PEANUT SCALE

EAA BABY ACE

By JOHN BLAIR . . . The Baby Ace is without a doubt one of the most popular homebuilts around, and makes an attractive and good-flying Peanut. Scale documentation is as close as the nearest airport.

• From Demoiselle through Pietenpol to EAA Baby Ace, the parasol monoplane has consistently been one of our most successful aircraft types. The Baby Ace itself is a development of the earlier homebuilt Corben Ace designs of the thirties. What modeler over forty doesn't remember his twenty-five cent, kit-built Corben Super Ace?

This plan is presented as a stick-for-stick, exact scale model, from drawings in the October 1973 *Mechanix Illustrated*. Built as shown, the model will be reasonably light (about 1/2 oz.) and will fly well. If you want to go for maximum endurance, the structure can easily be simplified to bring the weight nearer to 1/4 oz.

Begin by preparing some non-stock wood. With a balsa stripper or a good straightedge and your trusty Uber Skiver, cut some 1/32 x 1/16 balsa for fuselage structure and wing spars. Wing struts are 1/32 x 1/8 balsa, 1/32 sq. balsa is used for tail structures, 1/32 x 3/32 soft balsa is used to fair the cabane wires, 1/32 x 3/32 rock-hard balsa or basswood is needed for wing trailing edges, and 1/32 sq. basswood is used for tail surface outlines and wingtip bows. (Hint: a ready source of basswood is the wooden coffee stirrers provided at snack bars.) Secure or sand down some 1/64 sheet for leading edge sheeting (if used) and wing ribs. Turtle deck and side stringers may be either 1/32 x 1/16 balsa or 1/64 sq. bamboo slivers. The bamboo looks more "in scale."

Since construction is quite conventional, we will concentrate on features. First, you will find that working with tiny Peanut structures requires a good pair of bent-nose tweezers. As the fuselage box is assembled from the tailpost forward, put a temporary crosspiece in the bottom between stations 3 and 4. This will make installation of the landing gear easier, and will be removed later. Note that uprights at stations 3 and 4 are 1/16 sq. Bend the landing gear wires over the diagram and sandwich between two pieces of 1/32 sheet. Bend and sandwich the cabane wires in the same manner. Referring to the "typical section" shown on the plan, install the landing gear legs and cabanes in their proper positions. The front and rear gear legs, and cabanes "a" and "b," may now be epoxied or soldered together. The cabane wires are faired with soft 1/32 x 3/32 balsa. The landing gear is filled in with 1/32 sheet balsa. Sheeting the fuselage nose and adding turtle deck stringers completes this assembly.

Trying to produce "in scale" appearing structures, I have progressed from clumsy, cut-out sheet outlines through laminated balsa (and even smaller-section laminated basswood) to my present practice: a single piece of 1/32 sq. basswood. A stab or rudder outline wet-formed from 1/32 sq. basswood is plenty strong enough and looks really good on a Peanut model. With 1/32 sq. spars and ribs (or 1/64 x 1/32) a lovely, light unit results which can feature scale spacing without an undue weight penalty. Care in tissue shrinking and the use of plasticized dope is advised, however. Make cardboard forms for bending the outlines. Fifteen minutes soaking in hot water will soften the basswood so that it may be stretched around the forms without breaking. Lace the wood to the form with rubber bands and bake for an hour in a 200-degree oven. The tail surfaces may then be assembled directly over the plan. Soft wire hinges make all control surfaces movable. (The outlines are cut after the units are covered and doped.)

The exact scale wing is not complicated, it's just that the pieces are tiny. Make two 1/8 sheet center ribs. The

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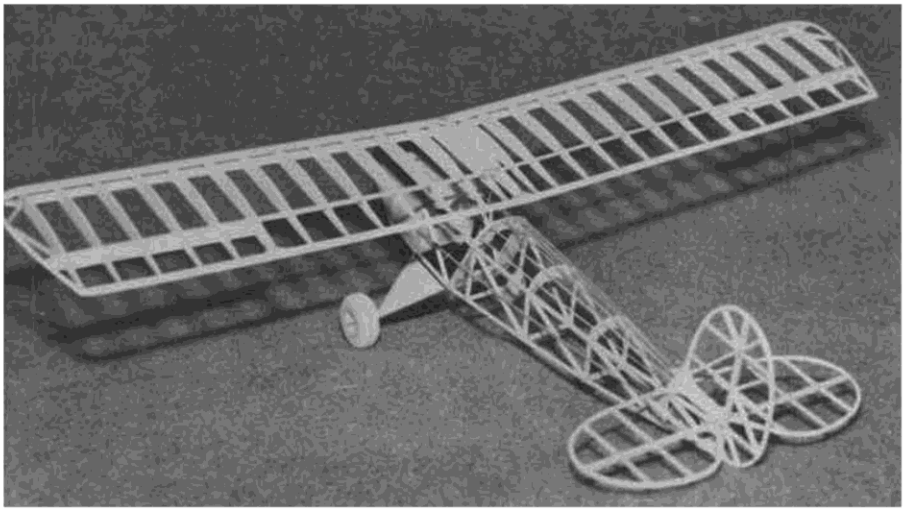

Narrow strips used for stringers and tail surface outlines add to the scale-like appearance. Wheels are turned from balsa. Control surfaces are hinged for flight adjustments.

Peanut . . . . . *Continued from page 57*

extra rib is used as a template while cutting the 1/64 ribs by the "stack" method, and is then discarded. If ailerons are built in, the ribs involved will have to be cut off. Build in the ailerons without cutting either the tip bows or the trailing edges. If the complete wing is covered, shrunk and doped before cutting the ailerons free, the whole process is much easier.

The model is covered with superfine tissue, applied with thinned white glue. Since the "Ace" is a homebuilt, the color scheme and license number can be whatever you wish, or you may be able to find an actual airplane to copy.

"It's the detail that makes it scale." The extent and finish of the details you apply will depend on your skill, patience, and the type of model you prefer. However, the engine and landing gear at least should be detailed, even on a stark model, as these features add weight to the nose, which is useful. For a completely detailed model, nothing will take the place of a set of photos, or a real plane to work from.

Baby Aces have been powered with various lightplane engines, so you can detail your own favorite and be correct. The landing gear is the trusty Piper J-3 unit. Note that this gear is outsized on the tiny Ace, which adds to the plane's cute charm. Shock absorbers, brake drums, and flush wheels all add good looks with little work.

The wheels themselves are made from soft 1/4-inch sheet, faced with a ring of 3/32 sheet, as detailed on the plan. The axle bushing is 1/16-inch aluminum tubing. After the wheels have been secured on the axles with a drop of glue, the wheels are finished with a disk of colored bond paper.

Block dimensions for a hand-carved prop are given on the plan, but if you would rather not tackle one, one of the excellent plastic props available will work fine. Power for a 1/2-oz. model is a 12-inch loop of 3/32 rubber. A 1/4-oz. model will fly on a loop of 1/16 rubber.

There are several trimming steps that can be built in and will guarantee successful flying. First, make sure that the center of gravity is well forward. There should be two degrees of positive incidence in the wing. The wingtips should be washed out about 1/16 inch. There should also be about two degrees downthrust. With these adjustments built in, you should be able to get your model flying. Fine trimming with "tweaks" of rudder and elevator, maybe some additional thrust adjustment, will let you build up to maximum endurance. Fine trimming can also include changes in the length and size of the rubber motors. Remember that a shorter motor will give more power and shorter duration, and a longer loop will deliver less power over a longer time. Try for an initial climb, a long, steady cruise, and a landing just as the winds run out.

The Baby Ace is a fine flying model. The best of luck and lots of enjoyment with yours. •