GOLDEN

OLDIE

The Golden Oldie is not scale, but rather is a fantasy that grabs the character of the 1920's. The design is ideally suited to the new .40-.45 four cycle engines.

This big, old biplane has really been a lot of fun. It flies slowly, realistically, and it is quiet. It is not the misplaced whine of a high revving engine, but rather there is a low throb as the Golden Oldie cruises down the runway. The power is an OS FS .40 four cycle engine. The slowness is deceiving because there is power to pull the biplane easily up through a loop without seeming to change speed. Perfect hammerheads are easy. The four huge ailerons give precise control, even at low speed, yet they are not sensitive. The Golden Oldie is incredibly easy to fly as it is very light for its size. Lightness is the secret for getting low powered models to perform. The Golden Oldie has a total wing area of 800 square inches, yet it weighs only 5½ pounds.

This is my first experience with a four cycle engine and I am really pleased. The four stroke engine runs much slower than the usual model engine, but has more torque, which allows it to swing a larger propeller. Four stroke engines are much quieter than a muffled two stroke engine. Consequently; four stroke engines can be flown in places where other engines would be a noise problem.

The Golden Oldie is not scale to any aircraft. Designed for the 4-stroke, it resembles the aircraft of the late 20's and early 30's.

By Fred Reese

The Golden Oldie is one-third Jenny, one-third Gypsy Moth and one-third fantasy. I wanted an airplane that looks real and flies like the real thing but I did not want to be confined to a fixed scale design and color scheme. I wanted to be able to express myself and have a flying machine that looks right. I also designed the Golden Oldie to be modified. You may prefer a Sopwith or Rumpler rudder and military markings. Any two inch to the foot accessories would be the right size. You could add a second cockpit and dummy engine cylinders and machine guns that are available from Williams Brothers. If you change the shape of the tail surfaces, maintain the approxmiate areas and do not reduce the span of the stabilizer or the height of the rudder. As shown, the Golden Oldie is very stable, and will be as long as the overall sizes are not changed.

The Golden Oldie was designed for the new .40-.45 sized four cycle engines as currently made by OS, Enya and Saito. They are quiet and economical to run. An 11/6 gives the best performance with these engines. A .60 four cycle engine would fly the Golden Oldie nicely, but they are larger and heavier and would require

changing the design of the front. The firewall would have to be moved back about 1" so as to not make the model nose heavy. Any two cycle .45 to .60 engine could also be used without changing the design and would give excellent performance. The four stroke engine is ideally suited to airplanes that have light wing loadings and are intended to fly slowly like the Golden Oldie.

Since the Golden Oldie is not scale, I designed the rigging and struts to be as simple as possible, yet appear realistic. The monofilament rigging is not really necessary, but the outboard wing struts are. The struts maintain the spacing between the wings and the aileron linkage.

Construction

Fuselage:

The basic fuselage sides are made from 3/16" square spruce and 3/16" sheet balsa. If spruce is not available, 1/4" square balsa could be used. The basic side structure extends from the firewall to the rudder post. The side is sheet balsa with a 1/16" plywood doubler from the firewall to the cockpit and 3/16" square spruce aft of the cockpit. The area under the stab is filled with 1/8" or 3/16" balsa for the pushrod exits. Build two sides over the plan using white glue. Use waxpaper or Saran Wrap to protect the plan. Glue the 1/16" plywood doublers to the sides with Zap or contact cement. Be sure to make a right and left side. Glue the 3/16" balsa nose pieces to the sides raising the front 3/4". This is the right nose taper to fit a 2" spinner.

To one side, glue on the firewall (F-2), the tank floor (F-5), and the bulkhead (F-3). Glue on the other side and pull the tail together and glue. Glue in F-17, the tailwheel mount. Epoxy in the two landing gear mounts (F-13 and F-14) and the wing hold-down (F-15). Glue on the 1/8" plywood nose bottom. Bolt in the engine, add the 1/2" triangle along the bottom edge of the nose and the 1/8" balsa bottom and then fit the spinner ring (F-1). Glue in the cockpit floor (F-6) and all of the 3/16" square fuselage cross braces. Glue in bulkheads F-4 and F-7 and add the 3/32" balsa top sheeting. Glue on bulkheads F-8, F-9, F-10, F-11, F-12, and add the five 1/8" x 1/4" top stringers. The cockpit backrest is added after covering and painting. Add the balsa fillers around the engine from scrap and shape to fair into the spinner. If you are considering adding floats, which will be featured next month, epoxy in the rear float mount (F-16), the 1/8" plywood F-18, and the wire "U" for the water rudder linkage. Sand the fuselage for covering and give all of the structure one or two coats of Balsarite inside and out. The fuselage can be covered and painted and all trim added now.

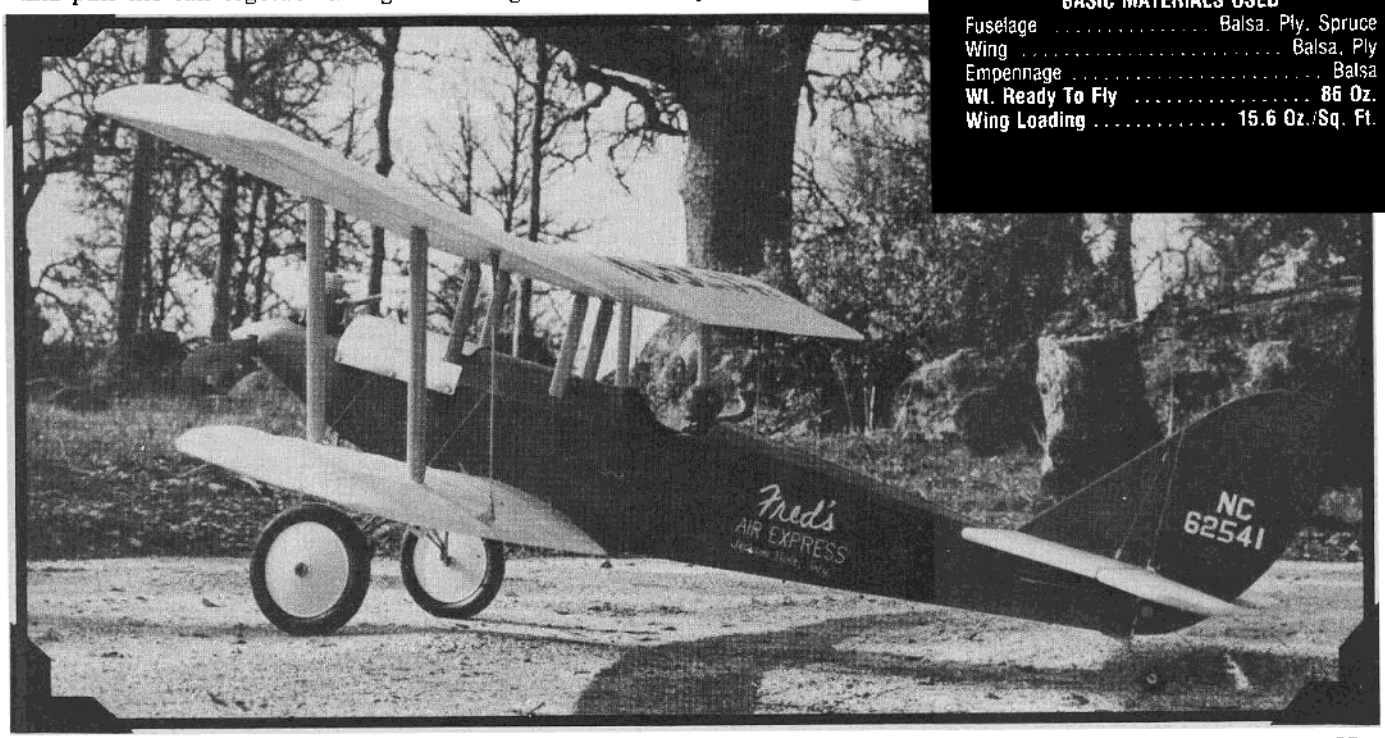
The fin and rudder are made from 1/4" balsa. Note the extra balsa and plywood insert at the base of the rudder for the control horn and steerable tailwheel.

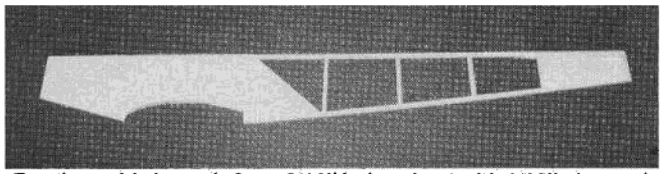
The stabilizer and elevator are made from 3/8" balsa for a little extra strength. The inside curved corners of the elevator are glued in as triangles and then shaped with a Dremel sanding drum or with a dowel and sandpaper. Sand the tail surfaces, give them a coat of Balsarite, and cover. Add the trim and number if desired. After covering, hinge the surfaces together. Cut away the covering on

GOLDEN OLDIE

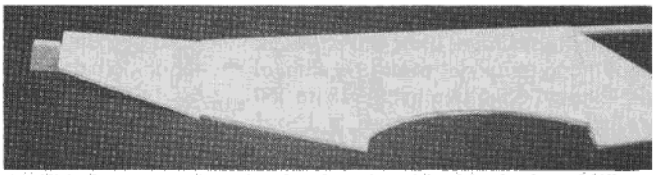
Designed By:
Fred Reese
TYPE AIRCRAFT
Sport Biplane
WINGSPAN
Upper 56"
Lower 44"
WING CHORD
9 In. (Ea. Wing)
TOTAL WING AREA
800 Sq. In.
WING LOCATION
Biplane
AIRFOIL
Flat Bottom
WING PLANFORM
Constand Chord
DIHEDRAL EACH TIP
1" (Both Wings)
O.A. FUSELAGE LENGTH
44 Inches
RADIO COMPARTMENT SIZE
(L) 11" X (W) 3" X (H) 3"
STABILIZER SPAN
20 Inches
STABILIZER CHORD (inc. elev.)
8½ Inches
STABILIZER AREA
150 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
7 Inches
VERTICAL FIN WIDTH (inc. rud.)
7 Inches (Avg.)
REC. ENGINE SIZE
.40-.45 4 Stroke
FUEL TANK SIZE
8 Ounce
LANDING GEAR
Conventional
REC. NO. CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Ail., Throt.
BASIC MATERIALS USED

Fuselage	Balsa, Ply, Spruce
Wing	Balsa, Ply
Empennage	Balsa
Wt. Ready To Fly	**86 Oz.**
Wing Loading	**15.6 Oz./Sq. Ft.**

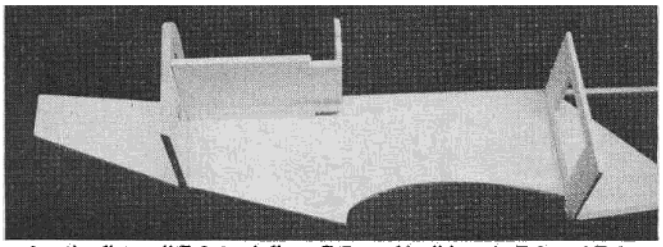




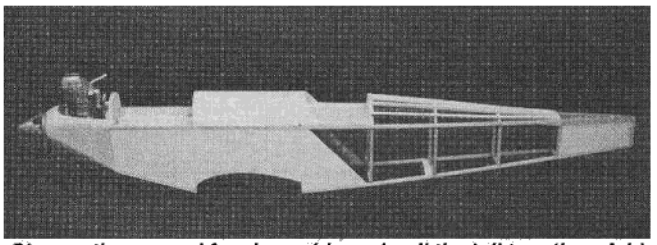
Fuselage side is made from 3/16" balsa sheet with 1/16" plywood doubler and 3/16" square spruce.



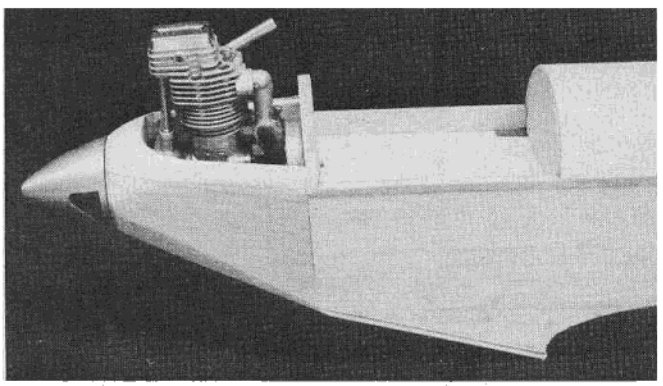
3/16" balsa nose piece is glued to the side, blocked up 3/4".



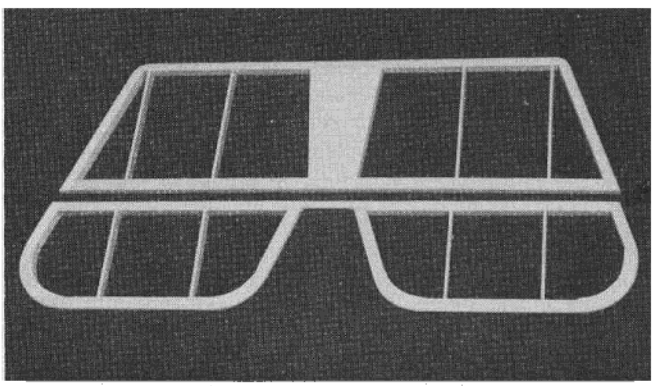
Glue the firewall F-2, tank floor F-5, and bulkheads F-3 and F-4 to one fuselage side.



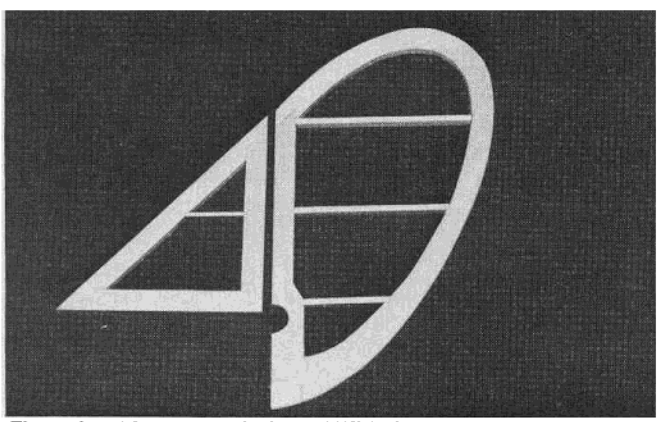
Glue on the second fuselage side and pull the tail together. Add the cross braces, landing gear and wing mount blocks, bottom sheet, top bulkheads, sheeting and stringers.



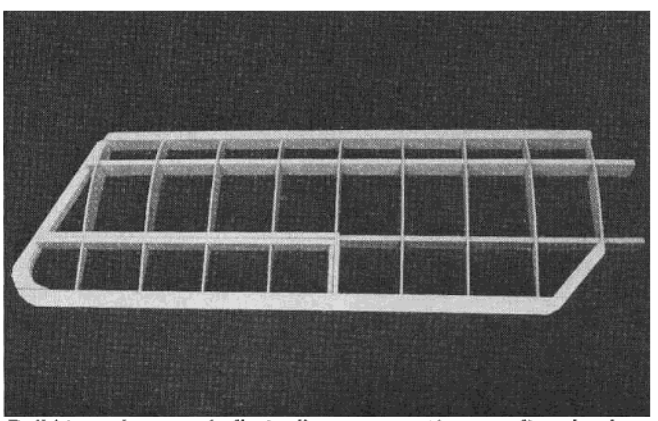
O.S. .40 4C mounted in nose. Just the engine for this bipe.



The stabilizer and elevator are built from 3/8" balsa. Elevator is linked with 1/4" dowel.



Fin and rudder are made from 1/4" balsa.



Build top wing panels first, ailerons are cut away after shaping and sanding.

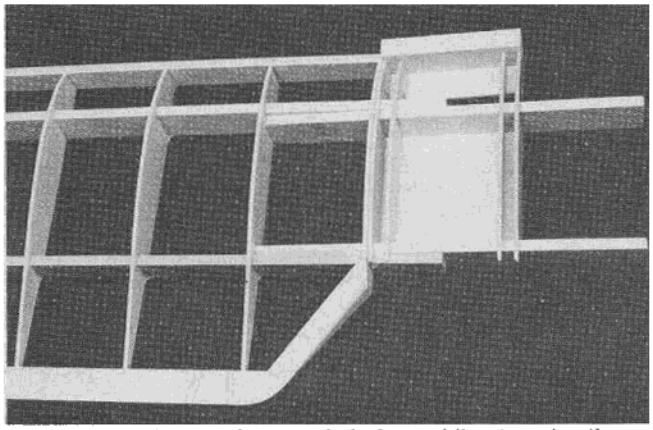
the stabilizer where the fin and fuselage will be glued. Glue the hinged stabilizer and elevator to the fuselage. Mount the tailwheel assembly to the fuselage and fit it into the rudder. Glue the fin and rudder to the stabilizer along with the bottom hinge into the fuselage and the tailwheel wire into the rudder.

Make cut-outs for the cabane struts in the top of the fuselage and epoxy the struts in place. True-up the tops of the struts with a sanding block. The front struts should be 1/8" taller than the rear struts relative to the top of the fuselage. Cut the slots in the struts for the aluminum clips with a hacksaw blade. Shape the tops of the struts and sand the struts to an oval cross section. Epoxy in the clips. Drill through the struts and clips with a 1/8" drill and glue in 1/8" dowel pins. Seal the struts with two coats of clear urethane varnish.

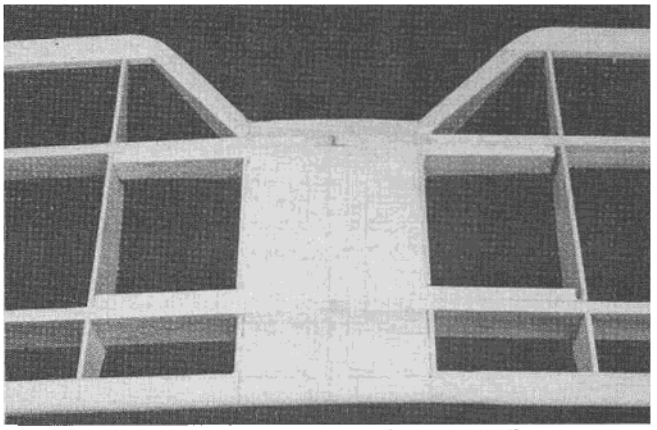
Wing:

The top and bottom wings are basically the same except the bottom wing is two bays shorter on each side. The wing ribs are the same but you don't need to drill the top ribs for a pushrod. I built the top wing first because it is easiest, even though it is larger. Build the two outer panels first and then the center section. Begin by gluing the ribs onto the spars over the plan. Add the leading edge. Glue the full length trailing edge to the W-3 ribs. Glue in the W-5 ribs and the 1/4" x 3/4" aileron leading edge and the 1/4" square filler over the rear spar ahead of the ailerons. Add the wing tips and the 1/2" x 1" piece from the trailing edge to the spar at W-2.

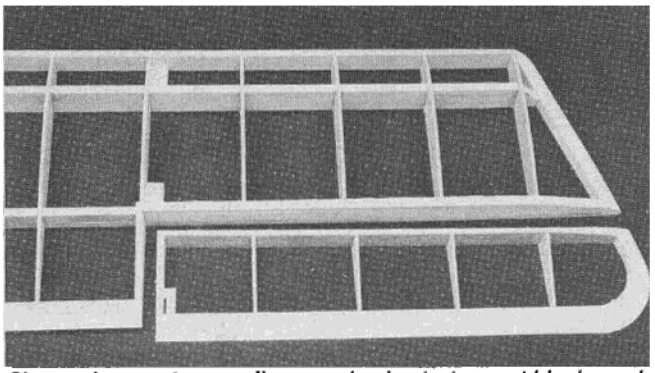
To build the center section, pin



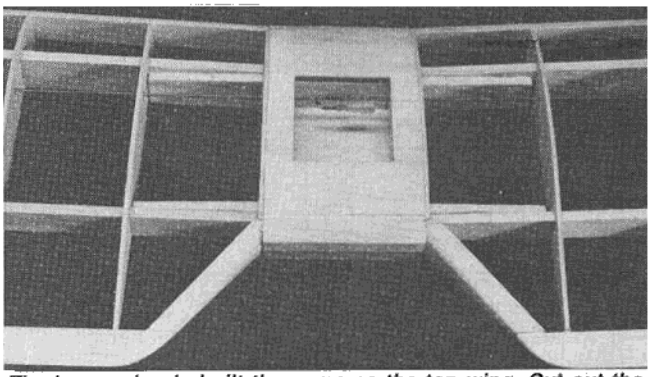
Fit center section to wing panels before adding top sheeting.



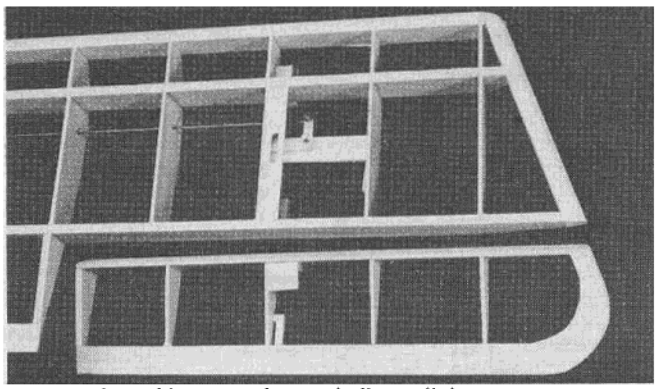
Wing panels are epoxied into finished center section.



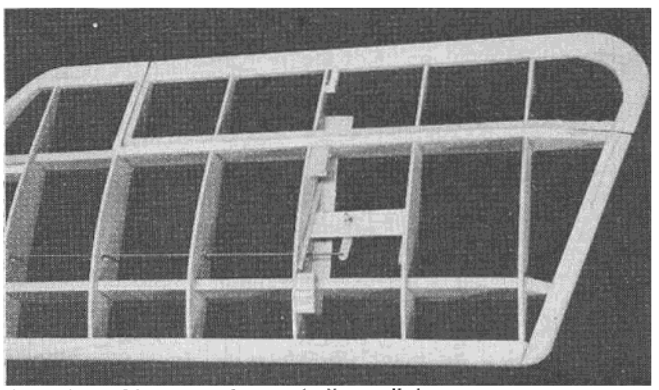
Shape wings, cut away ailerons, glue in strut mount blocks and aileron horn mounts. Give completed wing a coat of Balsarite before covering.



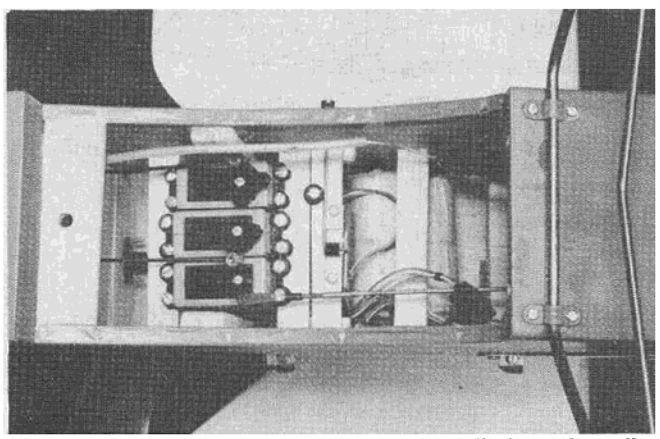
The lower wing is built the same as the top wing. Cut out the opening in center section for aileron servo.



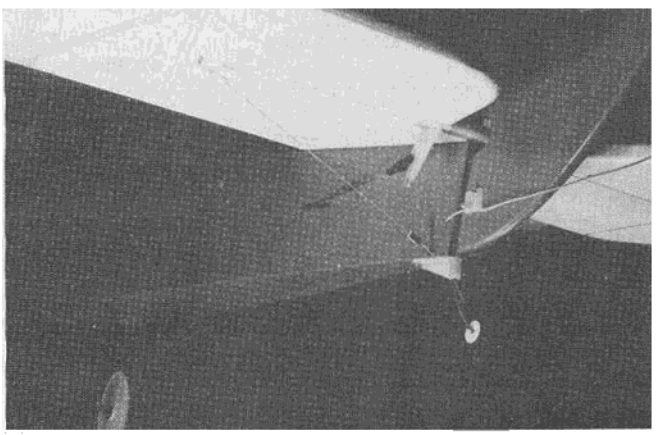
Bottom view of bottom wing and aileron linkage.



Top view of bottom wing and aileron linkage.



Radio and servo installation. Note the push-pull wire to the radio switch.

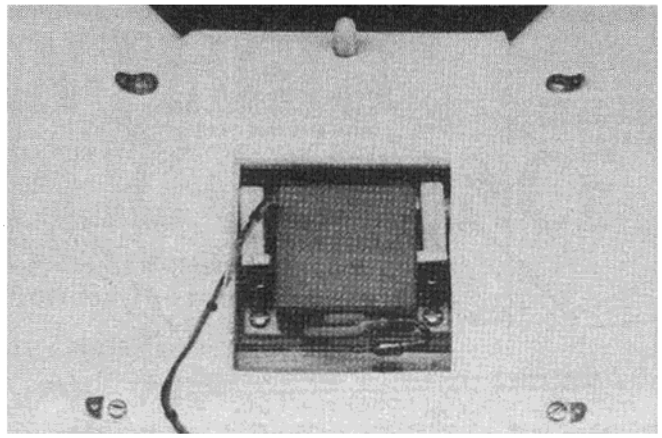


Tailwheel, control horns, pushrods and tail bracing.

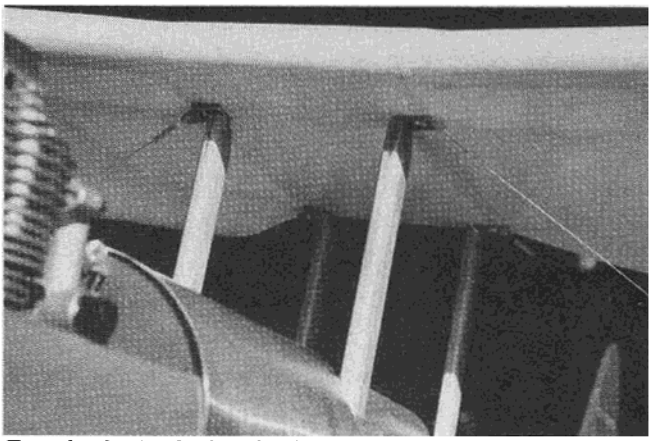
down the bottom center piece of 3/32" balsa sheet that fits between the two spar joiners. Glue the spar joiners to the bottom sheet. Add the W-1 ribs and the leading edge. Trial fit the center section to the wing panels. Add the top center section wing sheeting. Epoxy the wing panels to the center section, blocking up each wing tip 1". Epoxy in the 3/8" x 1/2" maple wing mount blocks and the rest of the balsa fillers. Sand and shape the wing leading edge, wing tips, and ailerons. Cut the ailerons away from the wing and add the 1/4" plywood strut attachment blocks and the 1/8" plywood control horn mounts.

Build the bottom wing following the same procedure. After the wing is shaped and the ailerons are cut away, add the aileron bellcrank mounts, the aileron linkage, and the plywood blocks and horn mounts.

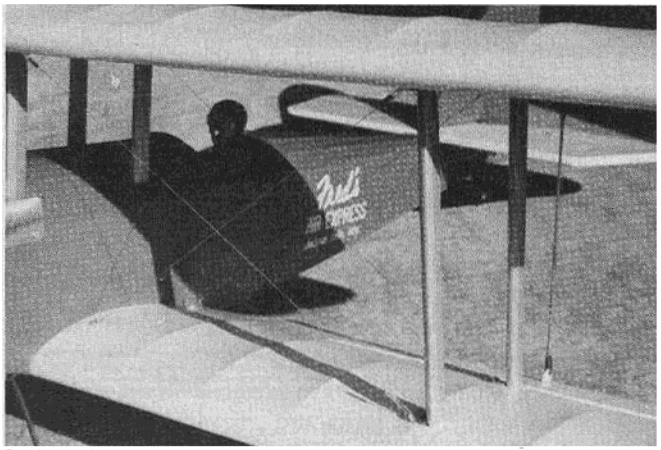
Fit the lower wing into the fuselage. Drill the two 1/4" holes into F-14 for the wing hold-down dowels. Insert two short pieces of dowel into the holes and press the wing into the dowels to mark the wing. Drill two 1/4" holes into the wing and glue the dowels into the wing. With the lower wing in the fuselage, drill through the rear maple block and F-15 with a 3/16" drill. Screw a 1/4"-20 tap through the hole to thread F-16. Drill out the wing hole with a 1/4" drill. Screw in a 1/4"-20



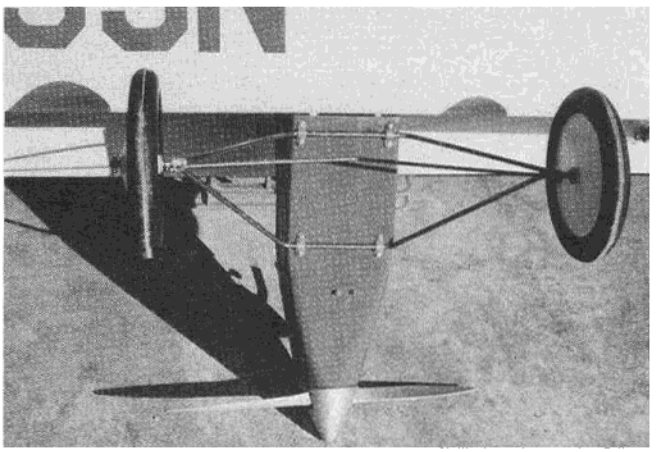
Aileron servo in lower wing.



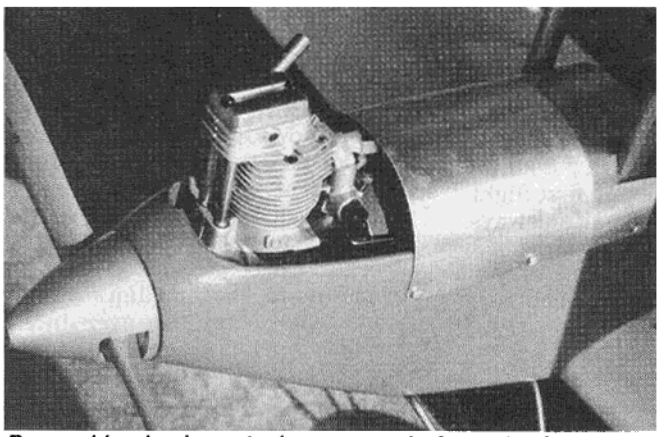
Top wing is attached to aluminum clips in cabane struts with #6 sheet metal screws.



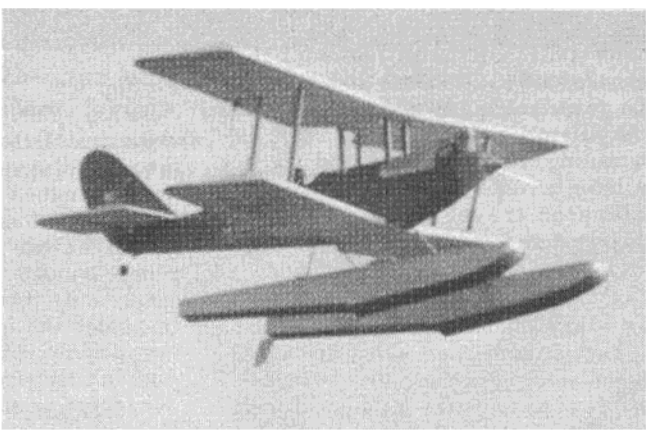
Outboard wing struts and aileron linkage between the wings.



The wire landing gear is attached to the fuselage with Goldberg nylon landing gear clamps.



Removable aluminum tank cover made from aluminum roof flashing from building supply. Engine is O.S. FS-40 four cycle.



Next month the Golden Oldie on floats.

nylon screw. Remove the screw and "set" the threads in F-15 with Zap.

Sand the wings and give them one or two coats of Balsarite. Use two coats if you plan to fly off of water. Cover the wings and apply the numbers cut from trim sheets. The white lettering on the fuselage was hand painted with white enamel.

Lay the finished top wing upside down on a pillow for support and place the fuselage on the wing. Line up the strut clips over the maple blocks in the wing. Mark and drill one hole only with a 3/32" drill and screw in a #6 x 1/2" sheet metal screw. Mount the bottom wing and align the two wings. Mark the other three top wing mount holes. Remove the wing and drill, then remount the top wing with all four screws. Fit the outer wing struts onto the aluminum clips already screwed to the wing. Epoxy or Zap the struts onto the clips. Trim away excess metal and varnish the struts. The monofilament flying wires can be fitted now or later. I used little "S" hooks bent from pins on one end of each flying wire so they can easily be disconnected but still remain attached at the other end. The flying wires are attached by crimping a 1/4" length of 3/32" aluminum tubing over the monofilament.

Servo Installation:

Install the radio as shown on the plan. For the aileron servo, I glued in a 1/8" plywood mount into the wing. The servo was then mounted in an aileron servo mount and screwed to the plywood plate in the wing. The two aileron pushrods and the link to the servo are all connected and soldered inside a short piece of 5/32" i.d. brass tube. The upper and lower ailerons are

connected by a long threaded Kwik Link with a solder link (clevis) at the other end. Small control horns of 1/16" plywood are epoxied into the ailerons. There cannot be any slop or binding in the aileron linkage. If the servo is straining, find the bind and fix it. Aileron travel is 5/8" in each direction. Elevator travel is 1¼" in each direction and rudder travel is 1½" in each direction.

Landing Gear:

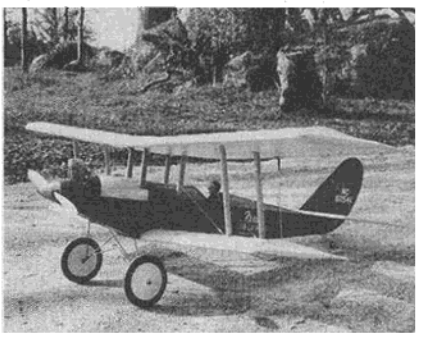
The landing gear wires are bent, rebent and sworn at, then wrapped with copper wire and soldered together. I nailed the LG-1 and LG-2 to a board for soldering and adjusted the bends until the ends touched without flexing something. The bent spreader (LG-3) gives some flex to the landing gear, but stiffens it considerably. To mount the wheels, you can simply use 5/32" wheel collars or you can use 1/16" cotter keys as I did. The wire axles are cut off flush with the wheels so only the 3/16" o.d. brass tube is drilled for the cotter key. The wheels must be drilled out to 3/16".

Mount the landing gear to the fuselage with Goldberg or DuBro 5/32" nylon landing gear clamps. These are neat and simple, but eventually you will replace the #2 screws with #4 screws. No redrilling is necessary.

Flying:

Before you fly your Golden Oldie, make sure all the surfaces are going in the same direction. After I got all the "turn" trimmed out on my first flight, the airplane was flying half sideways. I brought the airplane home and rubber-banded a 36" length of 1/4" square onto the bottom of each wing tip under the outermost rib. It was instantly apparent why the airplane wouldn't fly straight. No two sticks were pointing in the same direction. It took about a half hour with my covering iron to rewarp each wing panel into alignment. The hot iron did not affect any paint or varnish over the covering. Just twist the panel as you want it, and run the iron over both sides to remove the wrinkles. I did not put in any wash out.

The flight of this bird is majestic and I felt comfortable with it right away, once I got the warps out. The stall is gentle and straight ahead, but you really have to try to stall it. When I am by myself, I fly it low around me like a U-control model just so I can see it better. The first two times I landed it, I really bounced it in and cartwheeled it (on rough concrete, naturally). Fortunately it did no damage except scuff the wing tips and break the prop. I was used to faster models and a biplane like this really slows down quickly when you cut the power. When the airplane should have been touching down, it was still five feet up — thud! People quickly pointed out the error of my ways. Now I only partially reduce power on final and let the airplane set-up its own natural descent. Just before touchdown I cut the power to idle and flare gently. Landings have been easy ever since. I just wish I could once get all of the bugs worked out without bashing the airplane. Maybe, they aren't suppose to fly right until they are dirty and dinged. I much prefer flying the Golden Oldie from grass. It just feels right and those big 5" wheels will roll over anything. Next, the Golden Oldie on floats. □



From RCModeler Oct. 1983