; a simple box-style is sufficient. Bellanca's lifting-body ideas were also impressive. Regarding Bellanca: if the box had an airfoil shape, it could be added to the mix while adding some cosmetic appeal to my model.

Foresters were said to be fine engines then, and I wanted to try them. They came as a .29 and .305, so with a simple engine exchange, a single model could fly in two competition classes. So the Foresters dictated my model's size. Right off the board, the new model proved to

be a very kind flyer—extremely easy to use and surprisingly competitive. However, the War terminated my free-flight activity, and I was unable to determine which of the new designs was superior.

Sometime in 1943, on a weekend home from the Navy, I learned that a local contest had been scheduled. I hadn't competed since my induction, so I had to fly my 'Foiler in this one. The model's performance at the meet was like something I'd never seen before! The weather was free-flight perfect, and the first two flights ended (dethermalized) on the field with excellent time. For the next flight, I locked the spoilers into place, and the 'Foiler sat sky-high, right over the field; it didn't want to come down. Eventually, it lost lift and landed less than 1/4 mile away. The flight time was hard to believe; one hour and five minutes! Fantastic? I was in free-flight utopia!





The design is simple, light and strong. The original had a single retractable landing-gear leg, but the new design has been flown well with the standard gear shown here.

Recently, Fred Mulholland and Tom McCoy enticed me to seek SAM approval of my three designs: the Blitzkrieg, Thunderbolt and Airfoiler. All three were

begin by producing the indicated outlines. These surfaces use "quick and dirty" cap-strip-style ribs bent around a spar. The secret with these is first to soak them in

is shrunk tightly. All balsa is medium weight except for the spar, which is 8 to 10 pounds per cubic foot, straight grained. Today's obsession with excessive power might dictate 10- to 12-pound balsa or an equivalent. Tom and Fred capped the spars of their replicas with carbon fiber.

The spoilers are hinged at their front edges and are opened by a no. 16 rubber band to a maximum of ¼ inch above the wing surface. I use an Austin timer with a suitable linkage to activate the spoilers after a desired time.

FUSELAGE

The basic structure uses balsa stick construction and is very easy. This is covered



SPECIFICATIONS

Model: Airfoiler replica

Type: Antique, SAM RC assist, or free flight

Wingspan: 60 in.

Wing area: 505 sq. in.

Length: 35 in.

Weight: 36 oz.

Wing loading: 10.25 oz./sq. ft.

Airfoil: under-cambered

Power required: .29 to .30
2-stroke

Powered used: O.S. .20
4-stroke

Prop: 10x6

Radio req'd: 2- or 3-channel
(aileron, elevator and throttle optional)

Comments: the Airfoiler is a replica of Pappy deBolt's original model from 1940. Simple, yet light and strong, the model has polydihedral, and the plan shows controllable elevator and rudder-control surfaces. These can be omitted for free-flight.

approved. As good friends will do, Fred and Tom agreed to produce the needed replicas of my models, so I give considerable credit to them for making this article possible. Fred built a 'Foiler replica and reported fine contest performance. Tom also built one that he now flies regularly.

CONSTRUCTION

The original Airfoiler was pure free-flight. Today, we have "RC-assist," for which the needed control surfaces are shown. If you like vintage models, the

An O.S. .20 4-stroke engine is a fine choice to power the Airfoiler. Note the lightening holes in the wing ribs.

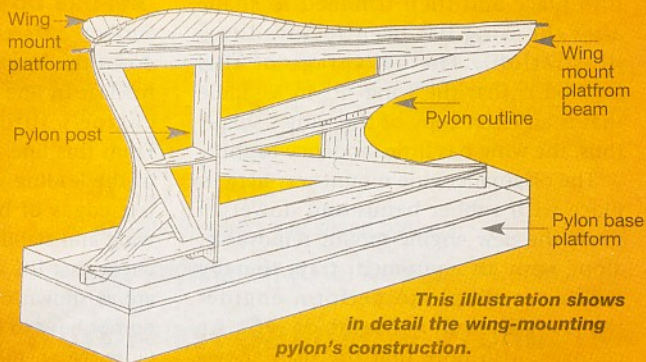


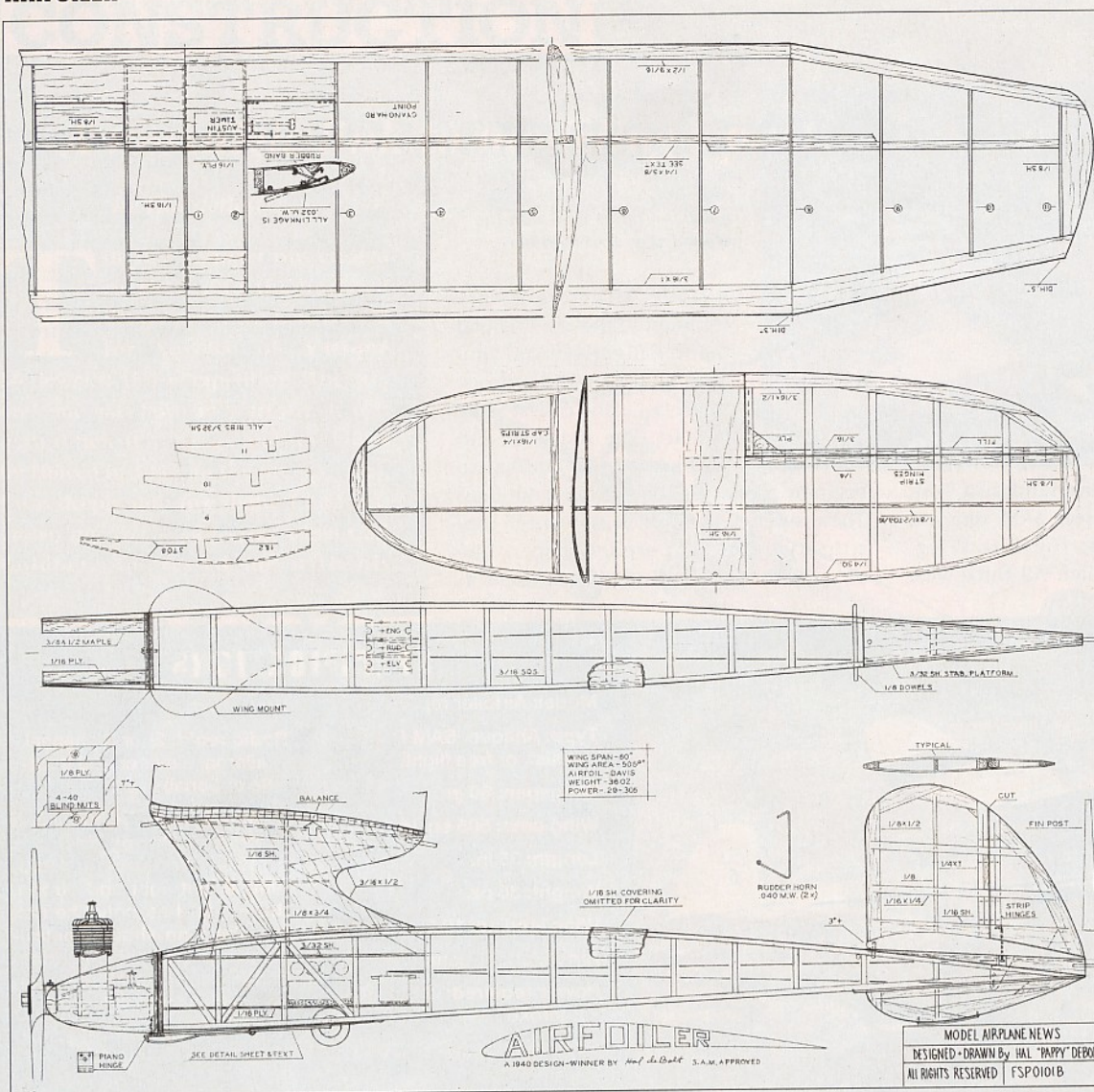
water and to form the curves with your fingers before installation.

WING

Start by cutting out the ribs as shown on the plan. Note that the wing has rather robust leading and trailing edges. These are needed for strength and to prevent the wing from warping when the silk covering

with lightweight ¼-inch sheeting. Build the sides together (one on top of the other) and then sand their edges so they are identical. Place them vertical on the assembly board using a centerline as a guide while you join them with balsa crosspieces, as indicated. The wing pylon is built separately and then attached to the fuselage floor. The pylon post and ribs





To order the full-size plan, turn to "RC Store" on page 200.

are then installed, followed by the sheet covering.

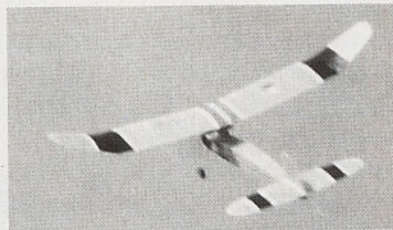
The construction of the pylon wing saddle is a neat trick. First, protect the bottom center of the wing with clear food wrap. The two halves of the wing-mounting platform are cut oversize and placed between the wing and the pylon. After the wing has been properly aligned with the fuselage, the platform is glued into place and then trimmed to shape after the wing has been removed (see illustration). The advantage of this method is that the wing sits in a saddle that is an exact copy of the wing's shape; thus, the wing has little tendency to shift.

The original engine mount was held in place with rubber bands and dowels. I made the new engine mount removable, along with an equipment tray, thereby making it simple to perform engine-thrust adjustments and/or engine changes. Also note that the plan shows

the original retractable landing gear. A simple wire gear can be easily added, as shown in the photos. Note that the retract gear leg is formed with music wire and uses a "stop" so that as the model rests and taxis on the ground, the wheel is forward of the hinge point. When the model lifts off, the rubber band swings the gear back, eliminating much air drag.

BEFORE COVERING

Scribe a reference line down the length of the fuselage in line with the engine's thrust line. From this line, measure to the leading and trailing edges of both the wing and stabilizer, and check that the angles of incidence for both are as shown on the plans. These settings do not have to be exact, but they should be close. Next, make sure that the stabilizer



aligns properly with the wing. If it doesn't, adjust the stab's saddle until the wing and stab are parallel to each other. Also make sure that the fin is straight and vertical.

Balance the model with "risers" placed under the fuselage and a 3/8-inch-square stick on top of them; move the fuselage fore or aft until it "teeters." The riser sticks should be placed beneath the indicated balance point. Move the RC equipment around on the tray until the model balances level. Last, take a good look; everything should fit properly and just look right.

COVERING

The 1940 'Foiler was covered with silk and dope, and this is still a great method to use today. Using your

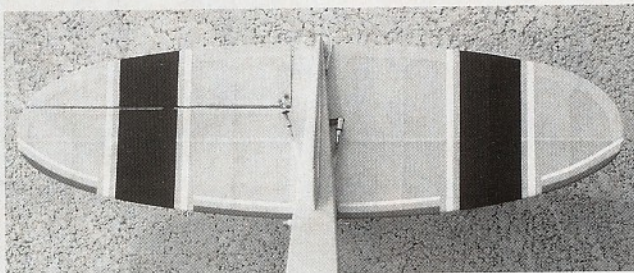
FLYING

If you want RC-assist, today's "mini systems" require about as much space as the original ignition system did, so there is ample room for any type of radio gear.

Tom McCoy used an O.S. .20 4-stroke engine to power his replica, and it performs nicely with a 10x6 Pro-Series Power prop.

For a start, you can hang-glide the model to check its trim. A gentle, level push should see a glide of 50 feet or so. If adjustment appears necessary, shim the forward edge to the stabilizer 1/16 inch at

AIRFOILER



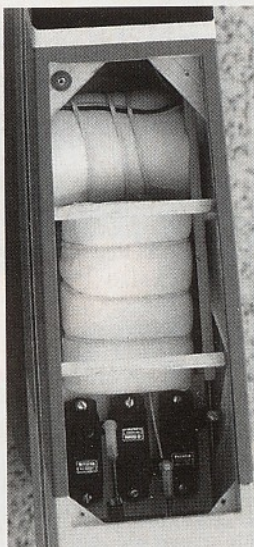
For RC-assist flying, the new Airfoiler has movable elevator and rudder-control surfaces that are used to trim the model for maximum climb and glide performance.

a time until you get a smooth, shallow glide. Do the same thing under the wing's trailing edge if the glide appears too steep.

RC-ASSIST

Flight adjustments for SAM-style flight are to obtain a straight climb and a flat glide. Be concerned with power first; launch the model at low power so the climb is shallow but straight. If it has a tendency to turn, use

A belly hatch makes it a snap to get to the RC gear. Screws in the corners hold the hatch in place.



a thin shim under the engine-mounting joint. Adding a bit more power each time, repeat the process during several flights. At about $\frac{3}{4}$ power, note the angle of climb; it may be too steep. With full power, the

model might go past vertical. If it does, add more positive stabilizer incidence. Initially, be careful at full power so that the model does not go past vertical and end up on its back—not good! If the glide appears too steep in the power-adjustment phase, simply move the balance point backward until the glide is flat. Balance changes do not affect powered flight performance.

The Airfoiler was very competitive at the early free-flight meets. It will still perform well today, especially if there are some thermals around to exploit. To quote Tom McCoy: "Hey, guys; I can hardly see the darn thing. It just does not want to come down; sure loves thermals!" Is there anything more to be said? Have fun! †



Hal "Pappy" deBolt— a lifetime of modeling

We have been privileged to have many distinguished modelers contribute to the pages of *Model Airplane News*. Many readers have grown up reading articles by Grant, Zaic, Thomas, etc. One modeler who cut his teeth on such articles is our own Hal "Pappy" deBolt, who has gone on to inspire an entire generation of modelers with his own model designs and contributions.

Pappy got his start in the 1920s when he built his first model out of scrap spruce and glue from his Uncle Clarence's homebuilt-aircraft shop. Throughout his early years, Hal built, flew, crashed, redesigned—and flew again—free-flight models, always trying to improve his building and "trimming" skills. While in Geneva, NY, he won a local contest, and his prize was a trip to the 1933 Nationals. This was the opportunity for Hal to see the likes of Bassett and Kovel compete. Hal says the direction of his life was set after this experience.

Hal is perhaps most famous for his model airplane company of the 1950s and '60s, DeBolt Model Engineering Co. (Dmeco). He has produced free-flight, control-line and RC models; the list is impressively long. One example of Hal's designs is a control-line model called the "Bipe," some 50,000 kits of which have been sold.

It's wonderful to have Pappy with us today as a contributor to our first issue of 2001. His Airfoiler replica is a nostalgic link to our modeling past and a testimony to his modeling longevity. Thanks, Pappy—for everything.

—Gerry Yarrish



Hal "Pappy" deBolt (right) and Tom McCoy smile for the camera and show off Tom's replica of the Airfoiler.