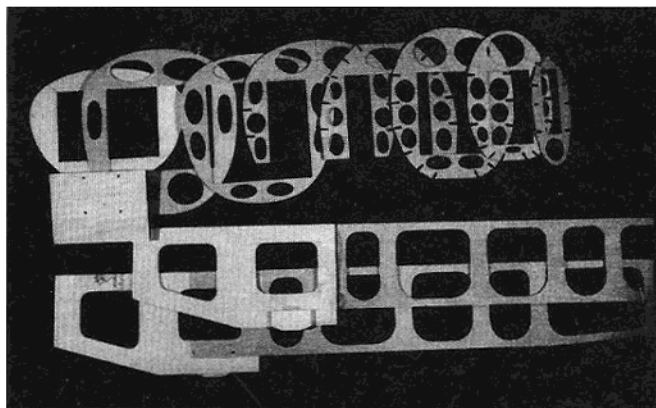


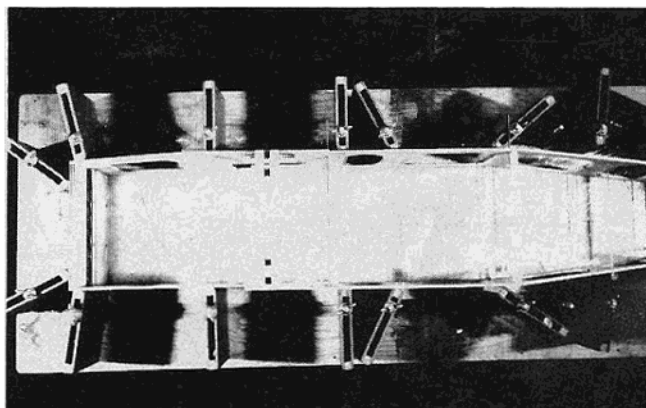


STARDUSTER TOO





Fuselage bulkheads and sides.



Fuselage sides layed up in RCM Jig that appeared in February 1972 Issue.

Stand Off Quarter Scale

Dear fellow scratch builder, look no further. Starduster Too will unwind your mind and retread your head. Neither the depths of the oceans below, nor the heavens above, can hold the accolades that will be heaped upon you when you arrive at the field with your Starduster Too.

I first noticed the Starduster Too in magazines pointed to the small plane pilot. Stolp is the original designer and builder of the full size aircraft. He is located at 4301 Twining, Riverside, California 92509. The elliptical wings and wasp waist going into the empennage make it one of the most aesthetically appealing small aircraft I have seen. When the plans were in the layout stage a Super Tigre 2000 or 3000 seemed to slide right in. It always seems that when things complement each other, design problems dissolve. This was the case with Starduster Too. It seemed to fall off the drawing board and into fabrication.

Have a go at it and I'm sure you will be richly rewarded.

Construction

A word about scratch building: Don't let anyone talk you out of scratch building a model, especially a large model. About the only difference

between scratch building and kit building is you have to cut out the parts. Admittedly, large models take a little more material and a larger engine. But they are much easier and more fun to fly than smaller ones. Remember big planes fly, small planes flit. Also, by scratch building, you end up with something unique.

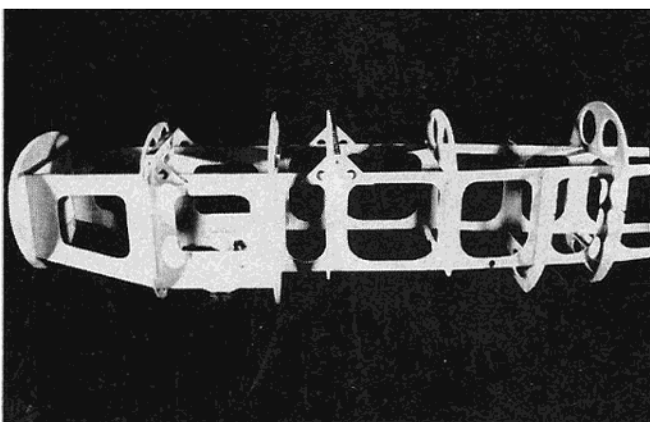
Fully aerobatic sport scale biplane for 1.2-1.8 cu. in. 2-stroke glow engines. By Martin A. Fallandy

You probably read most of the R/C press as I do. Some will lead you to believe that if you don't build feather light, within two weeks you and your loved ones will be entirely covered with warts. Another will tell you to carve a mold, cast it, hang a Pratt and Whitney R-2800 on the front end and you will be able to bore vertical holes forever. Somewhere in-between is the spot for you. I only grease on about four out of ten, so I tend to put a little more beef in the landing gear. Make this your airplane, feel free to move things around to suit yourself.

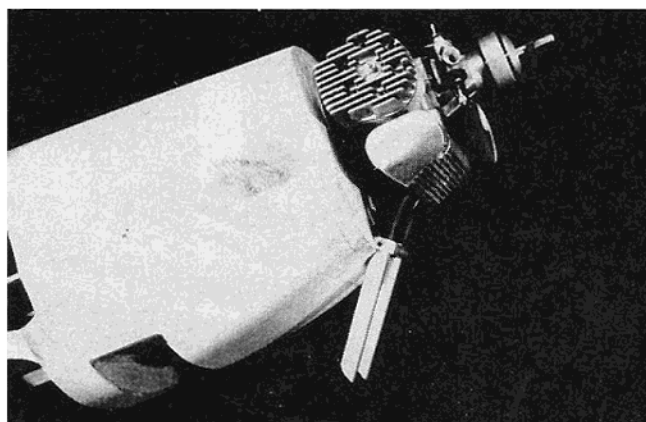
Maintain the parameters and balance point and I know you will be successful.

Fuselage:

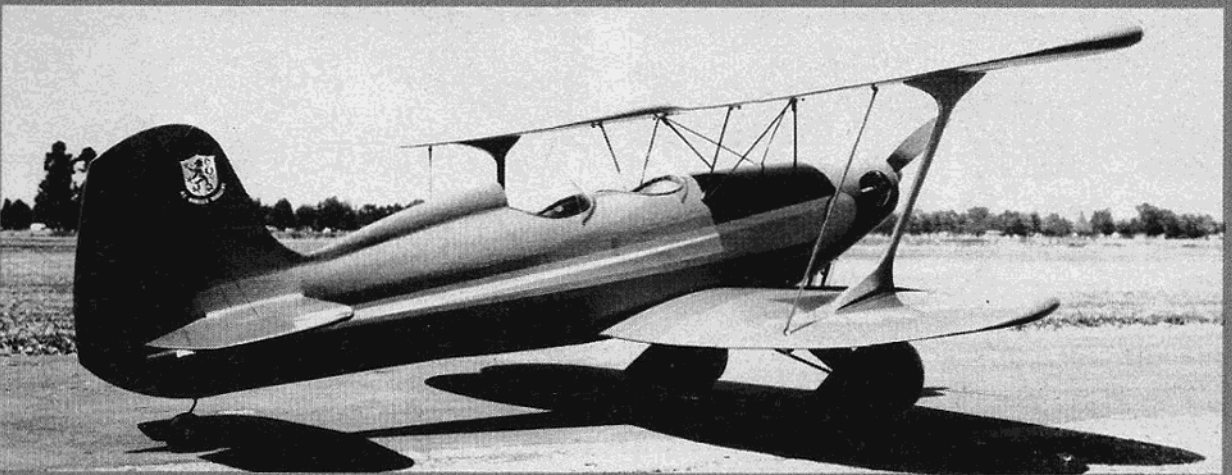
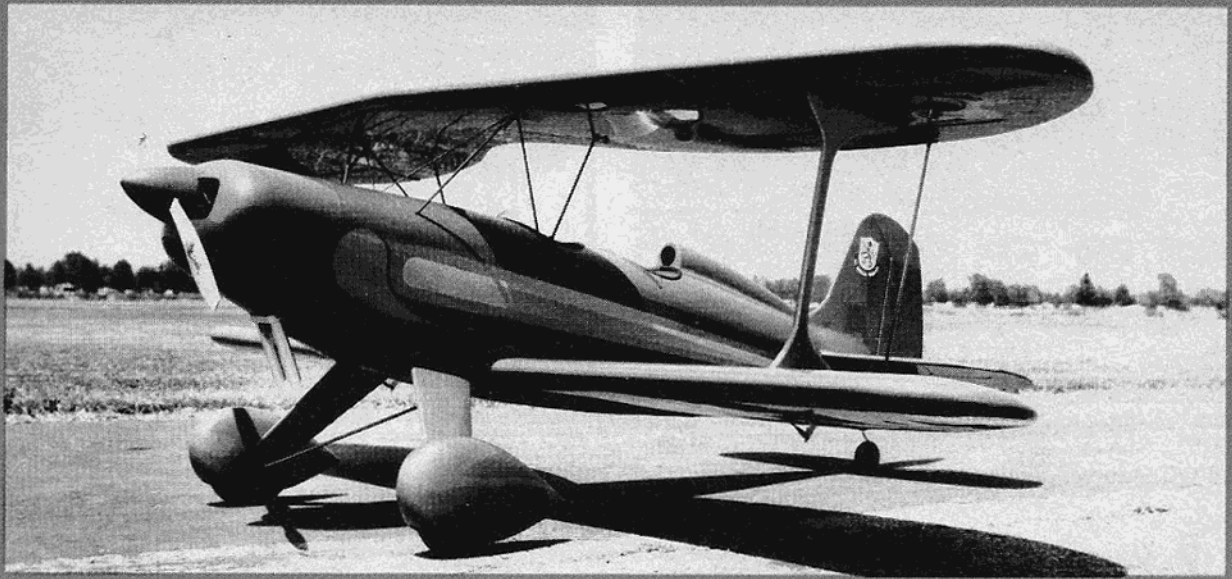
The fuselage is merely a box frame with formers slid over the box. The box gives great torsional strength and the formers give it a round or elliptical shape. I like to make the structural members from 3/32" sheet balsa with 1/64" ply contact cemented to both sides. This gives you a 1/8" thick sheet that is very strong, yet light. Cut the two sides out of two sheets that are glued together in areas that will fall out with a lightening hole. Make sure that the forward 1/8" ply doublers are in place. While the two sides are together, be sure to drill the 1/16" holes where shown. These holes will be used to align the bulkheads. I like to use the RCM Fuselage Jig (RCM Feb. '72) to lay up the box. With the box complete and removed from the building jig, start at the front end and thread two 1/16" music wires through two corresponding vertical holes. You can now slide a bulkhead from the rear, forward and up against the wires. Each bulkhead will be exactly positioned as it is glued in place. Resist the temptation to sheet over the bulkheads until you have all the supports in place for servos, tank, receiver, batteries, onboard glow plug driver, and any other required

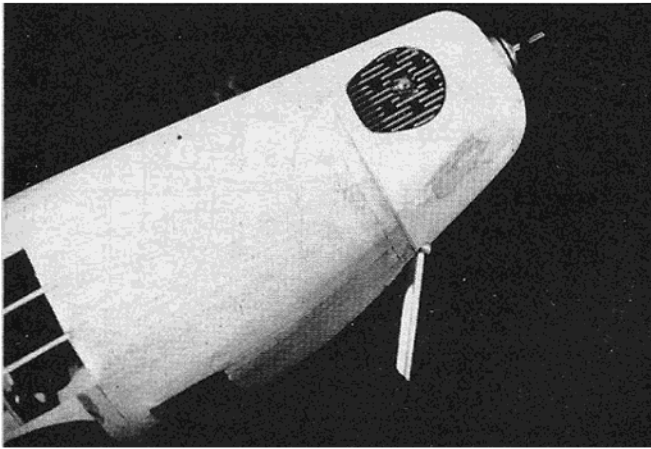


Completed fuselage box section.

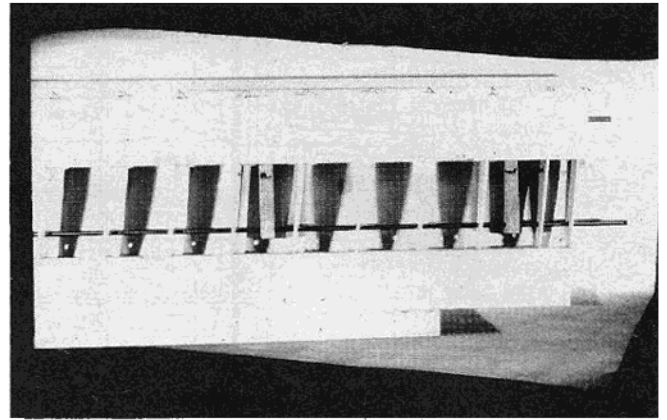


Super Tigre 2000, J'TEC muffler and stacks mounted on fire wall.

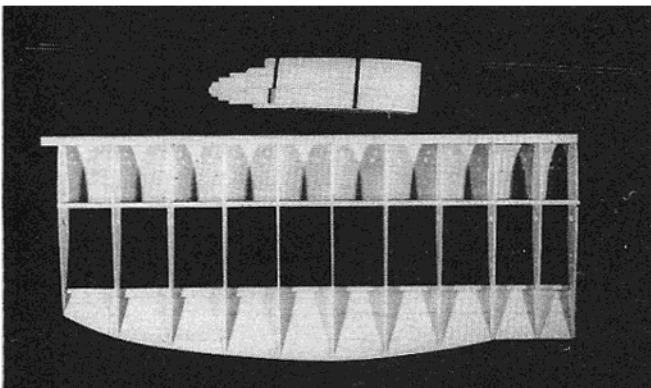




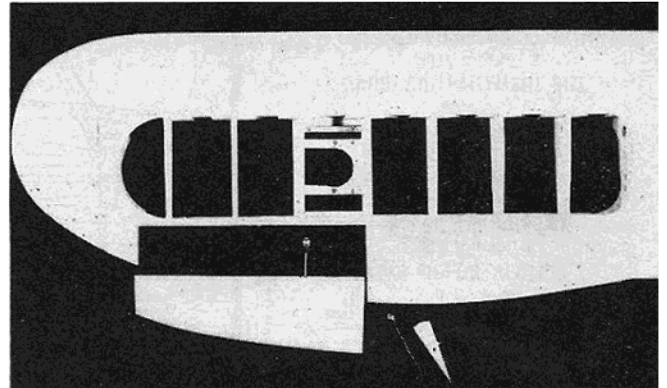
Engine cowl fitted and bolted in place.



Wing layed up on construction board showing 1/4" drill rod for alignment.



Completed lower wing panel. Ribs stacked up on 1/4" drill rod. 1/4" dia. x 36" long drill rod used for alignment.



Lower wing panel with aileron cut out and counter balance installed.

equipment. It is much easier now than when the fuselage is covered. I sheet with 1/8" x 3/8" strips; this gives me a little extra room for sanding. Always block sand (sandpaper wrapped around a hard, flat block). This will eliminate surface hills and valleys. When sheeting or adding ribs, be sure to alternate from side to side; otherwise you may pull the fuselage out of alignment.

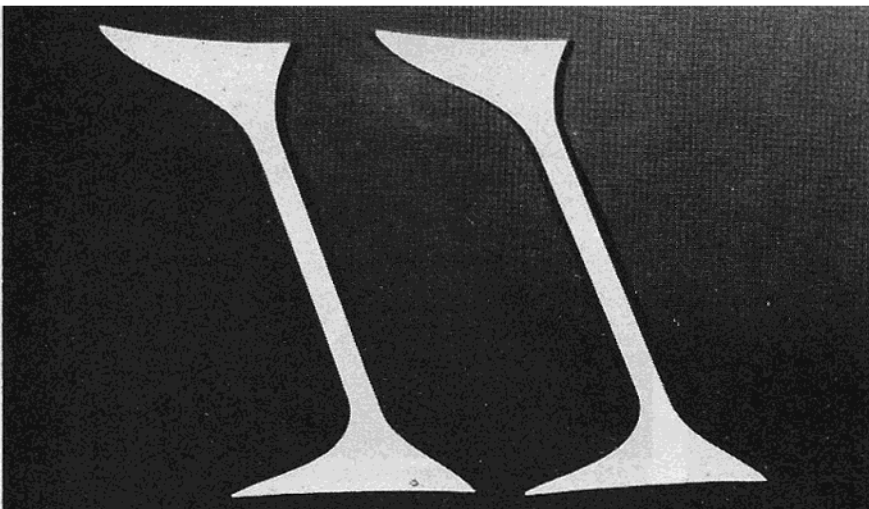
Wings:

Admittedly, biplanes are a little

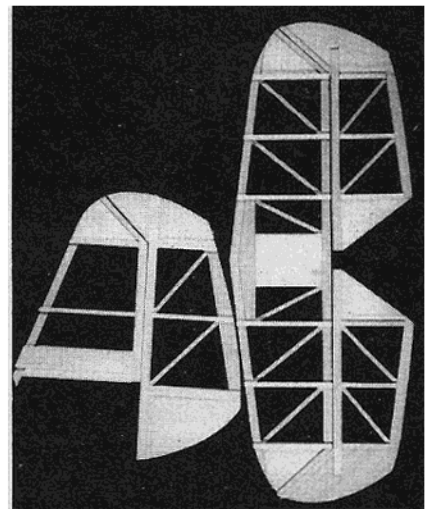
more work, with the extra wing and cabane struts. But what the heck, that's what makes us biplane fliers so much more fun to be with and better looking than the average R/C flier. Build the four panels separately, two for the top wing, and, unless you have one heck of a long building board, two for the bottom. Because the airfoil is semi-symmetrical (NACA2412), they do not lend themselves to flat building. I like to thread the wing ribs on a couple of 1/4" diameter drill rods and

support the rods slightly above my building board at three stations. The supports can be of any type of wood, but the hole spacing must be identical to those in the wing ribs. One support is threaded on the rods with an equal number of ribs on either side. The remaining two supports are threaded on the rods, outboard of the ribs.

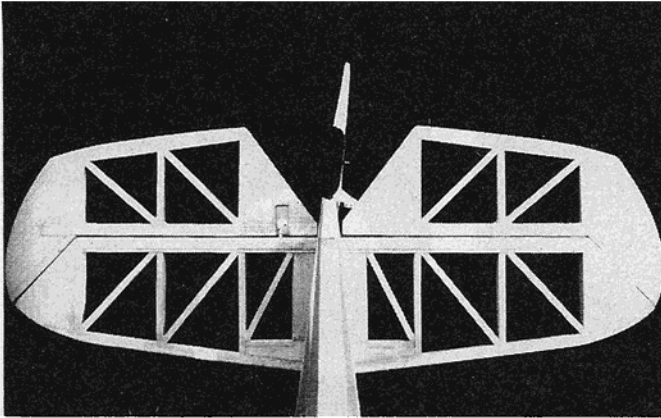
With everything properly spaced, secure the center and end supports to your building board. Assemble as much of the top of the wing as possible



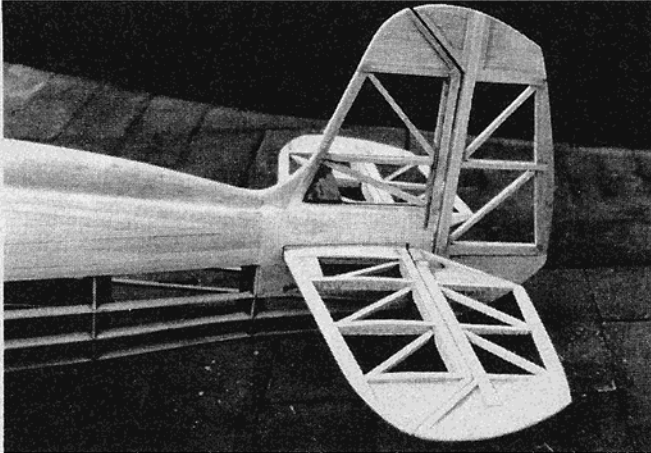
Interplane "I" struts.



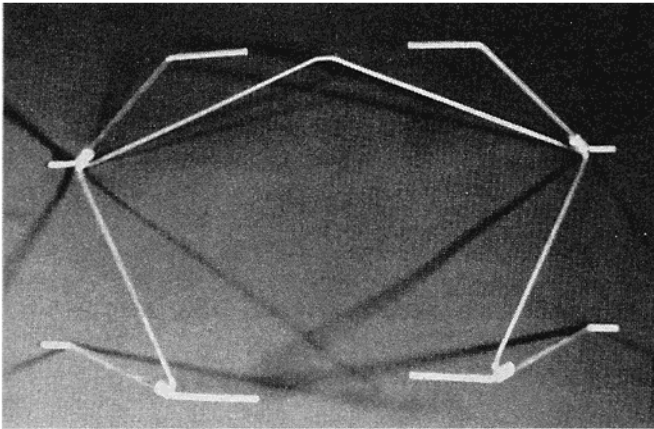
Tail group ready for final shaping and sanding.



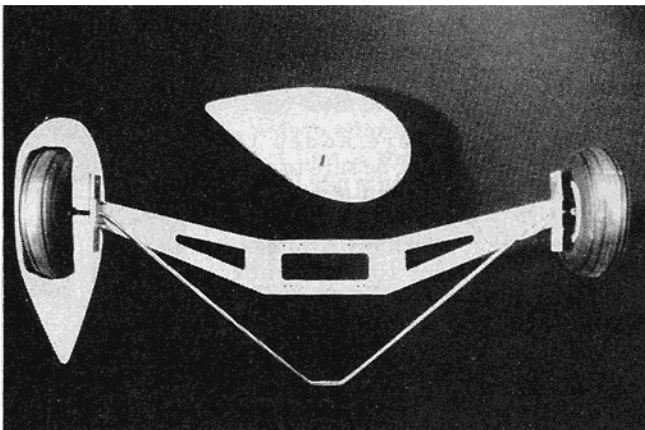
View looking up at underside of stab.



Close-up view of completed tail.



Wire cabane struts completed.



Aluminum landing gear/axle and wheel pants.

STARDUSTER TOO

Designed By:

Martin A. Fallandy

TYPE AIRCRAFT

Sport Scale Biplane

WINGSPAN

Top 72"/Bottom 65"

WING CHORD

Top 12 $\frac{3}{4}$ "/Bottom 12 $\frac{1}{2}$ "

TOTAL WING AREA

1464 Sq. In.

WING LOCATION

Biplane

AIRFOIL

Semi-symmetrical (NACA 2412)

WING PLANFORM

Elliptical

DIHEDRAL EACH TIP

Top 0"/Bottom 3/4"

OVERALL FUSELAGE LENGTH

58 $\frac{1}{2}$ Inches

RADIO COMPARTMENT SIZE

Ample

STABILIZER SPAN

27 Inches

STABILIZER CHORD (incl. elev.)

10 Inches

STABILIZER AREA

216 Sq. In.

STAB AIRFOIL SECTION

Flat Bottom

STABILIZER LOCATION

Mid Fuselage

VERTICAL FIN HEIGHT

10 $\frac{3}{4}$ Inches

VERTICAL FIN WIDTH (incl. rud.)

12 Inches

REC. ENGINE SIZE

1.2-1.8 Cu. in. 2-stroke (Glow)

FUEL TANK SIZE

16 Oz.

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

4

CONTROL FUNCTIONS

Rud., Elev., Throt., Ail.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa, Plywood

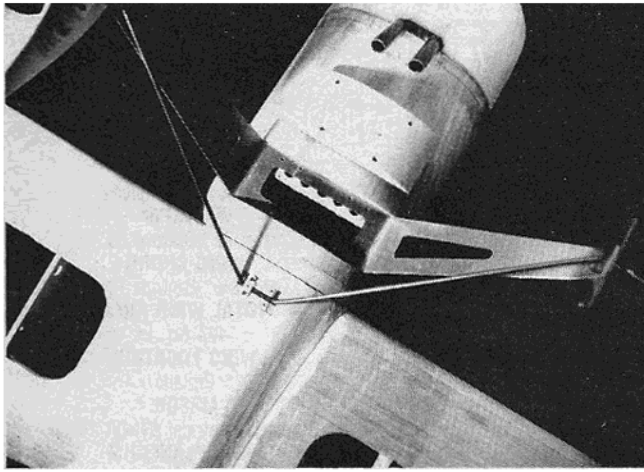
Wing Balsa, Ply. & Fiberglass

Empennage Balsa

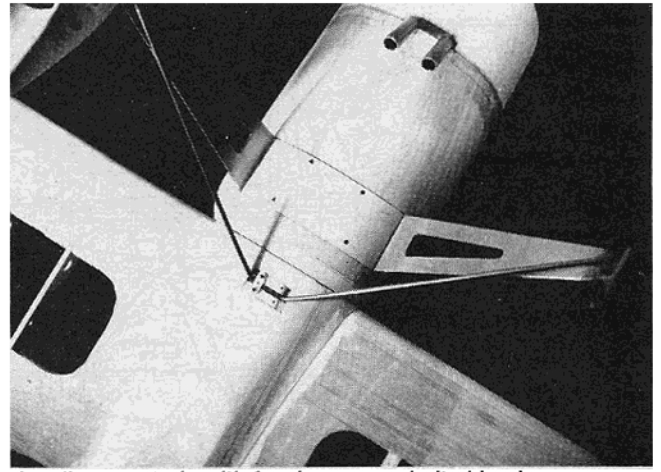
Wt. Ready To Fly 284 Oz. (17 $\frac{3}{4}$ Lbs.)

Wing Loading 27 Oz./Sq. Ft.

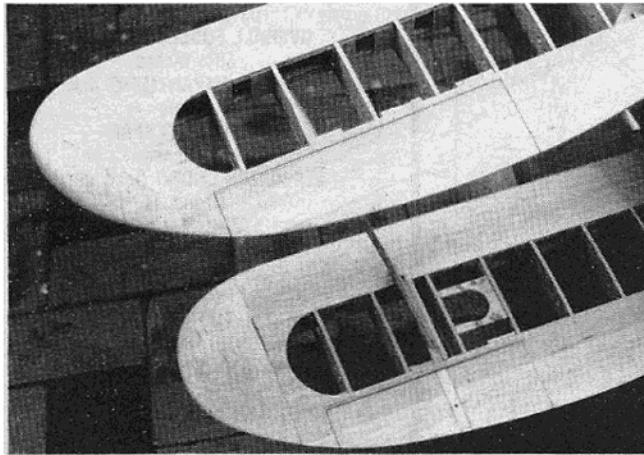
while your tooling is in place. When everything has dried, slide out the 1/4" drill rod, remove the wing and complete the lower side. With the basic wing complete, cut out the ailerons and add the hinges.



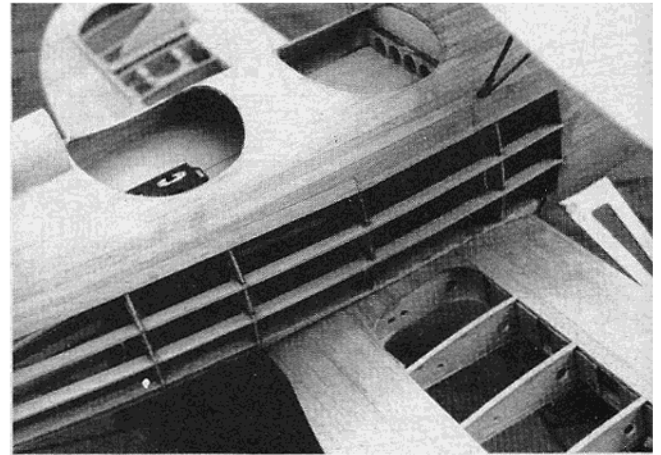
Landing gear/axle in place.



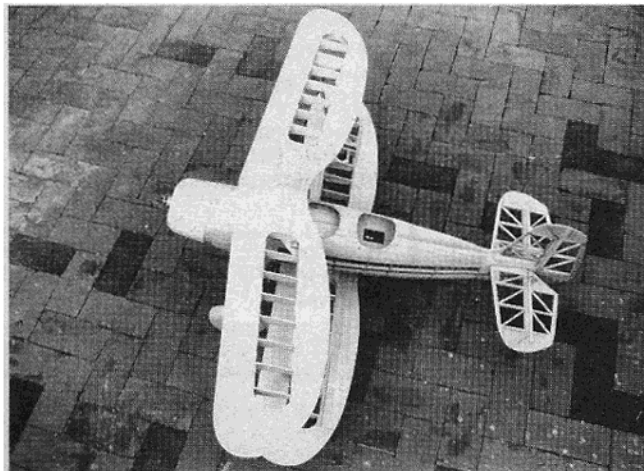
Landing gear/axle with fuselage cover bolted in place.



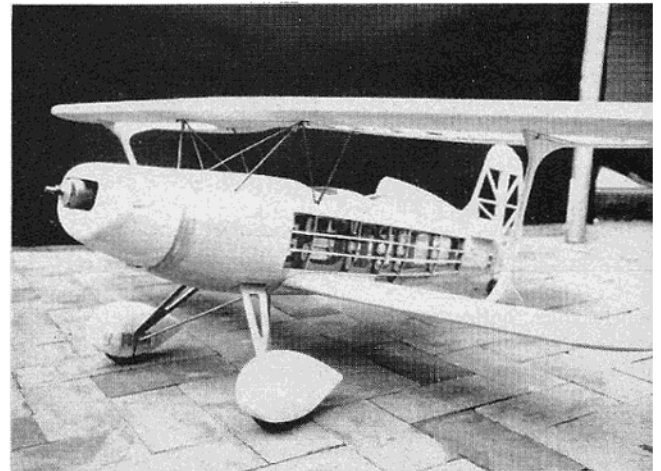
Upper and lower aileron. Servos mount in lower wing.



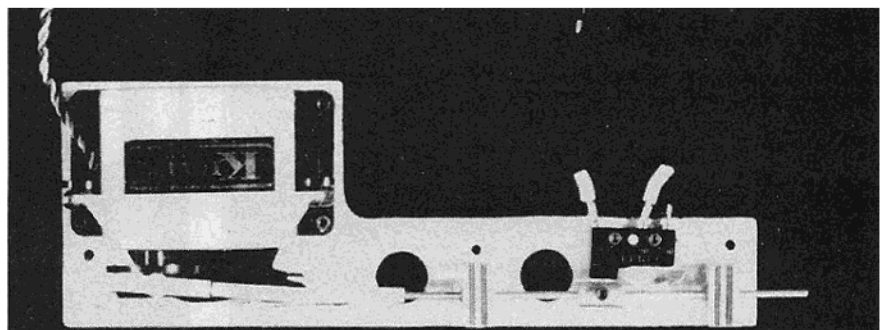
Front and rear cockpits.



Bare framework.



Counterweights are added to eliminate flutter. Also, be sure to seal the aileron gap with a strip of covering material. The servo mounts are for EMS servos that match my Kraft set, but add your own to take your particular servos. I would stick to a servo for each side (connected with a "Y" connector) as there is a lot of wing area, and remember you are pushing four ailerons. Join the wing panels together. The top wing is flat, the bottom wing has a 3/4" dihedral at each outer most wing rib. Be sure to



On-board ignition system to light glow plug at low rpms. L to R: Servo, wheel collar and micro switch.

glass the top and bottom of both wings as shown.

Empennage:

I know you are getting very excited by now, but continue with the rudder and elevator. Both are assembled flat and pretty much routine. Where the sheeting and stringers end, place small spacers of soft balsa to take the place of the rudder and elevator. Then fill in with soft balsa blocks and finish the tail section to proper shape. When complete, remove the temporary blocks and position the rudder and elevator.

General:

A few things remain; the landing gear, wheel pants, and cowl. The landing gear main support is formed from 1/8" tempered aluminum covered with 1/8" sheet balsa. The wheel pants are made from laid up 1/2" and 1/4" balsa sheet. I carved the cowl from various balsa blocks glued together. Glue a 1/16" ply sheet on the end of the cowl that bolts to the fuselage. Rough shape the cowl and bolt it to the fuselage, and finish form in place.

Finish:

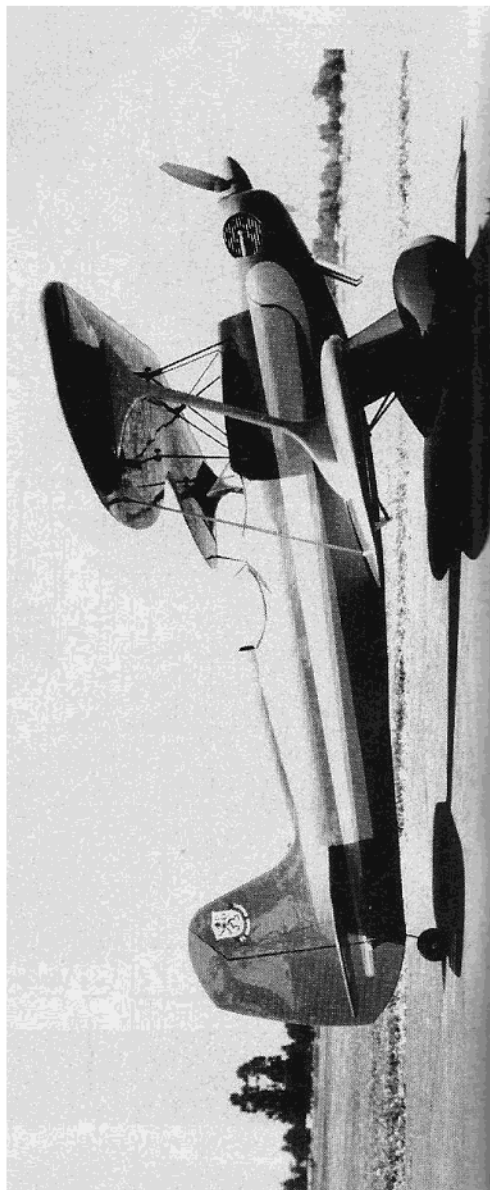
I covered the fuselage, empennage, and wings with MonoKote. I painted the balsa parts, cowl, wheel struts, and wheel pants with a coat of HobbyPox Stuff cut 50/50 with acetone. After sanding glass smooth they were sprayed with a can of Coverite spray epoxy.

Flying:

I wrote Ken Runestrand of RCM's Big is Beautiful column describing the project and he recommended going with a 1 1/2 cubic inch engine. So I hard mounted a Super Tigre 2000 to the 1/2" ply on the front end, using the handy cone shaped mount supplied. Prior to this, I broke the engine in on my favorite sled. I like gadgets so I installed an onboard glow plug igniter. It is easy to adjust. Put your throttle stick about four clicks from the bottom, then slide the wheel collar into the micro switch until the plug lights, and you've got it. But I must admit the ST 2000 idles very well on its own.

This is my third ST — a 35, a 75, and now the 2000. They are all first rate and seem to produce unlimited power, season after season.

I flew it the first time without the cowl and wheel pants to make sure it would fly. Then after the model was complete, I asked our local hobby shop dealer and owner, Jay Replogle, to ring it out while I took inflight pictures. Jay is one of those fellows who can walk and chew gum. He flies them all — from helicopters to Formula One racers. Jay's shop, Hobby House, Inc., 17721 Vanowen Street, Reseda, California 91335 (818) 609-1968, is one of those places where



if Jay doesn't have it, you probably don't need it. That includes planes, trains, cars, and boats --- plus all the people in there are modelers, and can advise you knowledgeably on your needs.

The three-views from which the plans were developed came from Gleason Enterprises, 1106 10th Drive S.E., Austin, Minnesota 55912 (507) 437-3781. Dick Gleason must have just about every airplane book and magazine ever published. I have requested his help before and he always comes through.

If you're still with me --- and I'm sure you are (who can resist a manuscript of this magnitude and quality), remember, don't let anyone talk you out of it, you can do it. If you get stuck give me a call.

Well friends, the nurse just came in and took my sharp pencils, so it's back to crayons. Great ankles on that girl.

Happy Landings!

**From
RCModeler
Dec. 1990**