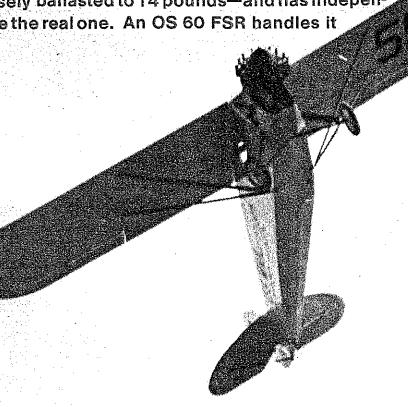




Inspired by the real planes he saw in his boyhood, George masterminded this scale. With more superb flying, faithful copy of the FC-2 in 2 in.-to-the-foot than 7 sq.ft. of area, the 88-in. plane weighs 11 pounds as built, but is dent stabilizer trim purposely ballasted to 14 pounds—and has indepenjust like the real one. An OS 60 FSR handles it with ease.



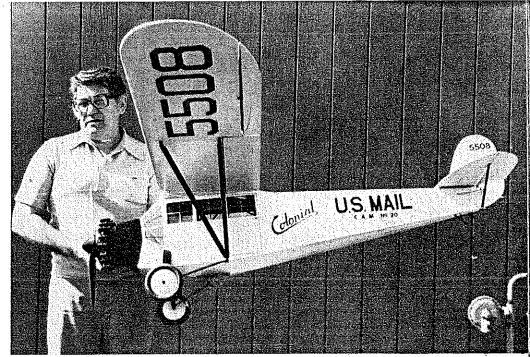
THE morning was gray with overcast skies but the heavy rain of the afternoon before had turned to a drizzle and visibility was much better at the old Syracuse Amboy Airport. The Colonial Western C.A.M. 20 flight of yesterday had been grounded by the weather but now was ready to continue its journey west to Cleveland. The pilot ground checked his Fairchild FC-2, taxied out and stopped, facing downwind to check the magnetos and clear himself of any landing aircraft.

His payload was mail only, without passengers to keep him company, as he swung the big Fairchild into the wind and pushed the throttle forward to begin the takeoff run. With this light load, the aircraft normally was airborne right away and he had shortened the takeoff run because of this. The tail came up right off as usual, but the Whirlwind did not seem to move the ship out in the normal fashion. With the airspeed showing takeoff momentum, the pilot drew back on the stick for lift-off. The point of no return was now past but the FC-2 would not leave the ground. The pilot had no choice but to cut the switches and ride the aircraft off the field into a swamp of tree stumps at the northwest end of the Amboy Airport.

The Fairchild was heavily damaged but the pilot's ego was hurt more than anything. He had not checked the drains on the wings lower trailing edge and both wings were full of rain water on takeoff.

I remember the incident being written up in the Syracuse newspapers and, while talking to Cy Bittner (who flew 5508 at one time for Colonial), he also remembered it, but who the pilot was and the exact date are lost in time.

It was one of these Colonial FC-2 aircraft that I wanted to model as I remembered



George and his big Golden Age bird. Built for Sport Scale, it does not have folding wings like the prototype, which, with opening cabin doors, would be needed for AMA Precision Scale.

them so well from Amboy during my early teens. Colonial Western, which started operations in December of 1927, followed Colonial Air Transport and acquired the early FC-2 Razorbacks, two of which had been factory built with the Wright J-4 for Colonial Air Transport. These two aircraft later had the J-4 power plants replaced with the newer J-5 Whirlwind, Colonial Western also had at least one FC-2 four-longeron aircraft (5508) for which I was able to get the black and white photo. Before Colonial became part of American Airways, in 1930, they painted all the aircraft lavender, orange and grass green, which is the color scheme of 5508 in my photo.

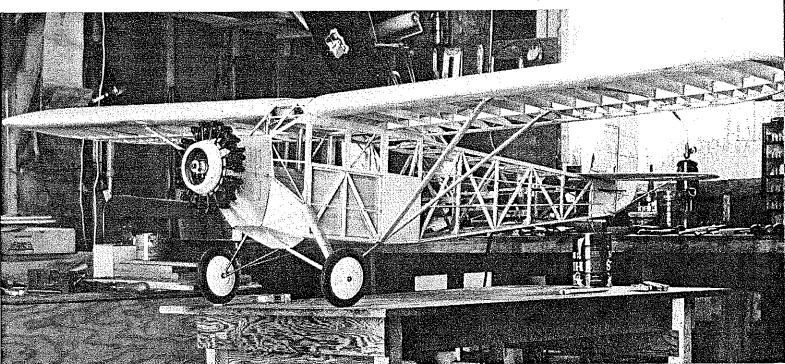
At the time of building the model, I did

not know what these colors were, so I did the model in its previous paint job of all silver with black nose—used from the start of Colonial Air Transport and much better remembered. While lavender, orange and grass green should have been remembered, no doubt American lost no time repainting them dark blue with international orange wings.

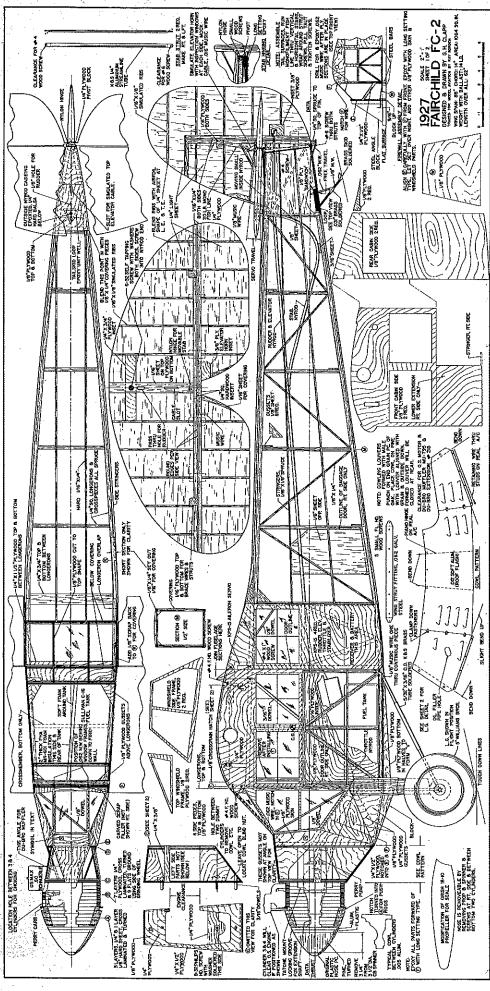
Because I wanted to include the movable stabilizer trim of the real aircraft, operating with a servo, it was decided to model a fourlongeron Colonial ship to have more room in the rear fuselage area.

#### Construction

Fuselage: Be sure to familiarize yourself



The most difficult thing in making the FC-2 is facing up to covering which hides the fabulous bare-bones structure. While it is evident there is more building than would be found in more ordinary aircraft, one senses that the construction lies well within his capabilities.



with the construction account and drawings before starting construction. It would be well to mention the reason for such heavy construction in the forward area of the model. In flying my TORC Trainer (Model Builder, Mar-April'78) during two years, I have been steadily adding lead at the center of gravity, both for wind penetration and to lower the center of gravity for better control. Ailerons were added to TORC to better simulate flying the Fairchild. The difference in handling in winds is amazing. I came to the conclusion that a wing loading of near two pounds for each square foot was not too heavy for a large RC scale model.

With this in mind the model was built using spruce longerons, wing spars, leading edge and all fuselage members forward of the wing's trailing edge. The model is robust with 1/2 aircraft plywood skin in the cabin area.

The wing area on the FC-2 model is just over seven square feet, and it came out well-balanced but weighing only 11 pounds. So three pounds of lead were added by melting up old tire balancers (obtained at a local gas station) before its first flight. This was added at the center of gravity just ahead of the servos and over the fuel tank.

Also at this point, I'd like to emphasize the reason for using long-setting epoxy to a greater extent on a model of this size. This long-setting type will penetrate the wood to a much greater extent and therefore hold much better. Ground shock on a 14-pound model is high at times even with the shock-absorbing landing gear.

Because of its unusual shape, the fuselage, from the wing trailing edge forward, dictated something other than a normal approach. It was decided to build the side frames in two parts, one part being from the rear wing spar aft, the other from the rear spar forward to the windshield. After building one right and one left, on top of the other, they are now set aside.

Cut out the main cabin bulkhead "F" and epoxy on the 3/16 music wire top landing gear section with its 4 plywood supports. and install "J" bolts. These five parts are assembled using a perfectly flat surface. Fasten the plan down so that the top of the bulkhead "F" will overhang the building surface, while the fuselage sections are assembled upside down. The top longerons of the forward section will lay flat on the building surface, and because of the step in the longerons back of the wing, the rear section is shimmed up with 1/4 pieces. The first step in joining the front and rear sides is to cut and glue in the cross pieces forward of the wing's trailing edge. As noted on the plans, the fuselage tapers forward and rearward at this point-without bending the longerons. Epoxy only these cross pieces and bulkhead "F." Also epoxy in temporary diagonal piece at rear of cabin area and leave it in until fuselage is finished. Now leave to dry. This front section must be carefully checked and held true, since it is the foundation for accurate building later on. These side angles are also the shape of

the wing roots, which later have to match. After this is set up, draw in rear halves and epoxy in cross pieces.

Cut out side ½ plywood skins and glue on. As shown on plans, the fuselage is fastened down, right side up, with the plans of the nose showing. The building of the section from firewall "E" to bulkhead "F" is unorthodox but very strong, if good joints are made and long-setting epoxy is used. This is shown on sheet one in lower right corner. Follow instructions shown there then add small top and side cowl parts marked with a framed "X" on drawing, along with windshield sides and small top outside windshield sections. Leave the center windshield frame off until the 1/16 music wire ties are installed later.

Cut out and add the two lower ½ plywood skins to each side and allow to dry completely. Drill firewall and notch bulkhead "P" for 1/16 music wire tie, each side of front windshield. Be sure to notch the firewall for bent-over wire ends so that the cowl section rear will lay flat. Add the small ½ plywood pieces behind the landing gear main legs and along bottom longeron for covering. Add balsa baggage door backing on right side and stringers. The tail skid is shock absorbing with the vertical section riding free in the ½ plywood.

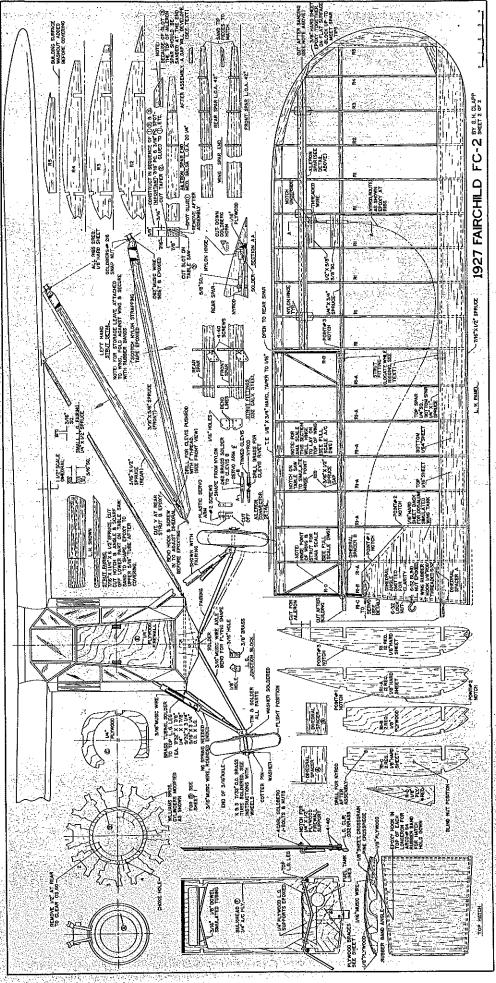
The whole section forward of the firewall is removable by loosening one screw on the aluminum cowling's right lower side in order to lift the aluminum cowl to clear the O.S. engine; by placing a Phillips head driver between the two bottom dummy cylinders and loosening this screw. The building of this section is clearly shown on the plans. Before assembling this, transfer dowel and fastening screw holes from part "D" to firewall and install blind nut on back side of firewall.

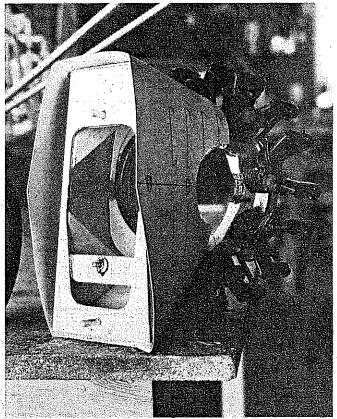
Part "A" is glued up and rough cut to shape on a tiltable table band saw or Dremel saw. After drilling a center hole, mount in lathe (or in my case an electric drill) and turn outside shape. Cut out center (after turning) on Dremel saw.

Part "B" which the Williams Brothers cylinders are mounted to, is made of sections of plywood epoxied together and carefully layed out for the nine sides. Rough cut this out on the Dremel saw and finish-grind outside on a side wheel sander.

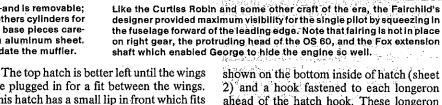
After the nose section is built, mount the O.S. 60 FSR engine to the Tatone motor mount and line up the motor shaft with center of Section "A." Mark motor mount holes on firewall, drill firewall and epoxy in blind nuts to inside. Cut out aluminum cowling, set louvers as explained on drawing, drill holes and fasten to front section with screws as noted.

The spinner is explained on the drawing and was turned on an electric drill. The scale prop is carved from a Grish 18-10 unfinished prop to the template. A notch is then cut through the rear wood part of the spinner on a table saw to accept this scale prop. The gap between the notch in the spinner and the prop is filled in with plastic





The nose section is built separately—as plans show—and is removable; note the projecting positioning dowels. Williams Brothers cylinders for the Wright Whirlwind are mounted on nine plywood base pieces carefully fitted together with epoxy. Cowling is cut from aluminum sheet. Shown is paper pattern, later modified to accommodate the muffler.



wood and carefully shaped to fit the prop blade angle. The flying prop will also fit into

The fuselage Nyrod control housings are installed with cross pieces of 1/8 balsa at each fuselage station for support.

are plugged in for a fit between the wings. This hatch has a small lip in front which fits under the cross piece, just in back of center windshield. The rear is held down with a rubber band stretched between the hook

To remove forward section, one screw is removed from cowl so that it can be lifted clear of engine; this done by inserting a Phillips head screwdriver between two bottom dummy cylinders.

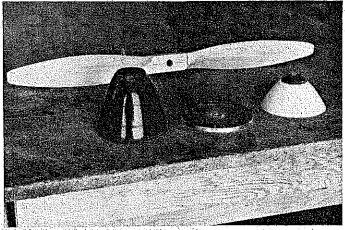
shown on the bottom inside of hatch (sheet 2) and a hook fastened to each longeron ahead of the hatch hook. These longeron hooks are not shown on sheet I.

The doors can be made to open (for AMA Precision Scale) by cutting them out of the side 1/4 plywood pieces. I have a good photo of the interior if you want to acquire

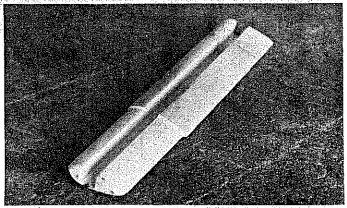
The 1/8 plywood on belly from rear of cabin area up to the rear landing gear strut is applied with the wing strut fitting (1/16 deep) groove cut in it. Do not add bottom plywood ahead of this, or the block on bottom, until the landing gear is applied.

Landing Gear: Cut and form the .031 brass fitting and attach it to bottom center of bulkhead "F" with bolts as shown. Machine junction blocks from 3/8 brass stock. Stand fuselage on the firewall "E," tail up on a flat surface. Form the 3/16 music wire axle (also the shock absorber) in one piece from wheel to wheel and run through brass fitting on bulkhead "F." Block up the ends of axle part to the proper height. Bend rear 1/2 music wire struts in one piece to fit bottom of fuselage ahead of 1/8 plywood, now on belly.

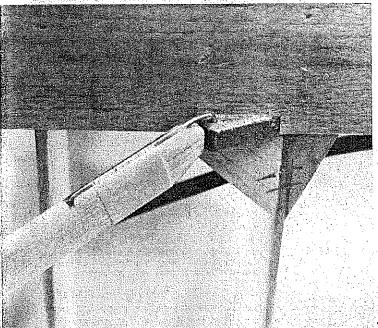
Slide brass tubes over them and make last bend where these enter junction blocks. Insert ends in junction blocks along with axle ends. Cut the eight pieces of brass tubing that go on the 3/16 wire (epoxied into bulkhead "F") and solder in place. Cut the two short pieces of 3/16 music wire that make the lower part of the shock struts.



The scale-shape propeller is carved from a Grish 18–10 prop. On right is turned wood section of the spinner, to replace normal plastic part.



The landing gear strut fairings are made as shown on the drawings, but are not epoxied until after the fuselage has been covered. Williams Brothers 5-in. Golden Age wheels are slightly under scale, but were largest scale wheels available. The landing gear is shock absorbing.



Parts of the Fox extension shaft which allows aft location of the engine.

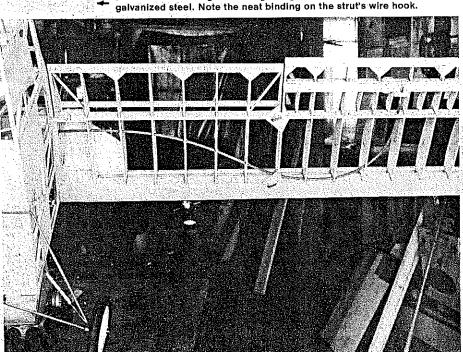
Detail of the left wing strut fitting. Wing strut fittings are made from .031

rounding off the top ends as shown. Wrap the rounded top ends with narrow strips of masking tape so they center in upper brass tubing. Solder junction blocks and struts together after careful alignment. Remove the masking tape so lower leg moves free in the top brass tubing. The brass tubing that goes over axles is cut and the ends drilled for small cotter pins, and soldered in place with inside brass washer.

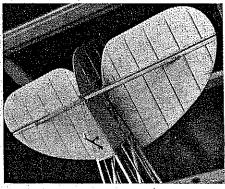
This soldering of the point of junction of struts, blocks, tubing and washers is better done by tinning all parts before assembly. This will insure total penetration of solder.

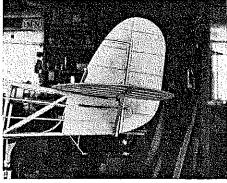
The strut fairings are made as per drawing but do not epoxy on until after covering the fuselage. The Williams Brothers Golden Age 5-in, wheels are slightly small for scale but are as large as they make. It is recommended that ship be flown with wheels with softer tires, except at contests, because of shock to the airframe.

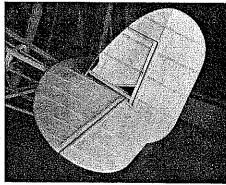
Tail Surfaces: These are cut from very light ¼ balsa sheet and pretty much explained on the drawing. The simulated ribs and other 1/16 parts, that raise the covering



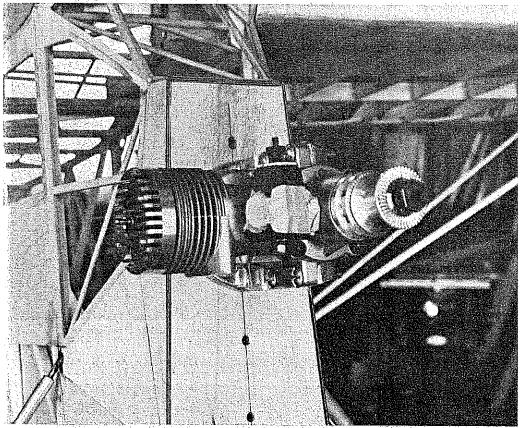
The wing panels butt against the fuselage sides with rubber bands between hooks, with Nyrods routing the pushrods to the allerons horns. Dihedral is scale at 1½ degrees, and quite adequate.



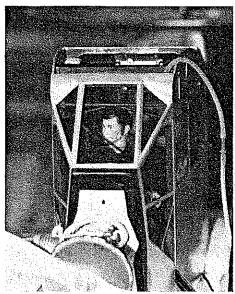




Tall feathers are made from light ¼ sheet with simulated ribs, etc. to raise the covering above the sheet, and to allow shaping to symmetrical cross section. Note strut attachment and shock absorbing tall skid, left; trimmable stab set at negative angle in this photo; and, right, how extension of fin leading edge rides through trimmable stab. Stab/fin wire (not shown) is 20-lb. monofilament, tensioned, sprayed sliver.



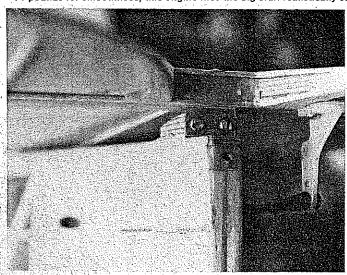
The side-mounted OS engine on the distinctive ply firewall. Although the 11-fb, ship is ballasted to 14 pounds for smoothness, this engine files the big craft realistically on only half throttle.



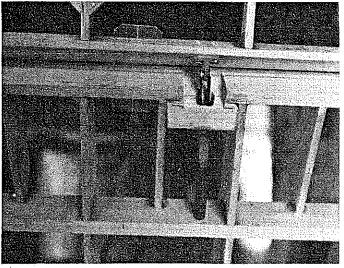
Hose projecting from cabin used to draw fuel from tank after flying. Black outline on firewall is electrical tape for cowl to rest upon.

away from the ¼ sheet, are installed after the symmetrical airfoil shape has been sanded to the ¼ balsa. The ribs are then sanded again at the leading and trailing edges to blend in.

Do not forget the plywood inserts or the spruce pieces between the stabilizer and elevator. In the final rigging, the 20-lb. monofilament fish line leader is sprayed



Detail of mount fitting for the trimmable stabilizer. Nylon hinge which permits trim movement is attached with small wood screws and epoxy.



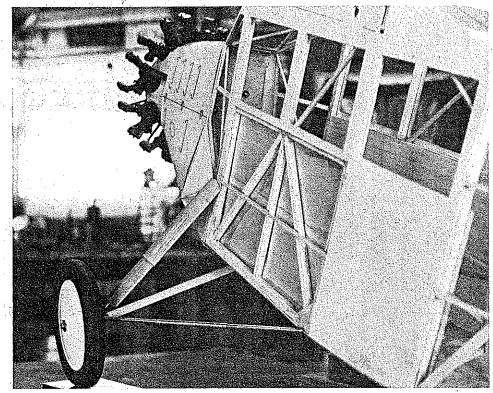
Detail of the Nyrod, clevis, and horn assembly at the aileron, showing how the alleron spar is cut away and supported. Note hinge, to left.

silver and run from the stabilizer on one side through rudder, and through stabilizer on other side. Both ends are then wrapped around strut screws; tighten one strut screw, pull monofilament line tight, then tighten other.

Wings: The airfoil on the model is the Goettingen 387, with the slight undercamber left out to give it a flat bottom. This undercamber is so slight that it is barely perceptible, and has little if any effect on the flight of the model.

The wings are built in two separate panels for transportation reasons. After all ribs, spars, leading edge, trailing edge and aileron spars are cut out and machined, assemble L.H. panel first on drawing over waxed paper. The aileron spars are left in one piece during construction and, because they are made from medium balsa, they are formed later at the tips with medium sandpaper glued to a fairly large block, along with the tips,

The hard balsa tip pieces are epoxied together on a flat surface and left to dry. Later, they are shimmed up and fitted to spar ends, trailing and leading edges, and epoxied on. The root ribs are attached, using the dihedral braces shown. Add the top 1/16 leading edge along with 1/16 balsa gas tank backing. Add the 1/64 balsa bottom leading edge back to the front spar. Use baby oil to make wing plan transparent so R.H. wing panel can be assembled over Coming in with the mail, the FC-2 will make an easy three-pointer.



Closeup of cabin area and landing gear from rear quarter, gives clear impression of side-frame construction. Note brass sleeves on rear strut.

back side of the plan.

With both wing panels completely sanded and shaped, cut out the ailerons. Note that the aileron gap widens towards the tip,

when sanding. This is as it was on the real aircraft. Make the necessary blocks and notches to actuate the ailerons; nyrod hous-Continued on page 99



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Oh, you want to know about (7): Reversing at the Control Surface! You can cross the aileron pushrods, or put the rudder control horn on the opposite side. Great ideas, if you think of them when you are building! The same goes for the elevator. You could put the control horn on top, where it belongs. Then, when pulling out of a dive (which puts the highest load on the elevator pushrod) the rod would be in tension rather than compression, so it couldn't buckle at the worst possible moment.

Keep those letters coming, friends. I've been fortunate enough to receive some very nice ones recently. One worth mentioning came from Ron Smith, AMA 83995 & WA4JNX. Ron sent me an Official Membership Certificate (Honorary) in the Tarrant Amateur Repeater Assoc., contingent on my obtaining the Technician's License I spoke of in an earlier column. I will have more to tell you on obtaining the Tech License, soon, and I think that you will like what you see and hear. Keep watching.

George Myers, 70 Froehlich Farm Rd., Hicksville, NY 11801.

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## Fairchild/Clapp continued from page 27

ings are epoxied in place in each panel.

Make the wing strut .031 galvanized steel fittings, but do not attach them to the wing as yet. The spar root ends are cut as shown.

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Save-A-Plane: Downed aircraft locater—also functions as range checker, and receiver-on indicator—will sound horn (can be heard for long distances) for many hours on low-battery drain. Small size and weight permits installation in almost any plane. Works with positive or negative pulse, 3- or 4-wire system. Battery drain: less than 100 microamps (20 MA at 5V, 40 MA at 9V, with horn on). Size: 1.03" dia., 1.095" depth; weight 25 grams (less than 1 oz.). Sound output: 80dB at 3 ft. \$19.95. Save-A-Plane, Box 344, Cos Cob, CT 06807.

product review product review product review

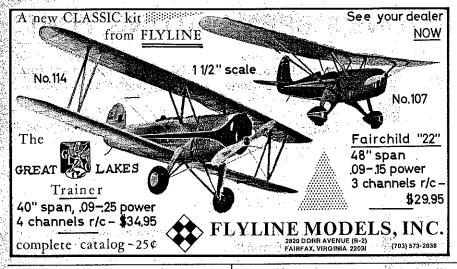
Holes for rubber hooks are drilled and blind nuts epoxied in.

Wing and Strut Rigging: The struts need no explanation. Once they are made, connect wings to fuselage with rubber bands between hooks. Lay fuselage and wings upside down on a flat surface. Make a cardboard template to check the 1½ degree scale dihedral between fuselage sides and the wing spars on bottom. Block up the whole ship underneath so that the dihedral is correct and there is about 2 degrees of washout at the wing tips. Attach the bottom strut hooks to the fuselage strut fittings and locate the wing strut fittings on the spars. Attach with bolts as shown.

Covering: The sanding of high points and very careful checking of all points of contact between framework and covering can make the difference between first and last place at a contest. The added time required is well worth it.

My Fairchild is covered with flat aircraft aluminum MonoKote. This covering makes a very realistic finish on any model but is very much harder to use than regular Mono-Kote. In fact, Sid Axelrod of Top-Flite said they had stopped making it. But the dull surface of this covering, and the fact of not having to paint it, has much appeal. Anyone dedicated to making this scale model, won't object to silk and dope; etc.

Flying: I first flew my FC-2 very early one



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Sunday morning with our club's president, Gary Brown handy with a camera. After several takeoff starts for the camera with tail in the air, but closing the throttle just after being airborne to land and taxi back, I finally had confidence and let it takeoff for a trip around the pattern. As soon as it was airborne, I found that the stabilizer leading edge had to be full up with full power, and pushed the lever on the TX to this position. As the model climbed out, and after its first turn, I throttled back to about ½ power. After the second turn into the downwind leg I found out that it would cruise very well at ½ throttle, Approaching base leg, I closed the throttle and the nose dipped as on a real ship. At this point I trimmed the stabilizer for glide and it settled into a very nice gliding attitude as I turned into final. The very first landing was a perfect threepointer. It may put the district

At this writing, I have flown the model many times and made numerous takeoffs and landings. Turns are accomplished with no rudder, and when trimmed, out it will fly hands off. No wonder those old time pilots thought so much of this design! The model does not seem to have any bad habits, and flown with ½ throttle and full up trim on the stabilizer leading edge, it is very hard to stall. When it finally stalls, it only slightly dips its nose to resume straight flight. It does not fall off on one wing, probably because of the tip washout.

While at the beginning it was my intention to have the model wings fold as on the real aircraft, I decided it was not done because of the complications and time involved. This could be done—and should be if built to AMA scale. It would necessitate a different strut attachment at the fuselage, with hinging up of the inner rear of the wing and hinging also of the rear spar at the fuselage, etc.

The model was flown in the 23rd annual

contest of the Aeroguidance Society of Endicott, N.Y., on July 8-9 '78. In static judging, it tied for first place. I had to abort the second flight of the first day because in building, I had forgotten to install the "J" bolts shown on the drawing of the main landing gear strut. One side tore out on the first flight after a real hard landing, because of gusty winds and not too good piloting. After repairing it as best I could, I tore both sides loose the next day and spent considerable time the next week repairing it, this time with the "J" bolts in place.

The next week, while flying it at the Syracuse Aero Radio Club contest, it placed well in static, but this day the FC-2 was heavily damaged in a low, downwind fly-by for the judges. The resulting stall was no doubt caused by a sudden gust from behind. It was that sort of day. I guess I am lucky to be around, I used to fly the big ones!

The model's scale is quite accurate, being enlarged with proportional dividers from my drawing of the real aircraft, which has Fairchild-Republic's historian and archivist, Theron Rinehart's approval in a statement on Fairchild-Republic stationery. As mentioned in the preceding issue, the drawing, photos, the statement, etc. can be obtained from me for proof of scale.

The Fairchild FC-2 is truly a beautiful flying model and very easy to fly. The crash was not the fault of the design. It simply fell to the ground with no airspeed. It is now rebuilt.

I would like to take this opportunity to thank Connie Moynihan, Gary Brown, our daughter Barb, John and Jerry Byrnes, and old friend Ken Little for the wonderful photography.

Also Herb Harkcom of Buzzards Roost, Oklahoma again: Without his help, photos and knowledge of the FC-2 he restored which is now in the E.A.A. Museum, this project would not have been possible.

#### ATTENTION

A notice appearing at the end of George Clapp's "The Fairchild FC-2" article in the March issue offers a list of available materials for 25c. A few readers interpreted the statement to mean that a scale drawing and documentary material was included in the 25c. The drawing and documentary material prices appear in the list—to be purchased separately.

(George Clapp, 11 Collins Terrace, Central Square, NY 13036.)

### RC Aerobatics/Van Putte continued from page 29

and carburetor, but it had a Semco muffler in lieu of a tuned pipe. It makes you wonder what he could have done with a retractable landing gear and a tuned pipe on that Dirty Birdy.

Some time ago I received a Sig Colt to evaluate, but lack of time to do everything I'd like to accomplish has kept me from personally building one. However, several local fliers have built them and their experience in building the Colt, combined with my flying their airplanes compels me to comment on it.

The Colt is intended to be flown with either rudder-elevator or with rudder-elevator-throttle control. It has the appearance of a Cessna-type design and has the lateral stability inherent in most high-wing aircraft. The 45-in. span styrofoam wing comes premolded intact, requiring only painting to complete it if smaller engines are used. Although the engine range is nominally 09 to 15, I flew one with a 35 installed! For that big engine, covering the wing with lightweight fiberglass cloth is recommended (by me).

The box-type fuselage is big enough for standard radios and very easy to build up. Rounding the corners provides an attractive fuselage with little effort.

One of the nicest features is that the Colt is a tricycle gear airplane. The kit comes with a formed aluminum main gear plus a complete steerable nose gear. Other accessories included in the kit are aluminum motor mounts, control horns, hinges and metal clevises.

Sig advertises the Colt as a sportster for Sunday fliers, but I wouldn't be surprised if they sell a lot of them as trainer airplanes, because it flies so well.

Every month brings more newsletters from all over the country and I enjoy reading about fellow RC fliers. Periodically, I've published excerpts from newsletters I thought would be generally appreciated. This month I have a great one from my club's newsletter. Major Ed Moorman edits the BEAM, Bulletin of Eglin Aero Modellers, and Ed published the following article which was received from Steve "Radar" Perkins.

"Rules for Students—Much has been written about how to instruct the student flier. Up to this time, however, there have been no guidelines presented as to how the student pilot should conduct himself. Having very recently gotten my solo papers, I felt it my duty to correct this great need. So I came up