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R/C BOATS

Ektachrome: Bill Antoine

Bill Antoine's
"Curtiss Robin"

Photos by the Author

The Classic "Curtiss Robin"

by Bill Antoine

An idea, to fill a need for a growing market. Aviation's hall of fame must include it. A .45 powered R/C replica.

The Curtiss Robertson Airplane Manufacturing Co., the largest airplane manufacturing company in the world, according to 1928 factory literature on the "Curtiss Robin" put it all together after exhaustive aerodynamic analysis. The engineering laboratory and experimental plant of the Curtiss Aeroplane & Motor Co. was located at Garden City, New York, adjacent to Curtiss Field.

The first "Robin" was manufactured at this plant and a large new modern plant was built at Anglum, St. Louis County, Missouri to handle the quantity of orders.

I believe the Curtiss engineering department was one of the first to use a model plane in wind tunnel tests and claimed it would fly a straight course without holding right rudder.

Some of the other early planes made by Curtiss were the Hawk, Condor, Falcon, Oriole, Lark and Carrier Pigeon. These were mostly military aircraft and now the "Robin" was to work its way into civil aviation.

One objective was to give the private owner a closed cabin type plane which did not require any special preparation in clothing or equipment other than that required for a ride in a car of the day. The aircraft was designed around the Curtiss OX-5 engine because of it's availability, although engineered to be replaced at a later date with a more efficient radial air-cooled Challenger of 185 hp.

A few interesting points of information were: gasoline consumption 15 mpg at 85 mph; two gas tanks of 25 gallon capacity each, mounted in the wings; landing speed was 40 mph; the gross weight, 2100 lbs. fully loaded. The fuselage was welded steel chrome molybedenum tubing, wing ribs of stamped alclad aluminum C-72 airfoil section, mounted on spruce spars with a 41 foot span. Length was 25 feet 9 inches and the price for all this was a mere $4,000. I almost forgot to mention the St. Louis "Robin 1" set a world's endurance record of 17 days, 12 hours and 21 minutes. And, if any of you can remember, "Wrong Way" Corrigan flew across the Atlantic from New York to Ireland in July, 1938 in a 1929 "Robin" powered by a Wright J-6-5 165 hp. engine.

Since starting this project, I find there are approximately a dozen "Robins" around the country, not too many with the old OX-5 powerplant. Back in '61, Norm Sten's "Robin" won a trophy for the oldest antique at the Le Sueur, Minnesota Fly-In. Mr. Glen St. Louis won 1st place with a 1929 "Robin" OX-5, "Best Antique Closed Cabin" at San Francisco's annual Pacific Festival back in 1960. The E.A.A. has the "Topeka" Robin in their museum and no doubt some will still fly them to the annual classic at Oshkosh.

Every modeler has to have some reason to build a particular miniature aircraft. Maybe he was just looking through a magazine and a beautiful colored picture of a full scale aircraft catches his eye. So he decides to make a model of it. Could be he even had a ride in a certain ship when he was a kid and it still sticks in his mind. He can recreate the old feeling to a satisfying extent by making an R/C replica of it and seeing it lift off once again to his own command.

Nostalgia is my reason, I never had a ride in a full scale "Robin" and colored pictures were not around when I was a kid. That's a give-away on my age, but I do remember my brother getting started building models when Lindbergh flew over Paris in 1927.

Of course I followed suit and it wasn't long after he built a "Curtiss Robin" and it won 1st place. It was on display in one of the banks in downtown Patterson, New Jersey. I can't remember much more of the details, but the plane stuck in my mind all these years. It has certain lines about it that turns me on. (Just as I said previously, every modeler has to have a reason.)

Another temptation for drawing up the plans and building one was Lou Perretti's (Aerotec Model Engineering Inc.) club held a "Golden Era" contest last year and I didn't have a plane to enter, so what better excuse could I have to finally sit down and work out the details for a "Curtiss Robin" R/C in the 1½" scale size.

The first thought was, it would be an easy model to throw together, a square box fuselage, constant chord wing, an easily built up stab and fin and rudder, similar to the old rubber band Free-Flight days.

It's not as easy as it sounds. And as I progressed, the problems mounted. I had better state now, if you are going to build the "Robin" as per the plans one item necessary is a Prestolite tank and torch to handle what I call the hard silver solder joints. There is a low melting point of the silver solder by J.W. Harris Co. "Stay Brite" used with a regular soldering iron, sold at hobby shops. It is very good for other connections that don't require as much strength. There was a miniature welding outfit advertised in the magazines a while back that I'm sure would do the job also. Like all modelers, where there's a will, there's a way, so no matter what method you will use, the final necessities should come out about the same.

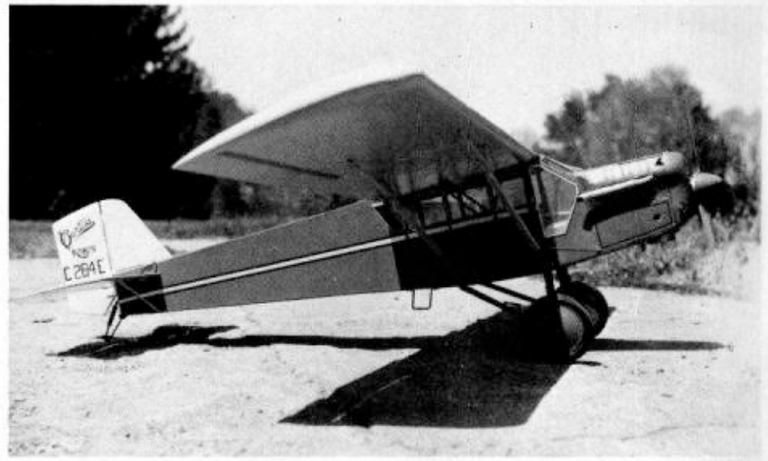
Fuselage Construction

Start by forming the two lower longerons and I suggest you over-bend them after wetting as they will spring back a little when dry. Make a left and right side as mast cross-braces are recessed so the covering material will not adhere to them, except along the window and door outlines. As stated on the plans, the door is on the right side only. Recess cross-bracing when joining the two sides as necessary. Rough shape the wing center-section balsa block and glue in place. This will take final shape when the wing is finished and mounted.

You will now have a "Curtiss Robin" body without a nose section on it. Make two aluminum gussets and drill a series of holes where they come in contact with the longerons and braces. Bend to shape, referring to the top view on the plan and epoxy them in place. Use small pins to help hold gussets. Next slide bulkheads #2 and 3 in position and drill small holes through bulkheads and aluminum. Pin or nail them using epoxy for glue.

At this point, mount the engine on bulkhead #2. See the plan for desired down and side thrust. Drill holes for the tank fuel lines and engine control cable. The nose is then built up with balsa blocks and bulkhead #1 is adhered to the blocks. Sand the blocks flush with bulkheads #1 and 2 and shape to the top view shown on the plan to bulkhead #3.

The entire nose section can now be covered with thin aluminum, three sections on each side, plus a little piece at the rear of each exhaust stack as it's hard to bend compound curves.



Barn door wing and box-like body, a 1930 spacecraft. It was a good idea with a prop attached. **Beneath:** It haunts old memories at any angle. R/C fliers will find it to be a forgiving design.

I used an old file ground to the angle and size shown to form air vents. Place the metal on a board with the female form cut in it to match file. Line up metal and lines on board and press file by hand to form vents in the metal. Do not cover dark area where exhaust stacks fit and where exhaust from the model engine exits.

The cowling is made up via the Hobbypoxy method. If you never tried it, or don't know how, write them for literature. You do have to make up a dummy nose section slightly smaller in size, approximately 1/16" undercut to allow for the thickness of the material used in making the cowl, and or the number of layers of cloth used inside the cowling to strengthen it. Cut the necessary holes in the finished cowl and mount to pine blocks glued to #1 bulkhead with small sheet metal screws.

Exhaust stacks were made out of ¼" dia. copper tubing, some straight brass tubing and ⅜" copper elbows silver soldered, filed and painted silver. Using a Dremel tool will help in mounting, as bulkhead #2 has to be cut to get the stack in place.

The Landing Gear

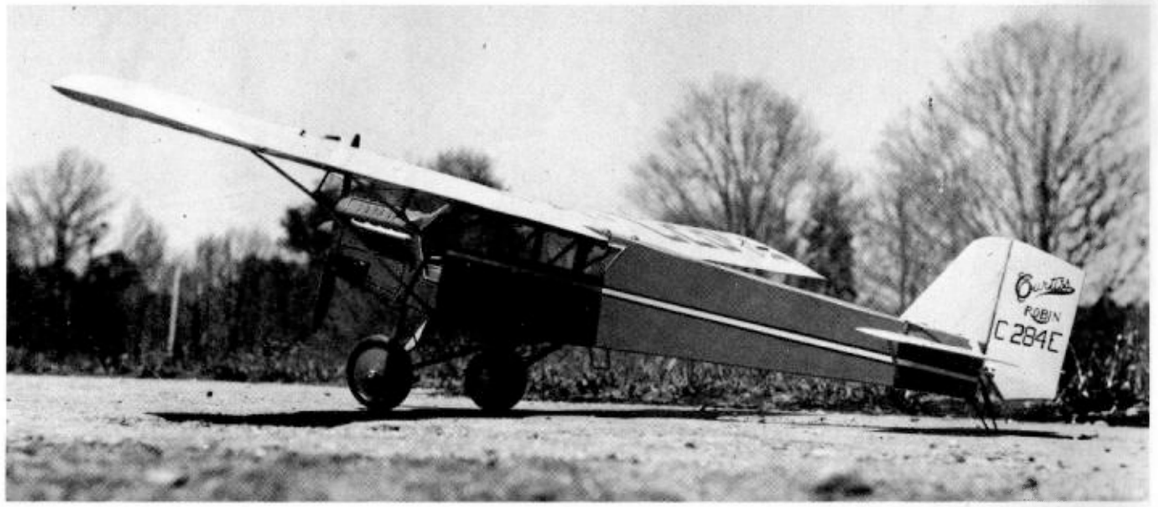
Form the main landing gear and slide the two nylon blocks in place and fasten to the aluminum gusset with sheet metal screws. The rear part of the landing gear is formed and wrapped around the main axle leaving a piece about 1⅛" straight up. You will have to apply heat at this point to do this. You can attach to the hardwood block which has a groove in it with two small flat pieces of metal screwed to the wood. Use the method shown on the plan for wing struts and to finish contour of the landing gear struts.

Stab, Fin and Rudder

There is nothing unusual in the construction so I'll let the plan tell you what you need to know. Checking with the centerline you will see the stab is set at 0 degrees incidence.

Linkage

The elevator linkage is easy. Make it up separately and fit to the finished fuselage, being very careful when cementing



Realism is the prime keynote, carried right into the structure. Bill is a master craftsman and tells how. The plans provide a wealth of detail.

Below: It's proportioned as a bird should be. The structure can take it, not prone to sag beneath the covering. A healthy .45 engine is advised.

in position that it doesn't bind. Use 5-minute epoxy and hold gently in position, turning arms to make sure the shaft is free. If you care to install brass tubing in ¼" ply blocks for bearings for the 1/16" dia. shaft, it's up to you. I think the rest of the fuselage detail is shown on the plans.

The Wing Assembly

Again, if you have ever made a built-up wing you should have no problem following the plan. If you are going to fly the plane with struts in position at all times you could eliminate the plywood gussets for ease of construction.

All the strut rigging on the wing is made removable so covering is no problem, except for the aileron rods exiting out, but the plan shows how to build up an area around that, so the covering has an area to stick to. The exit guides have to be made up and soldered. Again drill small holes to insert pin heads to simulate rivets.

I showed the size of numerals and the letters for the plane and of course this depends on which particular version you may want to copy. The same is true with the exhaust stacks, they can both be reversed, or only one, I chose to have both exit toward the rear. The original "Robin" had doors only on the right side, but later versions had one on the rear left also.

Getting material and old pictures for this project was the hardest part of the job. I even wrote to the Glenn H. Curtiss museum in Hammondsport, New York and a Mr. M. Stickler, an old time modeler was very helpful and sent a few pictures to me.

It was one of these that helped me make the decision as to the construction method of the front struts, using ⅛" dia. piano wire so as the other interconnecting struts could be fastened with silver solder.

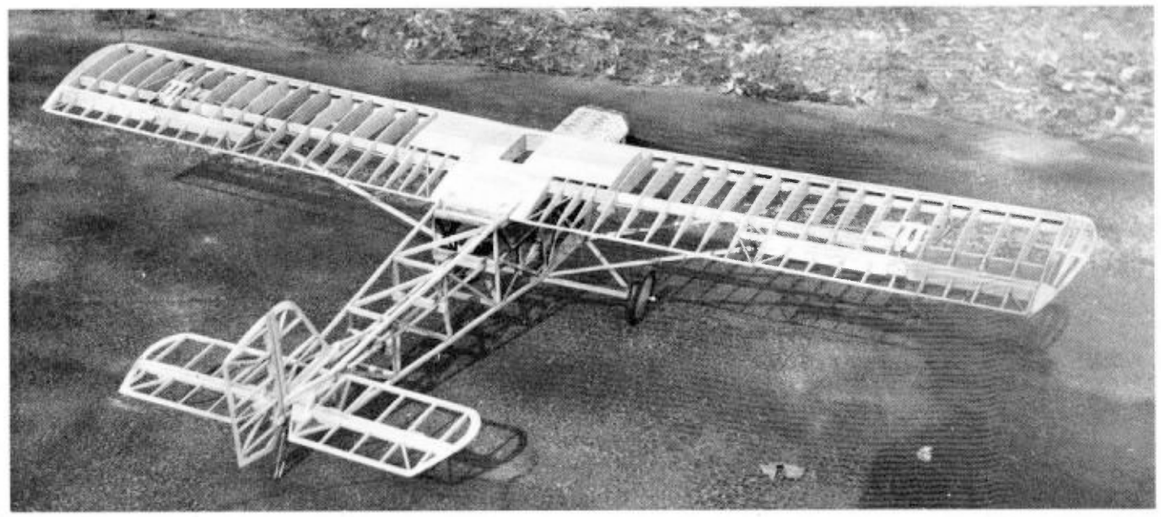
The Windows

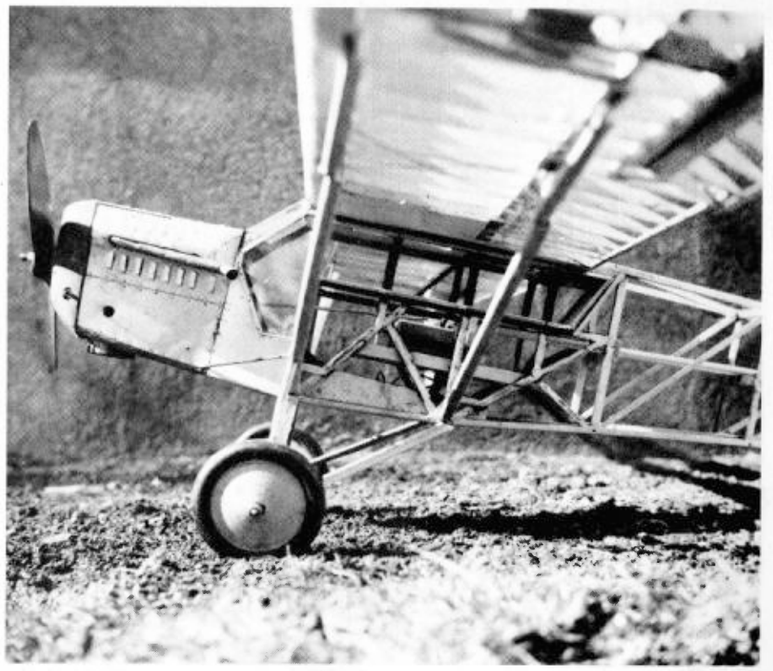
One of the unusual items about the "Robin" is the two large side windows which gives the pilot plenty of visibility and sunshine. Another feature is looking at the top view and noticing how the body widens out after the straight lines of the engine. This of course was to have people sit side by side instead of the usual in-line arrangement. The windows were made up from 1/32" celluloid obtainable at most hobby shops. The cabin side windows are one piece and the rest around the nose and side were cut and fitted separately.

Using the same aluminum that covers the nose section, make up little strips with the right angle bends so as to hold the windows in place.

I formed the bends using two flat files on edge in the vise, with a piece of aluminum about ¾" wide. Leave a little protrude and leave the rear file 1/32" lower than the front. Make your first bend towards yourself and using a screwdriver or such get a good angle on the bend. Now with a thin piece of steel such as an old X-Acto razor saw ground so there are no sharp edges, take a hammer and tap it gently to form the opposite bend needed.

After the "Z" bends are made, take a scissors and cut excess metal away after leaving about 1/16" for gluing and pinning. It may sound difficult, but the aluminum is very soft and bends and cuts easily. All it takes is time!





An aluminum cowling. The technique is described, takes patience, but it's not very difficult in itself. Notice all the room you have to stash your radio system. A framework to enjoy building.

A Fine Finish

Taken right from the factory literature: The color combination used on the "Curtiss Robin" is both artistic and attractive. The fuselage is burnt orange, wings and tail group of rich yellow with trimmings in black. I had a "Robin" owner in Nebraska send me "chips" of the colors and using Testors' hot fuel-proof dope, competition orange with a little black mixed in it, produced the burnt orange perfectly. For yellow I used Testors' 1486 yellow right out of the can. The rest of the color scheme came from people and owners of "Robins." Believe me, I tried to secure colored photographs of an OX-5 "Robin," but to no avail.

The First Flights

No matter how you sort of postpone the day for the final event, it has to take place. That first take-off, not knowing what to expect sort of gives you a case of weak knees. Again, for the nostalgia of it all, I had my brother with me so as to shoot some movie film just in case something went wrong.

From past experience I kept my C.G. a little forward, as a tail-heavy plane usually gives you more trouble than you bargain for.

The moment for flying finally arrives and you get it rolling down the field and then pour on the coal. Up and away it goes, smoothly and beautiful. Just a little transmitter trim and, like the original claim of the real one, you let it fly hands off.

After correcting an engine problem (a screw came out of the front housing), it was time to shoot some snaps doing some low fly-bys. Off again with a full tank of that precious glow fuel making pass after pass, not realizing the time it took. I had to come in dead stick and it handled just the way you would want a plane to perform, even in a glide. So all in all, the thrill of seeing an old "Robin" in the air really made it all worthwhile. Fly it well!

The unique lines of the fuselage and design of the gear stamp it as a classic worth building! **Beneath:** A glimpse of tail feathers, enough surfaces to alter course. Good slow flight control.