

STRUTZ COURIER

By Ted Strader

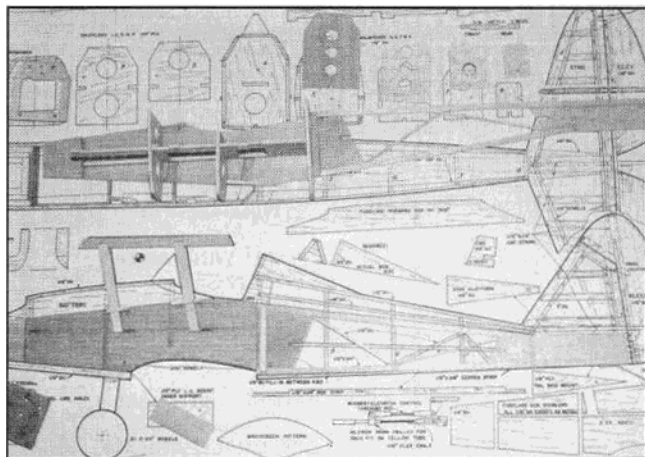


My fascination with biplanes began when I was about seven years old and the "Goodwill Flyers" landed

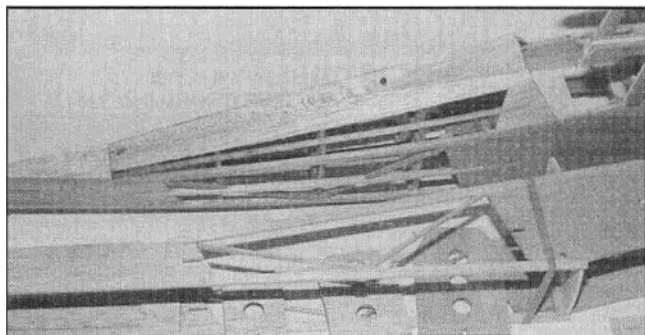
on my grandfather's farm in upstate New York during one of their summer barnstorming visits in the mid 30's. My first

airplane ride was in one of their New Standard biplanes — an open cockpit magic carpet that held four passengers in

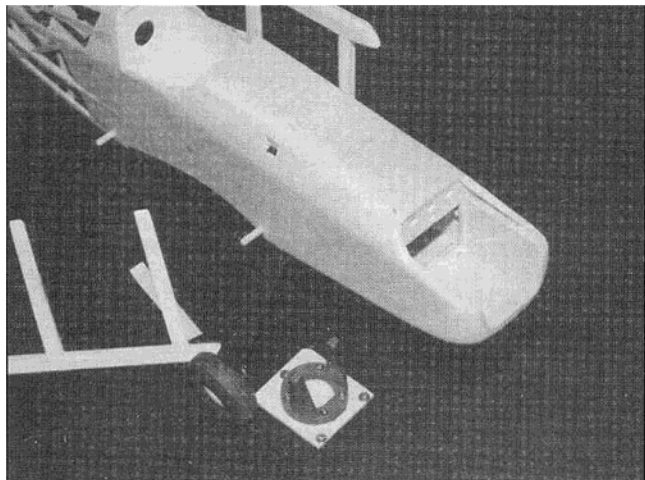




Basic fuselage sides are constructed over the plans. Doublers added with the aid of crutch and forward bulkheads.



An accurate fuselage front portion will assure an accurate rear assembly.

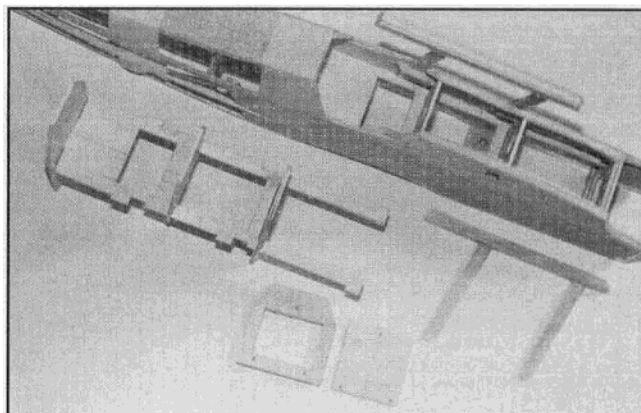


Molded engine mount attached to fire wall. Note opening in #1 through which the batteries and 2 oz. Sullivan tank will fit.

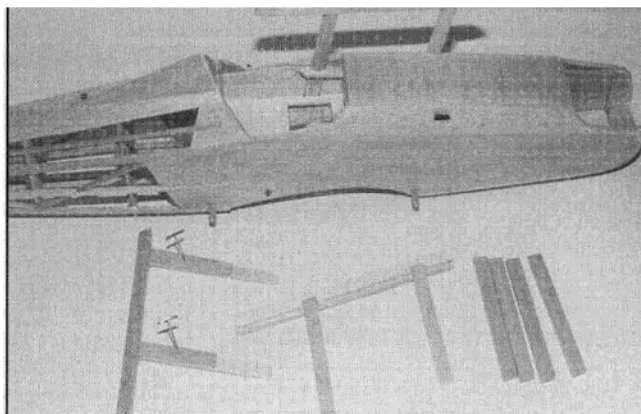
the front cockpit.

The New Standard, about which I know precious little, was a large craft powered by a gigantic radial engine. This power plant was not only deafening at full throttle, its prop blast could pin you to the back of your seat as it took off. Years later, my younger son Eric and I flew together in what was claimed to be the world's only flying 1930 New Standard D-25. It was my youthful memories all over again — only this time I was able to share it ... and it still pinned me to the back of the seat! I can't say for certain if these early experiences made me a two-wing fancier, but I still enjoy an occasional trip back through that aviation time-warp.

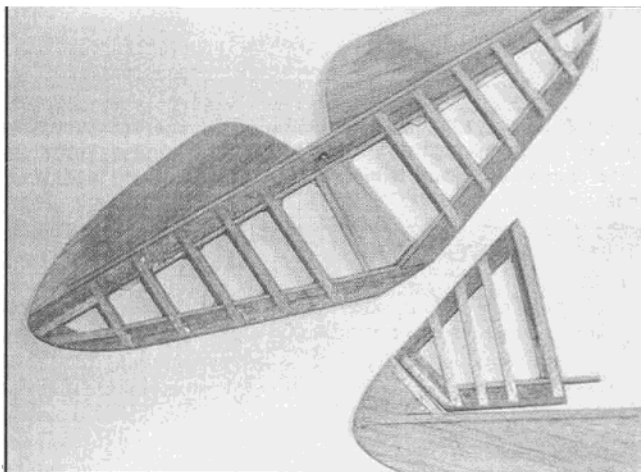
In the early days of R/C, my bipes were all sesquiplanes for stability. **Sesqui**, in this instance, refers to one and one-half wings ... one wing, half the size of the other ... or, if you're left handed,



Cabane strut temporarily in position. Fire wall shown in relationship to bulkhead #1.



Basic fuselage finished and sanded. Cabane construction is comprised of spruce and balsa.



Tail parts show "sucker stick" reinforcement. Hardwood 1/8" dowels cut down empennage flutter during maneuvers.

one wing twice the size of the other. Either way, by having the larger wing on top, the ensemble became a bit more stable from an improved parasol effect. In those earlier times, rudder control was all that most of us could hope for. The plane needed to be inherently stable to ward off the shock of full right or full left rudder without upsetting its equilibrium ... or, at least, that was the game plan. The parasol effect of a sesquiplane usually allowed me the luxury of a second flight! Flight testing in those days was often a terrifying experience.

By now, some of you are probably saying, "This model is not a sesquiplane. Why is he ranting and raving about something unrelated?" True, this is an equiplane with both wings basically the same size. It does, however, point out that today's equipment is so

and sand so that they are identical.

Next, cut the plywood bulkheads and plywood crutch, and fit bulkheads #2 through #4 onto the crutch to determine how they fit. This unit, unglued, will help to check the accurate positioning of the doublers as they are cemented in place. Bulkhead #1 must be prepared to later accept the fire wall. The plans show #1 with two pieces of reinforcement and three points where the fire wall is later attached via bolts into TEE, or hidden, nuts.

This method was used in the two Couriers shown here and two iterations which preceded this version. I find it easier to fish the batteries and tank from the front. With a charging jack on the battery pack and the tank properly prepared before installation, there should be very little need to remove them. The opening in #1 accepts a 2 oz. Sullivan tank.

If the fuselage sides are accurately cut, compared, sanded, and assembled; the doublers also installed in their proper places, and the forward bulkheads and crutch given similar treatment, your fuselage should be accurate. This part of the fuselage is important because the accuracy of the rest of the assembly depends upon it. Before you glue this much of the fuselage together, do a few dry runs, not only to be sure the parts fit and the assembly will be true and accurate, but to also work out the assembly and glue sequence with which you can be comfortable. I assembled this phase of the fuselage on a flat surface, pinning these parts together and wiggling them until you are satisfied that the framework is going together the way you want it.

Masking tape to hold the sides, crutch, and bulkheads while the glue sets and dries, makes the job a lot easier. Once the forward portion of the fuselage is set and the glue has dried or cured (depending on what you're using), the remaining bulkheads can be prepared for installation. This is when you must decide upon the control linkage you plan to use. I use a system featured in my Corky II seaplane published in the March '77 issue of *RCM* called a Unirod. One red nylon tube is installed from the servo location back toward the tail and exiting a few inches ahead of the rudder and elevator. A yellow tube is run through this red outer tube and a cable runs through the yellow tube. The yellow tube is used to actuate the elevator and the cable actuates the rudder.

Simple pushrods will also work as well. The important point is to decide at this point and alter bulkheads 5, 6, 7, and 8 to accept whichever method you choose. Once that has been decided, install these aft bulkheads in place. The 1/8" x 1/4" side strips are glued in place once these basic fuselage sides and bulkheads have been glued. Cement the 1/8" ply landing gear mount in place. The front fuselage bottom 1/4" sheet can be cemented in place at this time. The stab platform, tail skid mount,

sophisticated that we can have great flying success controlling a type of craft that used to be considered too unstable for rudder-only. I slipped something else into this equation as an added security bonus. The Strutz Courier is also a high aspect ratio biplane which adds to its stability.

One last point about this model and we'll progress to getting glue on our clothes. The plane depicted here is my seventh biplane, the fourth in the Strutz series, and the third iteration of this particular design. All three versions were originally controlled by an EK Logictrol radio. The two models built of this version are presently answering to a Futaba system. The EK servos were a bit larger than the S-133's and TS-11's currently in use; however, I'm still using 4-pencell NiCd packs which help the balance. The first Courier flies with a 20 year old Enya .15; the other one has a MECOA .15 installed.

The first Courier, flying for four years, weighs exactly two pounds dry and the new one came in at 31 oz. They are both covered with the same type of film, so the difference could be a little residual fuel soak.

CONSTRUCTION

Fuselage:

Fabricate the fuselage sides by pinning the forward fuselage piece and tail piece over the plan and join with the 1/8" x 1/4" and 1/8" square strips as shown on the plans. Make two equal sides, pin together,

STRUTZ COURIER

Designed by:

Ted Strader

TYPE AIRCRAFT

Sport Biplane

WINGSPAN

42 Inches T/38 Inches B

WING CHORD

5-1/2 Inches

TOTAL WING AREA

412 Sq. In.

WING LOCATION

Biplane

AIRFOIL

Flat Bottom (Clark "Y" Type)

WING PLANFORM

Constant Chord

DIHEDRAL, EACH TIP

3/4 Inches

OVERALL FUSELAGE LENGTH

27-1/2 Inches

RADIO COMPARTMENT SIZE

(L) 2-1/2" (W) 1-3/4" (H) 3-1/2"

STABILIZER SPAN

14-3/8 Inches

STABILIZER CHORD (inc. elev.)

4-1/2 Inches (Avg.)

STABILIZER AREA

39-1/2 Sq. In.

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top Of Fuselage

VERTICAL FIN HEIGHT

4-1/2 Inches

VERTICAL FIN WIDTH (inc. rud.)

4-1/2 Inches (Avg.)

REC. ENGINE SIZE

.15 2-Stroke

FUEL TANK SIZE

2 Oz.

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

3

CONTROL FUNCTIONS

Rud., Elev., Throt.

C.G. (from L.E.)

2 Inches (Top Wing)

ELEVATOR THROWS

3/8" Up - 3/8" Down

AILERON THROWS

N/A

RUDDER THROWS

1/2" Left - 1/2" Right

SIDETHRUST

0

DOWNTHRUST/UPTHRUST

0

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

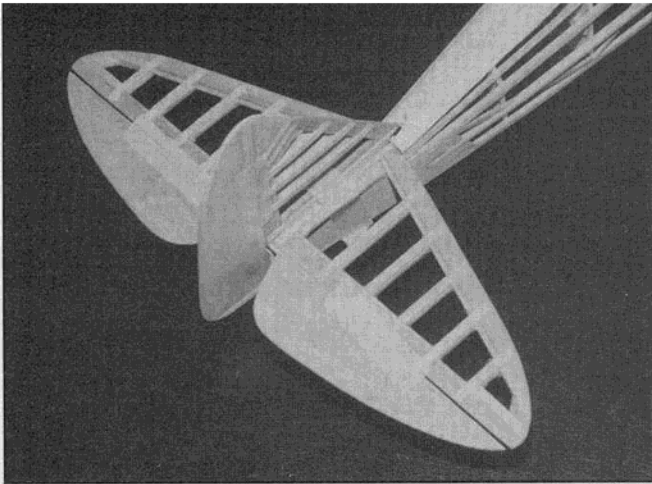
Wing Balsa & Spruce

Empennage Balsa & Birch Dowel

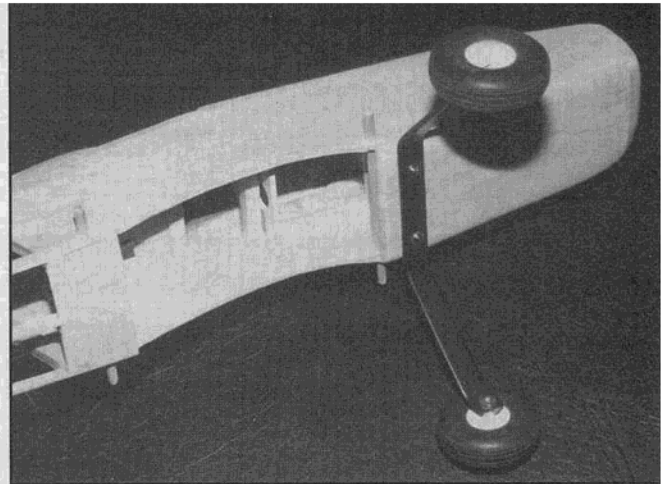
Wt. Ready To Fly ... 31 Oz. (1 Lb. 15 Oz.)

Wing Loading 10.8 Oz./Sq. Ft.

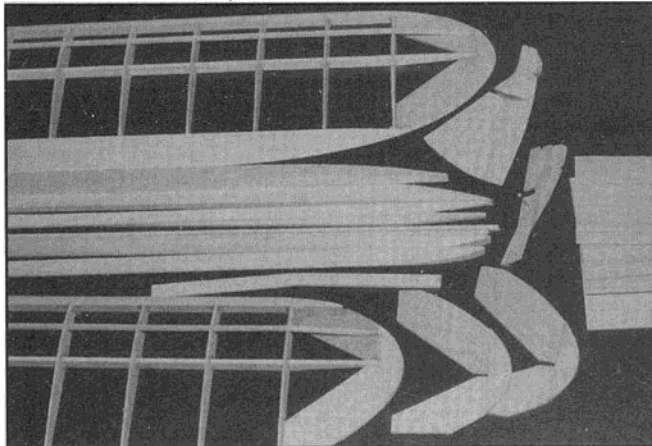
1/8" rear top sheet, CRS, rear upper 1/8" strips, and 1/8" x 1/4" rear center strip can be installed. Construct the cabane struts leaving the vertical 1/8" x 3/8" balsa strips off, to be fitted later after the forward fuselage side sheets and 1/8" forward top sheet have been cemented in place and sanded. The cabane struts need to be available to slip into place for checking alignment. They are not permanently installed until after the fuselage has been finished



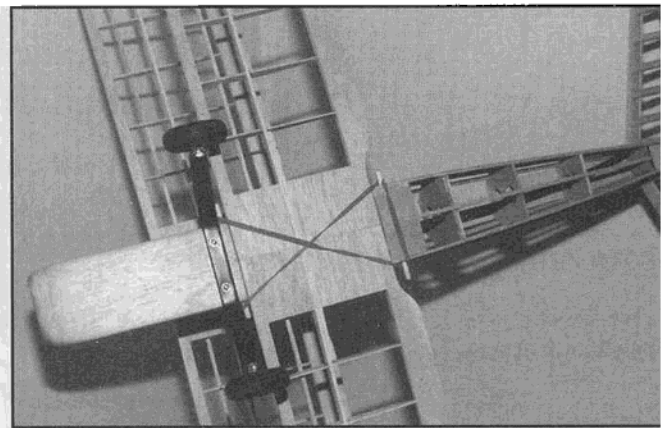
Tail parts in place to check alignment.



Landing gear is 1/16" dural (.060 2024 T3 or 6064 T3) covered with heat shrink tube for appearance.



Wing is basic simplicity. Tip parts are pre-constructed and reinforced prior to installation.



This view shows the main control tube in place. Landing gear is attached with 6-32 bolts into "T" or blind nuts.

and covered.

Sandpaper and patience are the tools needed at this point. Blend the nose block into the fuselage lines and check the fuselage assembly for accuracy.

Empennage:

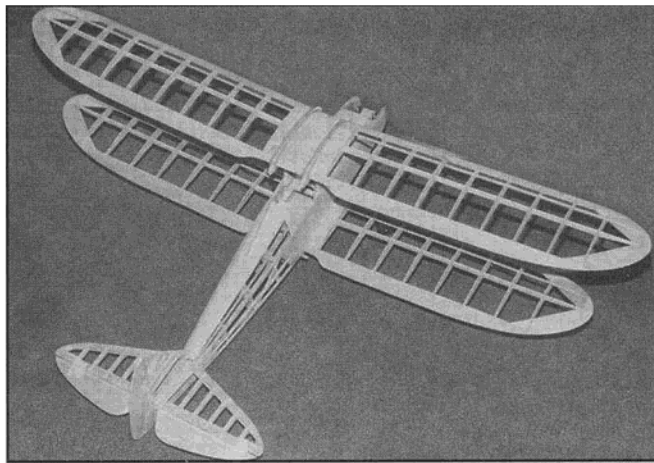
The only feature to mention about the stab-elevator and the fin-rudder is the use of 1/8" hardwood dowels for strength and the addition of 1/16" capstrips to reinforce the butt joints where the 1/8" x 3/8" "ribs" join the leading and trailing edges. When lightly sanded, they also give a little shape to the tail surfaces. I used thread hinges installed after the parts had been covered.

Wings:

Most modelers would rather submit to a root canal than build wings; and here we are asking you to build two of them!

Except for the time involved, these flat bottom units should offer no challenge. The tip parts are glued together prior to installation. Check all four together for similarity and cement the 1/16" sheet reinforcement in place on each. These pieces strengthen the join line of the two tip pieces and also assure the accuracy of the upsweep of each wingtip as they rest on the top of each spar end.

As you can see, both wing panels are



Exposed! Courier caught au naturale. Shows no shame, whatsoever!

identical except that the lower wing is 4" shorter than the top wing. Block up the adjoining panels and join with the appropriate plywood dihedral braces. I find it easiest to pin one panel flat and block up the other panel 1-1/2" at the rib location noted on the plans. The center section 1/16" sheeting completes the picture. Don't be afraid to liberally apply finishing sandpaper to the structures. It pays off in a better finish.

Once all the parts are built, sanded, tried, and accepted, temporarily install the R/C equipment and the engine. If any of the parts get dinged, they can undergo

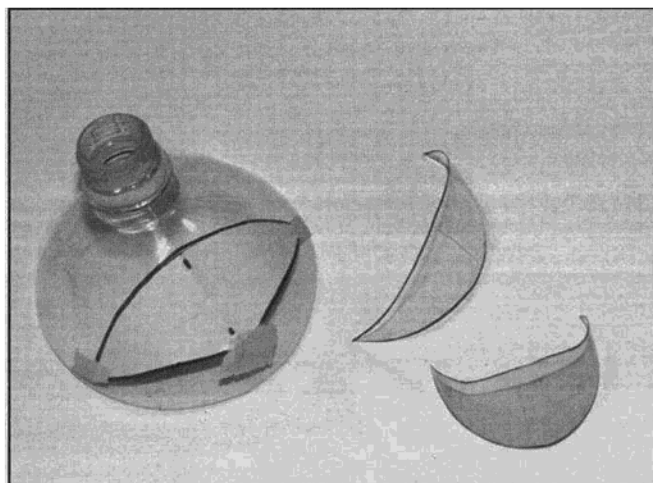
some cosmetic surgery. It's a lot easier to plug up some loose ends before the covering has been applied.

Covering:

Both models have been covered with Solarfilm and/or Coverite film. I can't give you a reading on using shrink fabric covering on this size model. I use Solartex on my larger biplanes which gives them a fabric appearance, but these may pull a bit too much for a structure of this mass.

Flying:

With the engine mounted and equipment in place, check all flying surfaces for warps and alignment. Balance the Courier

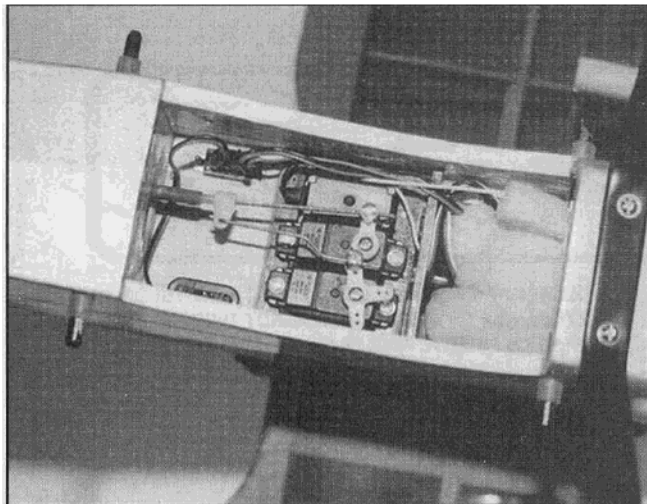


Wind screen (optional) was cut from a clear one liter soda bottle.

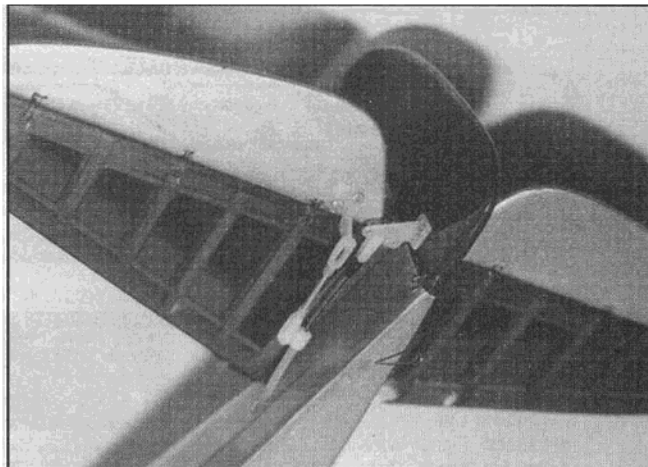
as close as possible to the spot noted on the plans. After any necessary adjustments, you should be ready to head for the field.

To date, I have not happened upon a field capable of allowing ROG, so I hand-launch while my son, Eric, acts as pilot-in-command. A straight thrust out and slightly up has done the trick every time, resulting in many, many flights. Even landings — power on and power off — in matted grass have resulted in nothing more serious than a couple of broken 6-32 nylon landing gear bolts.

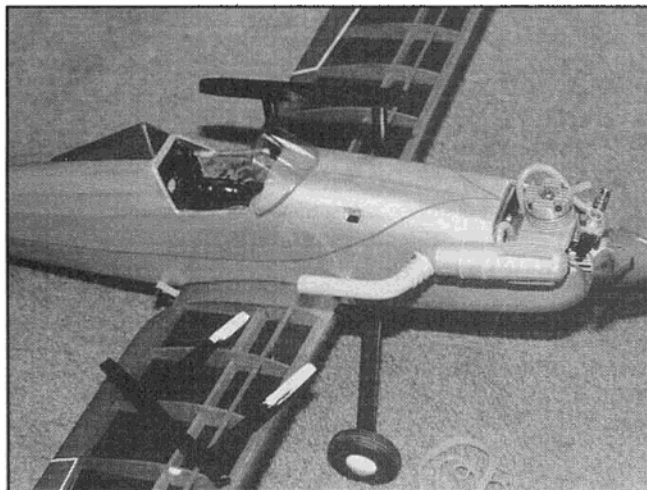
Courier number one is beginning to



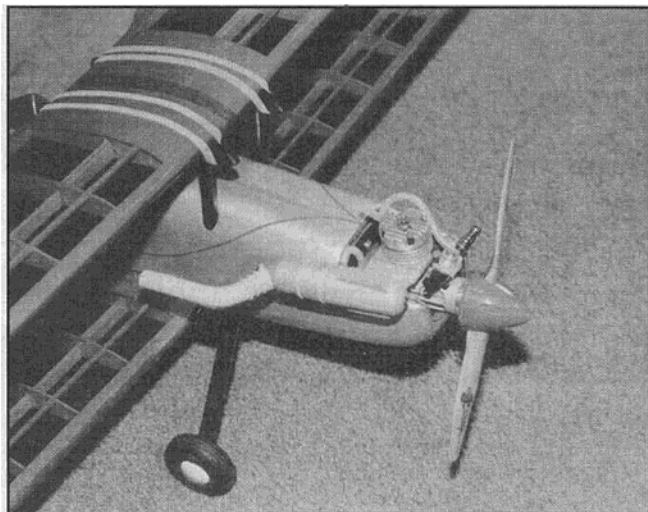
Servos in place, seen through bottom wing opening. Top servo appearing upside down is the throttle servo. Center servo controls rudder, and lower servo controls elevator. Receiver packed in foam just forward.



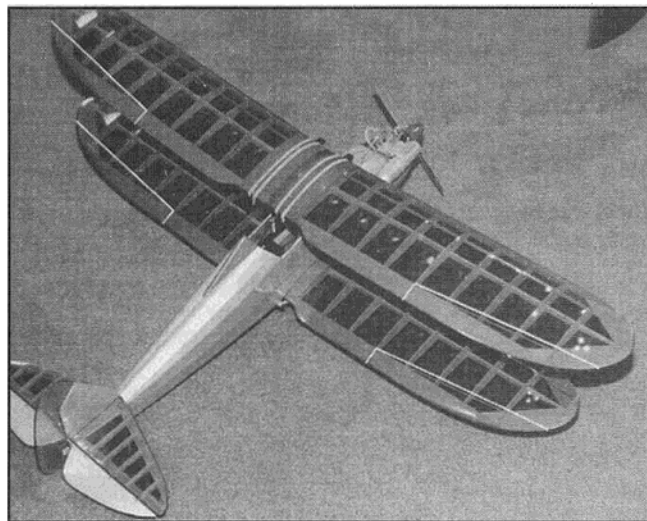
Hook-up at tail using the Unirod method. Cable works rudder while small tube works elevator.



Courier covered, ready to accept final and permanent installation of the cabane struts.



MECOA .15, 8 x 4 Zinger prop, Solarfilm covering, Great Planes spinner, and Hobbico exhaust deflector.



The Strutz Courier ready to bore holes in the sky.



— this bragging will most certainly result in my straining it through a hurricane fence in the near future. I never learn!

You should find your Courier to be a smooth and gentle performer which loops effortlessly and recovers instantly. One final reminder — bipes are notoriously prone to tail-heaviness. So, when balancing, lean towards yours being slightly nose heavy by shifting equipment to accomplish it.

If you feel so inclined, drop me a line and fill me in on your activities. My address is One Orchard Dr., Scotia, NY 12302-4445. My fax number is (518) 399-7731.

Good luck and good flying.



show a little age by the covering around the nose loosening around the edges. However, for all its many landings in less than forgiving terrain, it has no holes or broken parts — yet! But, you just watch