

Three-quarter front view of both ships with small airport background which adds the grass roots feeling of home-built aviation — both pretty!
PHOTOS BY TOM INGRAM

baby ACE

BY ANDREW G. ZOPH

Magnificent R/C Stand-off Scale version of most popular home-built aircraft with color scheme reminiscent of Curtiss Hawk P6-E.



Andy with the uncovered framework of the complete model. Nice size, not too big.

PREFACE
(Taken from Ace Aircraft Mfg. Co. literature)

• First, a bit about these airplanes. They go all the way back to Mr. O. G. Corben who opened an aircraft factory in 1923. A few years later he came out with a ship he called the "Baby Ace." This Baby Ace was the granddaddy of today's modern up-to-date version, the Model "D". Mr. Corben sold the early version in kits, and several were built in the thirties. Later the Federal Government placed such restrictions on home-built aircraft that none could be built, so the Ace designs lay dormant for several years.

In 1953, Paul Poberezny, president of the EAA, acquired all the old Corben Aircraft rights. This included the Baby Ace and the Junior Ace. He was joined by Stanley J. Dzik, a former Waco engineer, and together they redesigned the old Baby Ace. Paul and a group of friends turned out a new Baby Ace in about nine months. This version of the Baby Ace was known as the Model "C"; and it was featured in *Mechanics Illustrated* in a three months' series back in 1956. This series of articles gave the EAA a tremendous boost and was a great help in putting the EAA on a firm footing. It was also discovered that there was considerable demand for plans, parts and kits for such an airplane as this.

Since both Paul and Stan were executive officers of the EAA, to dispel any suggestions of a profit motive, the design rights to the Baby Ace and Junior Ace were



The baby Baby Ace standing in front of hangars gives a touch of realism. It is actually hard to tell from the real thing, with dummy engine, etc.

BABY ACE

sold to Cliff DuCharme of West Bend, Wisconsin. Again the Baby Ace was redesigned, reengineered and refined. Special tools were designed and built to turn out Baby Ace parts in quantity. This refined model is known as the Model "D".

A few years later, Cliff DuCharme sold the rights to this improved model to Edwin Jacob of McFarland, Wisconsin. Thurman G. Baird, owner of Ace Aircraft Mfg. Co., 106 Arthur Rd., Asheville, North Carolina 28806, acquired the rights from Mr. Jacob.

It has been estimated that there are about 350 Baby Aces flying today and hundreds more being built. Ace Aircraft Mfg. Co. feels that it is, "hands down," the No. 1 home-built in the world today.

• A legitimate question regarding this project might be—which came first, the chicken or the egg? Since I had done some work on Father John Fitzgerald's full-sized Baby Ace, could there be a better way to choose the subject for a Scale construction than one I had helped to build?

Father Fitzgerald acquired the partially completed airframe in early 1972. I built the tail surfaces and welded the engine mount, landing gear, lift struts and all fittings to the fuselage frame. The covering, painting, assembling and test flying were done by Father John. The first flight took place in August, 1973.

Around Christmas, 1973, my flying buddy, Jerry Messier, was looking for a subject for an R/C Stand-Off Scale model. After reading the AMA Rule Book and much talking, we decided to have a look at the Fitzgerald Baby Ace. This seemed to be an ideal choice. Since it was based only 25 miles away, we could get all the pictures and measurements we might need. The paint scheme was olive drab and yellow with stripes like the old Curtiss-Hawk P-6-E which would be a natural for a MonoKote cover job.

The more Jerry and I talked and planned about this project the more interested I became in building the Baby Ace myself. We made a deal—Jerry would finance the project, and I would do the building.

As stated in the preface, there are more than 350 Baby Aces flying today. A modeler could check around the small airfields in his area and probably locate one of them. Then he could obtain all the pictures and proof-of-scale measurements he needed for a one-of-a-kind Stand-Off Scale model.

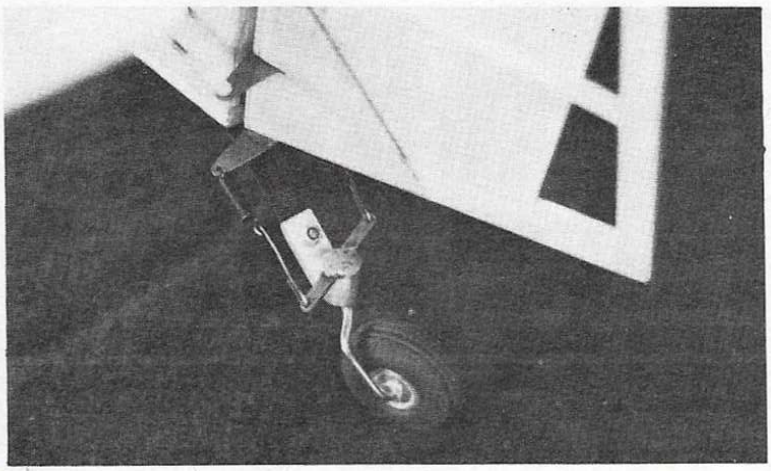
This is not a beginner's project, but it is not too complicated either. I will cover some of the things that might need clarification.

FUSELAGE. The fuselage uses spruce longerons and lots of plywood in the forward area. The use of epoxy glue is a must. The cabane struts will take much time and should be done carefully. A jig arrangement, as shown on plans, was used to hold the cabane wires in place while fitting the wires and silver soldering. The lower end of the cabane struts are sanded with 80 grit paper and have notches filed in them to help hold them to the epoxy in their slots. The plywood area of the fuselage was given a coat of epoxy before covering to protect it from the fuel. The cowling around the cockpit area was covered with MonoKote before it was glued in place. The stringers on the side and bottom were tapered before gluing in place.

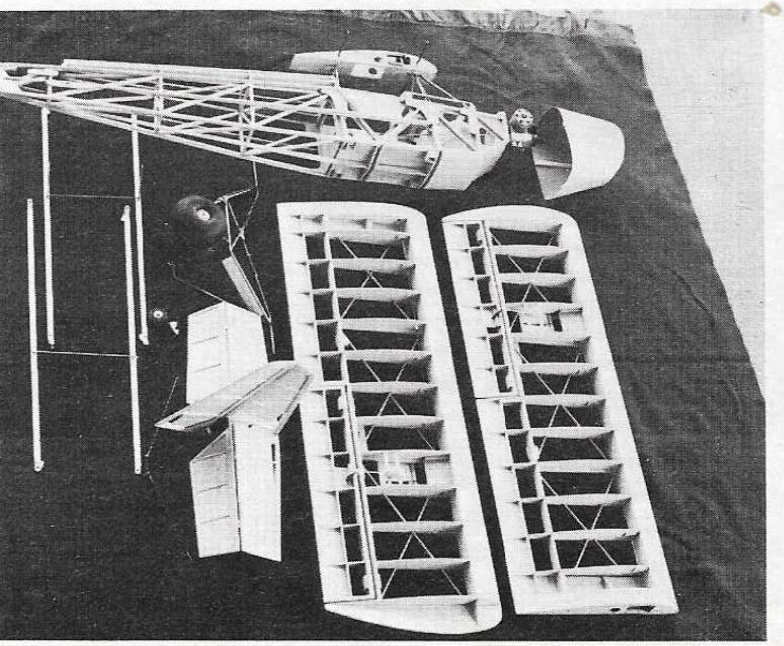
The cowling was built from 1/32" plywood and a balsa nose block. This method of construction was taken from an article in June, 1974, *RC Modeler* (pages 58-59). All doublers were added, cutouts

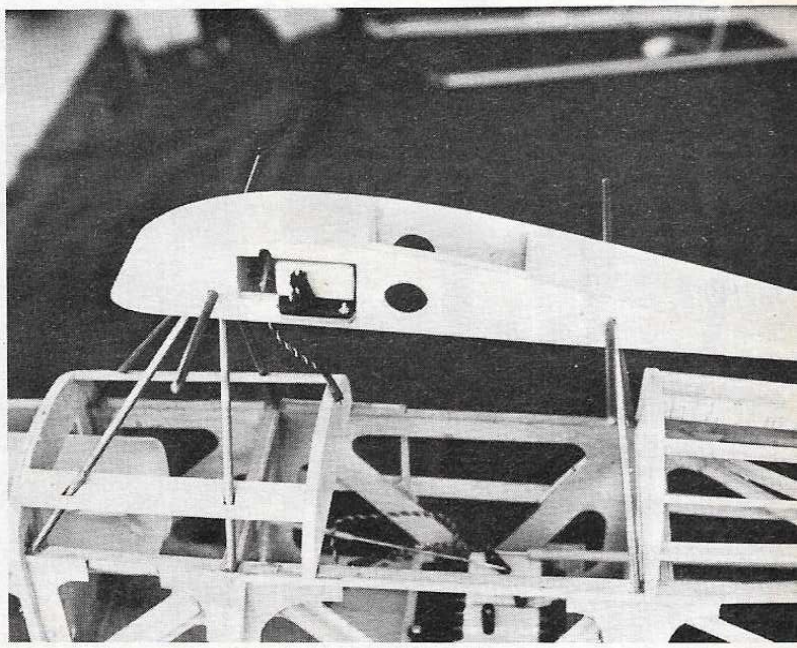


Close-up of dummy engine detail. Note spark plugs and ignition wires.



Tail wheel details. Note shock absorbing details using small springs.





If just looking at picture, above left, doesn't push you to build a Baby Ace, then you're not a modeler! Right, details of the center section of the wing.

made and the cowling mounted before it was cut in two at the parting line.

LANDING GEAR. The main legs were bent from 3/16" dia. music wire. The spreader bar and vee were made from 5/32" dia. wire. The springs with washers at each end were soldered to a length of 5/32" i.d. brass tubing. These units were slid on the 5/32" spreader bar before it was bent. All joints on the landing gear were silver soldered including the .040 brass gusset at the axle which also serves as a mount for the wheel fender. Four 8/32 bolts were silver soldered to the gear to hold the unit in place on the fuselage.

The main wheels are Trexler G-11's with an extra tire put over the outside for added strength. This was done by cutting the center from a second set of tires. The wooden hub was undercut to let the wheel cover fit flush. The wheel covers were made from .010 brass shim stock. The name "CUB" was stamped from the back side with ¼" letter punches and turned around to make the lettering read correctly from the outside. By using washers of the proper size, the cap is formed as shown on plans.

WINGS AND STRUTS. The egg crate type of spar and rib construction was used. Cut the four spars at the same time to help make the assembly square. Cut ribs from 3/32" sheet in stacks of 14 each. Remove nine ribs from each stack and add the aileron spar cutout. You will also need four end ribs for the ailerons. The 3/32" square drag and antidrag braces are added from the underside on the wing by cutting notches where needed. This should be done before the lower cap strips are glued in place. Build aileron in wing and cut out after all parts are assembled. Fiberglass arrow shafts were used to hold the wings to the center section. This area is built similarly to a sailplane. A rubber band hooked to each panel holds the wings in place. The push rods for the ailerons are hooked up, as each panel is assembled.

The lift struts are made from ½" K&S Streamline aluminum tube. A strip of .040-A250-5 aluminum is cut to fit inside the Streamline tube to take all the loads of flight and landing. Plywood shims are added to hold the ends and the area where the jury struts bolt in place. An extra piece of .032-A250-5 was used on each end to help stiffen the fitting and hold the drag wire between the front and rear struts. This wire was made from Nyrod flex cable.

TAIL SURFACES. The main thing to note on the tail surfaces is the inlay of ¼" square spruce at the point where the tail brace wires bolt on. The rib can be 1/8" x ¼" spruce or hard balsa. Fill in between the ribs with 3/32" sheet. The stab and fin are held to the fuselage with screws to make the surfaces easier to cover and repair. The tail brace wires have to add to the strength of the tail surfaces. On final assembly the fairings are tack glued to the fin and stab. The rudder horns are silver soldered together and set in a laminated plywood slot.

The tail brace wires are made from 1/16" welding rod. A ½" length of 1/16" i.d. and 3/32" i.d. brass tube are telescoped together with the end of the larger tube flattened and bent to fit. Drill ends for 2-56 bolt and secure nut with Loctite.

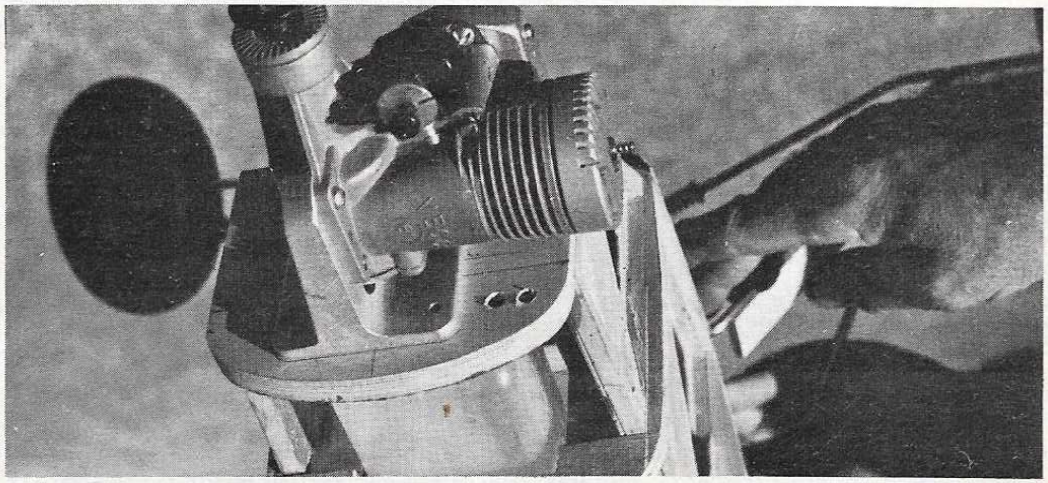
The tail wheel springs are from a leaf rake. The aluminum block was cut and filed to shape. A 5/16" slot was milled in bottom to hold the 3-leaf spring.

COVERING. MonoKote was used for covering on this project. The tail stripes, wing stars and license numbers were made from Super MonoKote. These are put on with an iron at a low heat setting.

The landing gear, cabane and lift struts are painted with AeroGloss. Everything else is MonoKote.

FLYING. The first flight was made in August, 1974, on a Friday evening, and we went to our first contest the next day. This outing was good for a 6th place out of eight entries. Obviously you must be better prepared. Since then, we have managed to win a 2nd place at the Chicago Scalemasters Contest in September, and at Chicagoland Expo II we also took 2nd place.

In so many articles I read, they tell you how to fly a tail dragger and all the thrills of the first flight. I think if you have built this model you should know how to fly by now. I will say the Baby Ace does handle well on the ground, and it flies like a one-quarter size Baby Ace. ■



Close-up of engine and fuel tank. Veco (now K & B) .61 is more than enough power.