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RCM radio control MODELER

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TOLEDO '85 COVERAGE

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The finished model ready to fly. The wing is held in place with six #62 rubber bands. Paint the Ace wheels yellow to match the covering.

SIMPLE CUB

The Simple Cub is the second in the Simple Series designs by Fred Reese featuring minimum construction and maximum performance schoolyard scale.

By Fred Reese

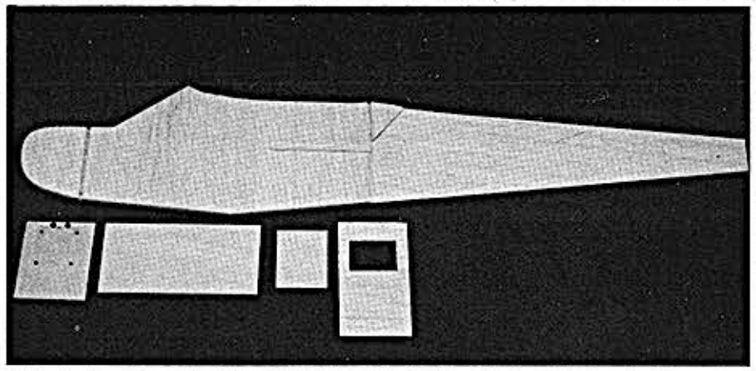
Next to P-51s, more models of Piper Cubs have been built than any other single aircraft. In fact, this is my sixth R/C Cub. There is just something special about a Cub. The Simple Cub is the second in a series of simple designs that I built last year. The Simple Citabria, RCM Nov. 1984, was the first. The Simple Series airplanes are designed to be the easiest possible construction that will produce an attractive, inexpensive, high performance schoolyard flier. Basic construction can be completed in an evening. The wing is the popular Ace constant chord mini foam wing, and power can be anything from .049 to .10 cu. in. but a TD .049 is recommended. The larger engines actually fly the airplane slower, but give better vertical performance. The Simple Cub is quite fast and is very aerobatic, not a beginner's airplane, just simple. The Simple Cub has generous dihedral and a large rudder for good roll response. Ailerons are not needed to do consecutive rolls or even fly inverted. The Simple Cub will take off from a hard surface easily if you give it a little shove to get it moving in a straight line. Once there is air moving around the rudder, the Cub will track straight with little or no correction required. The glide is fast when the engine quits and I usually don't try to slow it down until the Cub is on final approach and low, then just hold it off until it settles in on its own.

CONSTRUCTION

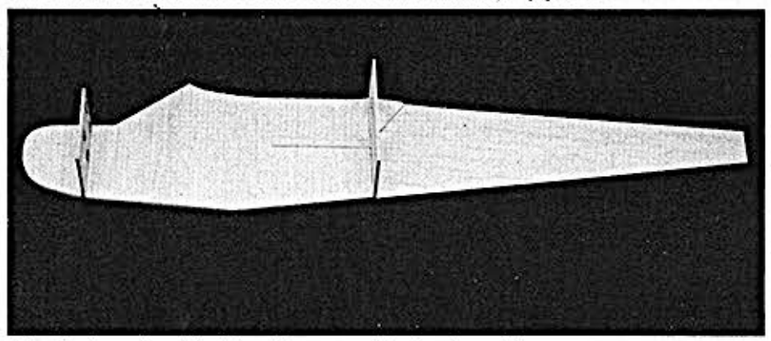
Cut out and use the fuselage side template to make two fuselage sides. Glue on the vertical grain balsa doublers over the shaded areas leaving slots for the firewall and bulkhead B. Glue on the balsa servo rail supports as this saves a lot of time later. Drill two 5/32" holes in the firewall for the fuel lines and drill the four 1/8" holes for the 2-56 blind nuts for the motor mount. Glue the blind nuts into the firewall and then glue the firewall and balsa bulkhead B to one of the fuselage sides. Glue on the other fuselage side and add the plywood bottom, C. Glue in the plywood landing gear doubler, D. Drill through C and D with a 5/32" drill for the landing gear and install the two 4-40 blind nuts as you can easily get your fingers in there now. Pull the tail together and glue. Glue on the remaining top and bottom 3/32" balsa sheeting with the grain crosswise. Sand the fuselage and apply a coat of Balsarite, inside and out.

Cut out the rudder and stabilizer from 3/32" balsa. Join the elevator halves with 1/8" dowel. Sand with #220 sandpaper and apply a coat of Balsarite.

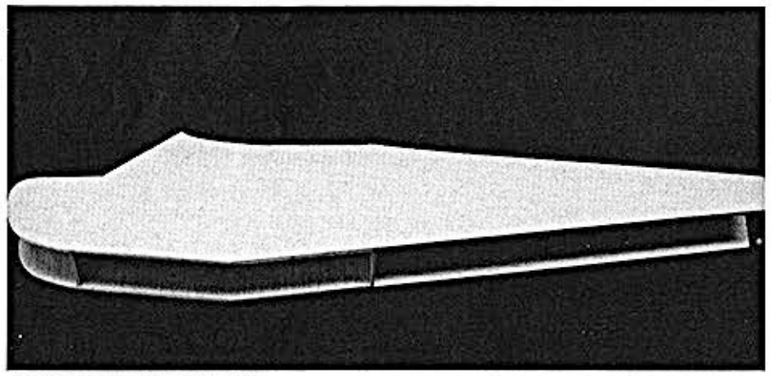
Cut out the wing tip template from the plan and mark the foam wings. Be sure to make a right and left side. Shape the wing tips with coarse sandpaper and taper the bottom until the tip is about 1/2" thick, then round off. Sand the dihedral angle and epoxy the two wing halves together, blocking up one wing tip 4" at the tip. Notch the trailing edge and epoxy in a 2" length of 1/8" dowel on each side of the dihedral joint. The dowel will



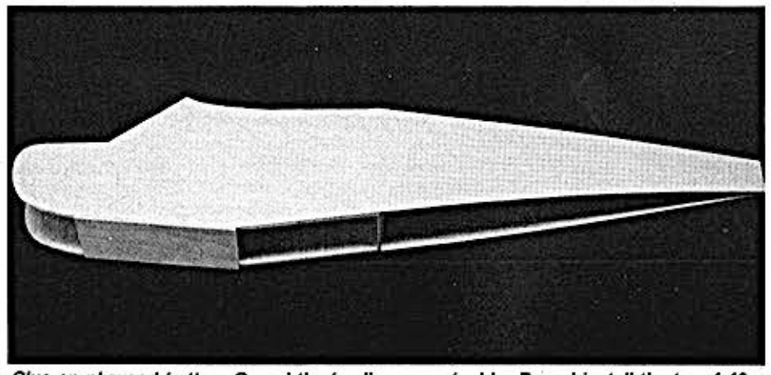
Make the fuselage sides from 3/32" balsa with 3/32" vertical grain balsa doublers using the template cut from the plan as a guide. Drill the firewall for the fuel lines and install the blind nuts for the motor mount. Cut out C and D from 3/32" plywood.



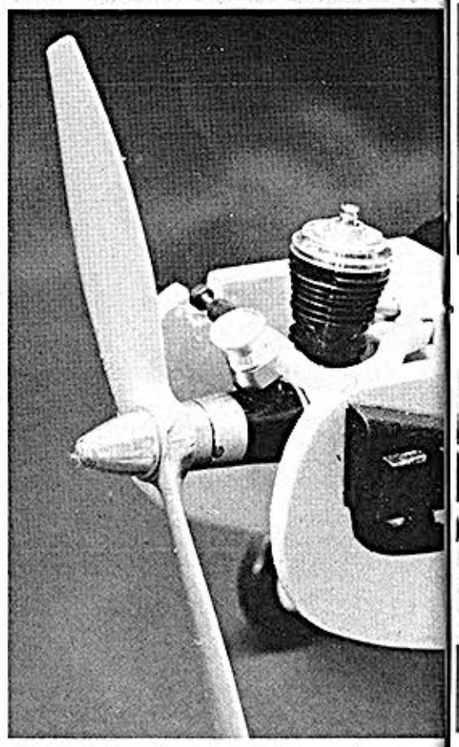
Glue the firewall and bulkhead B to one of the fuselage sides.



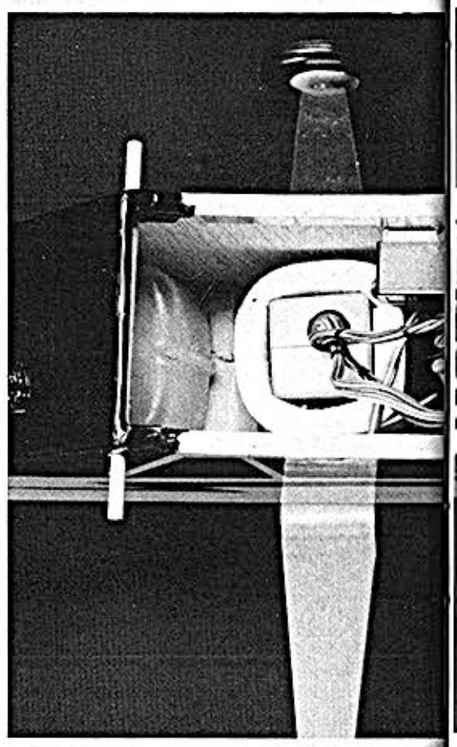
Glue on second fuselage side.

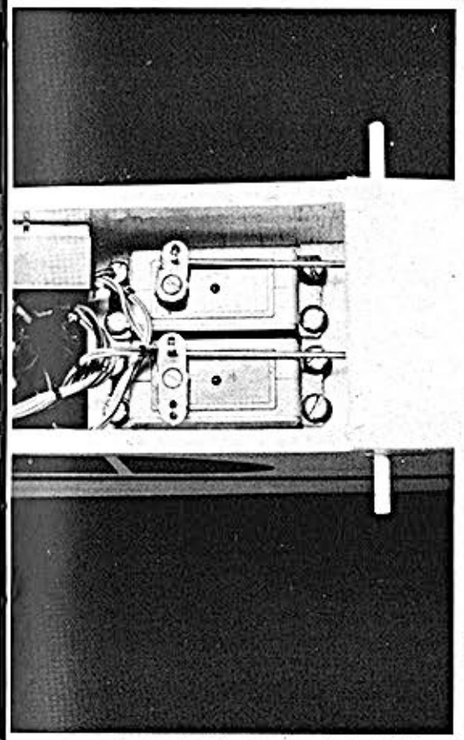


Glue on plywood bottom C, and the landing gear doubler D, and install the two 4-40 landing gear blind nuts. Pull the tail together and glue.

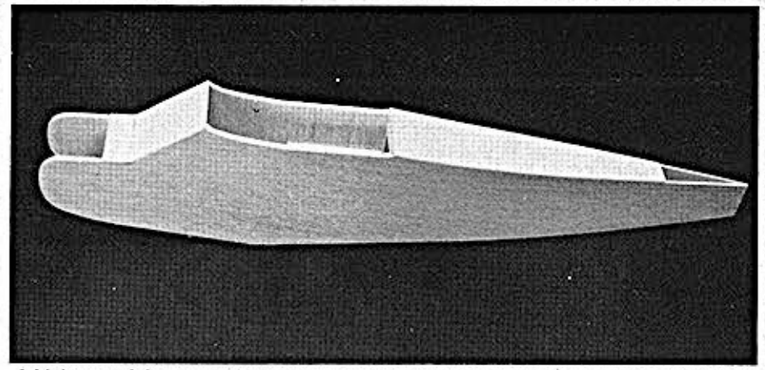


Cox TD .049 engine on Ace motor mount shown.

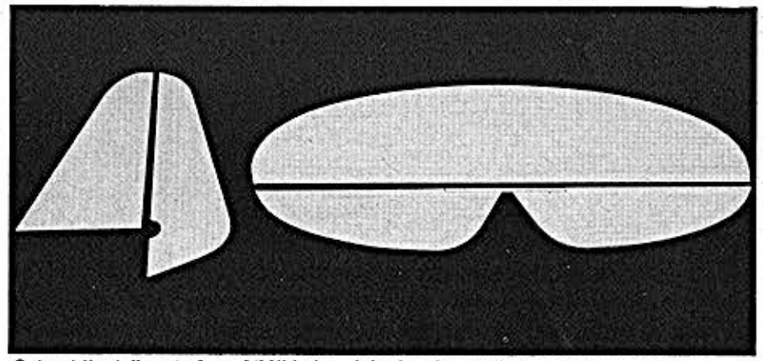




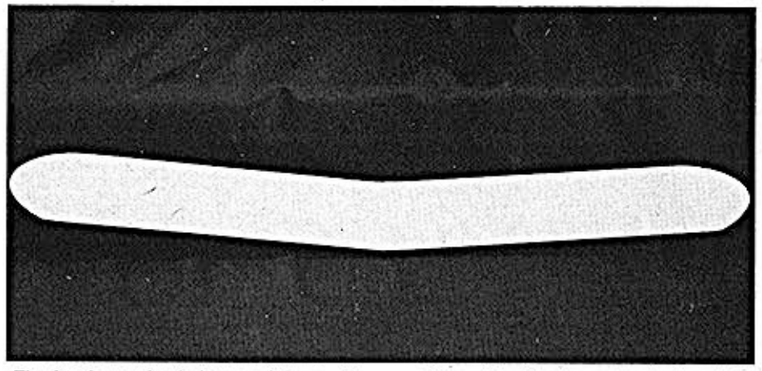
Fuel tank and radio installation.



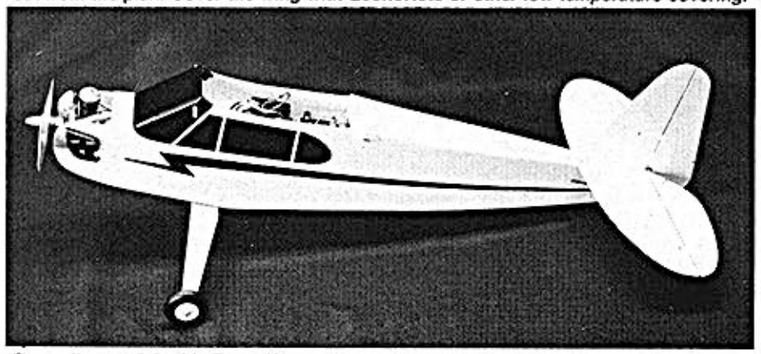
Add the remaining top and bottom 3/32" balsa sheeting. Sand the fuselage and apply a coat of Balsarite inside and out.



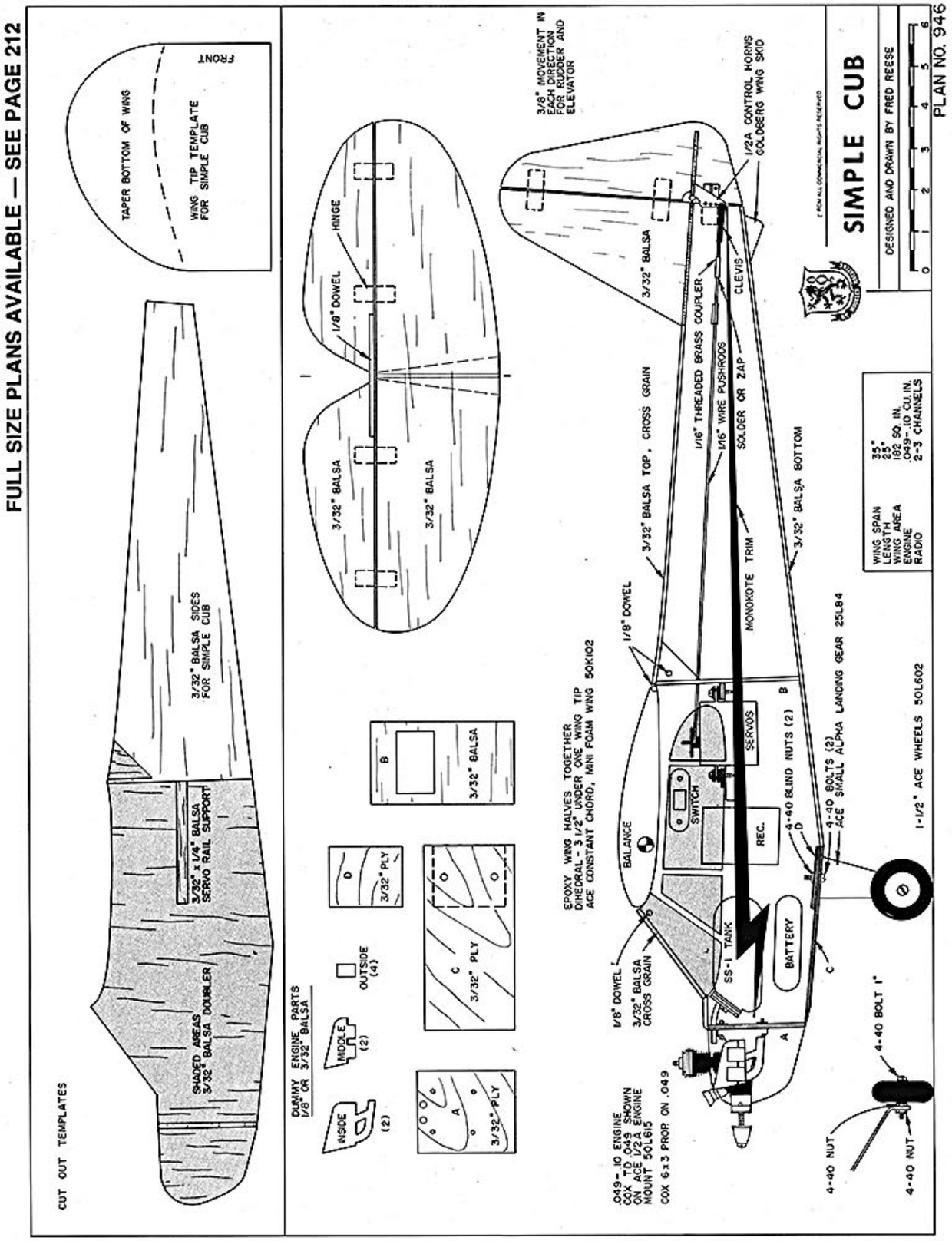
Cut out the tail parts from 3/32" balsa. Join the elevator halves with 1/8" dowel.



The Ace foam wing halves are joined with epoxy. Shape the wing tips using the template cut from the plan. Cover the wing with EconoKote or other low temperature covering.



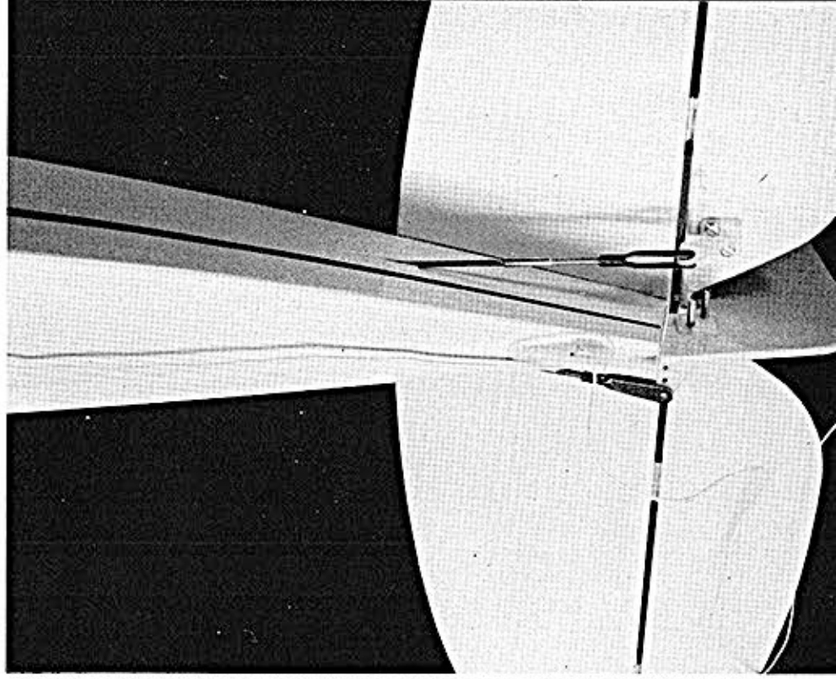
Cover the model with EconoKote and decorate with black MonoKote trim. Add the dummy balsa engine. Hinge the rudder and elevator. Install the landing gear, engine and radio. Glue on the tail group.



protect the foam from damage from the rubber bands holding the wing to the fuselage. Sand the wing lightly with #220 sandpaper to remove any flashing or bumps on the foam. Apply a strip of strapping tape from tip to tip on the underside of the wing, about 2" from the leading edge to strengthen the wing. The wing can now be covered with EconoKote, Solarfilm or other low temperature covering.

SIMPLE CUB
Designed By:
Fred Reese
TYPE AIRCRAFT
Simple Schoolyard Scale
WINGSPAN
35 Inches
WING CHORD
5½ Inches
TOTAL WING AREA
182 Sq. In.
WING LOCATION
High Wing
AIRFOIL
Semi-Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
2 Inches
O.A. FUSELAGE LENGTH
25 Inches
RADIO COMPARTMENT SIZE
(L) 8" x (W) 2" x (H) 3½"
STABILIZER SPAN
12½ Inches
STABILIZER CHORD (Incl. elev.)
4 Inches
STABILIZER AREA
48 Sq. In.
STAB. AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top Of Fuselage
VERTICAL FIN HEIGHT
4½ Inches
VERTICAL FIN WIDTH (incl. rud.)
3½ Inches
REC. ENGINE SIZE
.049-.10 Cu. In.
FUEL TANK SIZE
1-2 Oz.
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
2 Or 3
CONTROL FUNCTIONS
Rud., Elev., (opt. Throt.)
BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa & Ply
Wing ..... Ace Foam Wing
Empennage ..... Balsa
Wt. Ready To Fly ..... 18 Oz.
Wing Loading ..... 14.2 Oz./Sq. Ft.

The Simple Cub is designed so that all of the parts can be covered, hinged, decorated and all of the hardware and equipment installed before gluing on the tail surfaces. I covered my Cub with yellow EconoKote and used black MonoKote trim sheets for the windows and side trim. Apply a coat of clear urethane varnish or Zap around the edges of the black trim to seal the edges from loosening with time and fuel. The dummy engine is made from scrap 3/32" or 1/8" balsa and each side is three layers thick. The third layer is the little rectangular valve covers. The two engine halves are finished with two or three coats of black dope. Cut away the covering under dummy engine halves and glue them in place.



Pushrods and control horns. Loop the radio antenna through two holes drilled in the Goldberg wing skid used for the tail skid.

Cut the 3/8" wide servo mounts from 3/32" plywood and glue them into the fuselage. Assemble the one or two ounce fuel tank with the two brass tubes pointing straight forward. Trim the tubes so that about 3/8" to 1/2" protrudes through the firewall. Slip the tank in place and bend the protruding brass tubes slightly outward to hold the tank in place and route the fuel lines around the engine. Mount the engine, landing gear, and the Goldberg nylon wing skid as the tail skid. Slip the battery pack under the fuel tank. Mount the servos and radio switch. Route the radio antenna down through a hole in the bottom of the fuselage and secure it in the rear by looping it through two 1/16" holes drilled through the tail skid. Bend the two 1/16" wire pushrods using the plan as a guide. Both are the same length. Solder or Zap the threaded brass couplers on to the wire. Cut slots in the fuselage for the pushrods then insert and connect the pushrods to the servos. The pushrods will have to be bent slightly outward about 1/4" ahead of the slots for free movement.

Drill through the fuselage for the two 1/8" x 3½" wing hold-down dowels and glue them in place. The wing is held in place with six #62 rubber bands. After hinging the tail surfaces, cut away the covering on the stabilizer for the rudder and fuselge glue joints. Glue the stabilizer onto the fuselage and then glue the rudder onto the stabilizer. Attach the control horns onto the pushrods and then bolt the horns to the rudder and elevator. This procedure results in less bending and binding of the pushrods and a much quicker installation.

The foam wing and a hardware package that includes the engine mount, spinner, landing gear, wheels, fuel tank, hinges, horns, connectors and all nuts and bolts needed to complete the model are available from Ace R/C, Box 511, Higginsville, Missouri 64037, (816) 584-7121. The wing is #50K102 and the hardware package is #37E30. These items are available direct from Ace R/C or through your local dealer. □

Material List
5 — 3/32" x 3" x 36" medium weight balsa
1 — 3/32" x 6" x 12" plywood
1 — 1/8" dowel, approx. 18"
1 — 1/16" x 36" piano wire
Glue: Zap CA plus or equivalent
Balsarite wood prep. for covering (optional)
EconoKote or equivalent low temperature covering — one roll
1 — MonoKote trim sheet — black
1 — Wing, Ace constant chord mini foam wing #50K102
1 — Ace Simple Series hardware pack #37E30.
Note: hardware pack is the same as for Simple Citabria