

GREEN HORNET

By Martin A. Fallandy



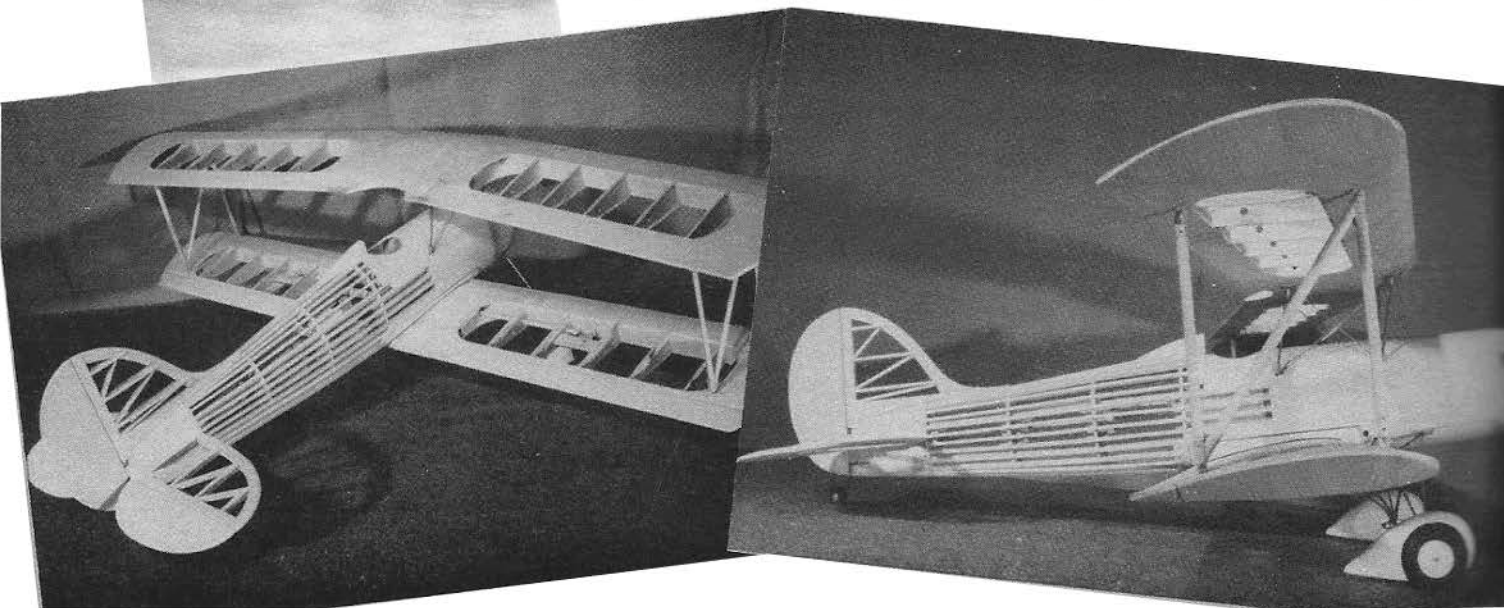
It's late August here in the west end of the San Fernando Valley. Hot and dry, as I sit here by the side of the moat surrounding my shop, idly tossing slightly spoiled apples at the crows. The sound of those snapping jaws gives a person a real sense of security. I had two very weighty world problems on my mind. The first, what color MonoKote to cover my latest biplane with and, second, does a fly make a half a loop or half a slow roll to land upside down on the ceiling. Then

my everloving wife came up and offered me a bottle of my favorite vitamins.

"No thanks dear, I'm waiting for Sweeny and Goertzen (my two flying buddies) to go flying," I said.

"Oh, that's right," she came back, "you and the airline pilots, no alcohol 24 hours before flying."

"That's right dear, except they have it easy, autopilots, copilots, computers and heaven knows what, and besides their equipment is built in a factory by





folks who know what they're doing," I returned. But there was something deeper on her mind, a sensitive person like myself can tell, and sure enough she lowered it on me.

"Dear," she started, "do you suppose you could do something about the backyard?"

"What's wrong with the yard?" I asked. "The weeds are a good six feet high, they give us privacy from Felix (RCM Aug. '83), our water drinking neighbor."

"I know, but Henry disappeared in there for three days last week," she came back. Henry is what she calls one of the midgets we have hanging around the house; she refers to them as "our" children. I haven't figured out this phenomenon yet, and besides there has to be five or six of them, what possible difference could one

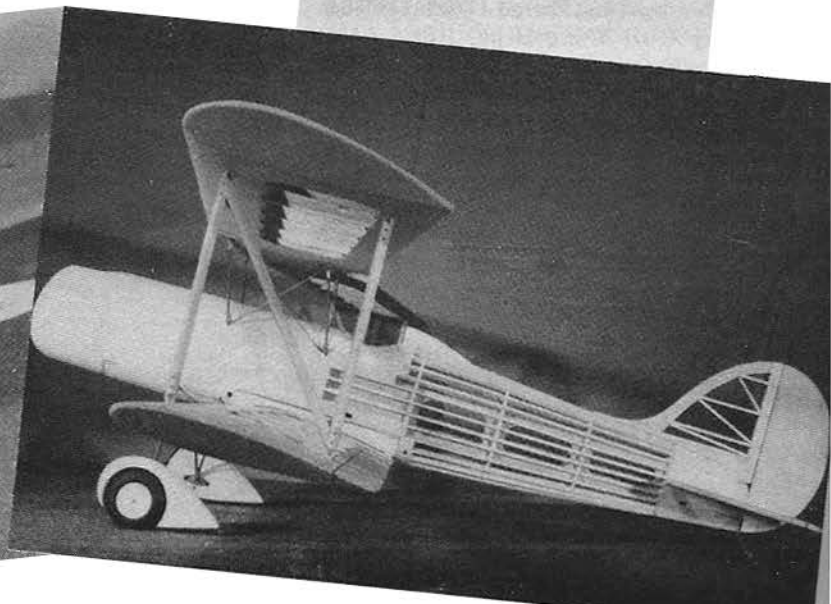
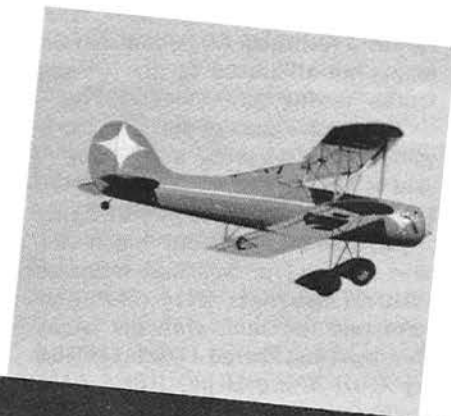
wandering aimlessly around in the weeds make. But they do seem to make her happy, and I've always felt everyone should have a hobby, besides a girl like mine is one in a million. Then she pretty well closed the conversation by saying:

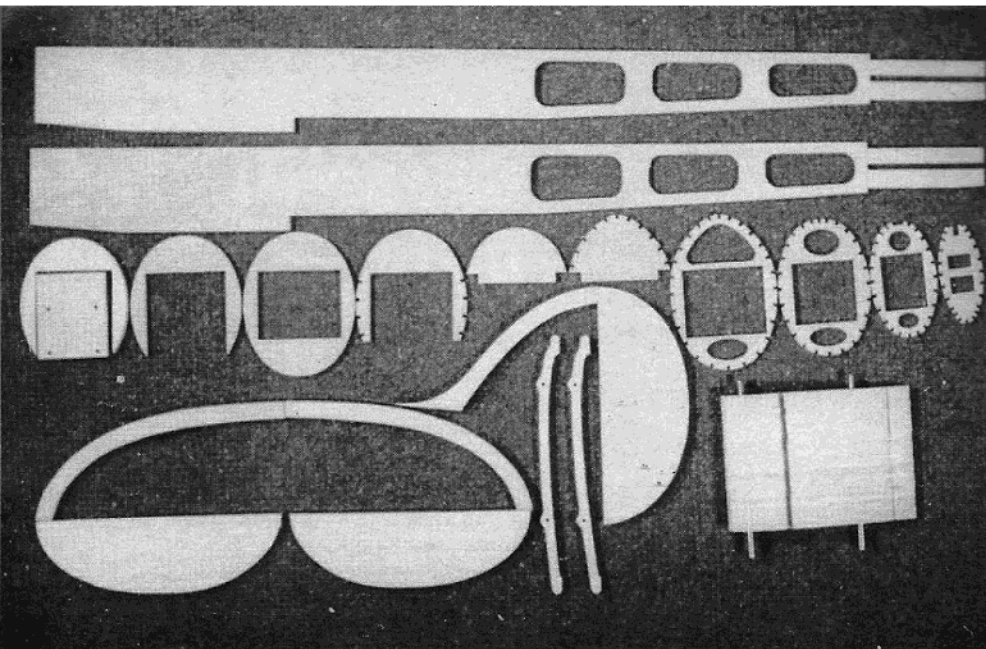
"Well dear, if something doesn't happen to those weeds pretty soon the sweet is going to drop out of 'Home Sweet Home'." Well any fool could figure out what that meant; I figured it out right away. "And further," she said, "I want to see something green out there."

"About this time Sweeny and Goertzen were honking and it was time to load up. "Okay dear," I said, "I'll get right on it — are the midgets all accounted for?"

"Yes," she said, "they're all in the house."

Give this fun biplane a try and you'll enjoy it as much as the designer does.





Step 1: Cut a complete parts kit. This will save building time later.

"Good," I said, lighting my pipe. I threw the burning match into the bone dry weeds, picked up my plane and gear and started for Sweeny's van, with the warm feeling that the backyard weeds were being taken care of. Walking along the driveway, I met my good neighbor Felix. As usual he was excited.

"Water, water, get some water Marty," he yelled.

"No you don't Felix, you're not going to fool me with that water trick again," I returned. As we rounded the corner we all waved to the two fire trucks roaring up.

"Nice to see our tax dollar at work, wonder who's having a problem," I said to my buddies.

We had one of those perfect flying days. Goertzen brought his Antic, powered by a four cycle mill; it floated around majestically. Sweeny terrorized the skies with his trusty Stearman and I bored a few holes with my Gull Wing Bipe. But I kept wondering what my everloving wife meant by wanting something green in the backyard. Well on the way home it hit me,

"Sweeny, swing by Smith Brothers Hobby Shop in Reseda, I need a few things," I fairly shouted.

"Good idea," he came back. "Perfect way to wind up the day," Goertzen chimed in.

On asking Chuck Smith for a roll of green MonoKote, his comment was, "Some green trim on a yellow model should look good, Marty."

"No Chuck, the whole model is going to be green," I said.

"Marty, you're further out of your gourd than I thought, the first time you go in the corn (corn is grown commercially around our field in the Sepulveda Basin where we fly) you'll never find it," he said in a concerned way. (You can talk to your customers this way when you run a first class hobby shop). But I took it in the spirit it was given and said, "It's a chance I have to take, Chuck."

So the "Green Hornet" was born. I took a lot of care covering this model; I wanted it to look just right. When complete I placed it in the center of the backyard, the gold trim contrasting nicely with the now level, charred backyard, and waited for the pleasant comments I knew would be coming from my everloving wife. I didn't have long to wait.

"Nice looking biplane, dear," she said, offering me a bottle of my favorite vitamins.

GREEN HORNET

Designed By:

Martin A. Fallandy

TYPE AIRCRAFT

Sport Biplane

WINGSPAN

Top: 53 3/4"

Bottom: 48 1/2"

WING CHORD

7 1/2 Inches

TOTAL WING AREA

767 Sq. In.

WING LOCATION

Biplane

AIRFOIL

Symmetrical

WING PLANFORM

Constant Chord

DIHEDRAL EACH TIP

Upper: None

Lower: 1/2 Inch

O.A. FUSELAGE LENGTH

34 Inches

RADIO COMPARTMENT SIZE

(L) 7 1/2" X (W) 2 5/8" X (H) 2 3/4"

STABILIZER SPAN

17 Inches

STABILIZER CHORD (incl. elev.)

6 1/4 Inches

STABILIZER AREA

72 Sq. In.

STAB AIRFOIL SECTION

Flat Bottom

STABILIZER LOCATION

Mid Fuselage

VERTICAL FIN WIDTH (incl. rud.)

7 1/2 Inches

REC. ENGINE SIZE

40 Cu. In.

FUEL TANK SIZE

8 Oz.

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

4

CONTROL FUNCTIONS

Rud., Elev., Ail., Throt.

BASIC MATERIALS USED IN CONSTRUCTION

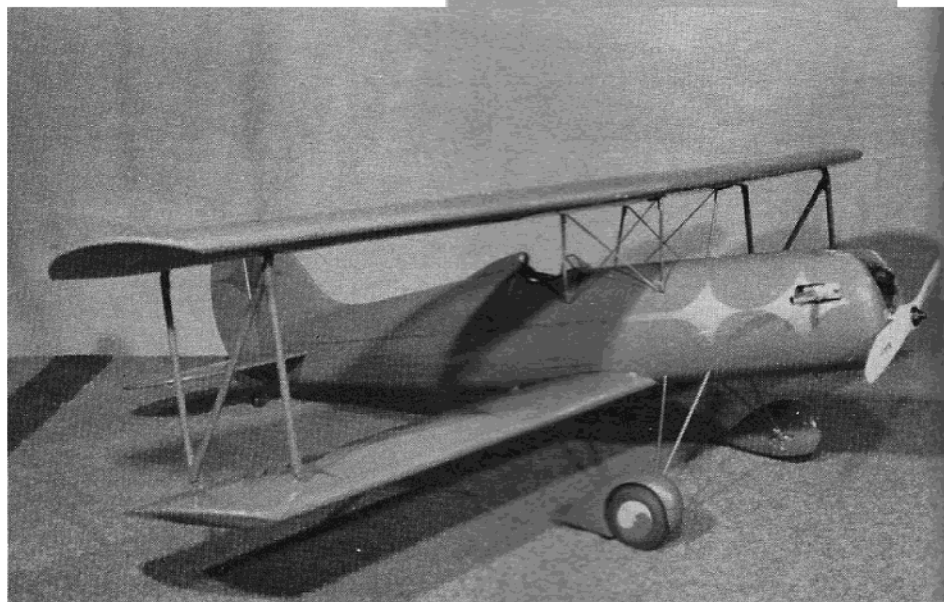
Fuselage..... Balsa & Ply

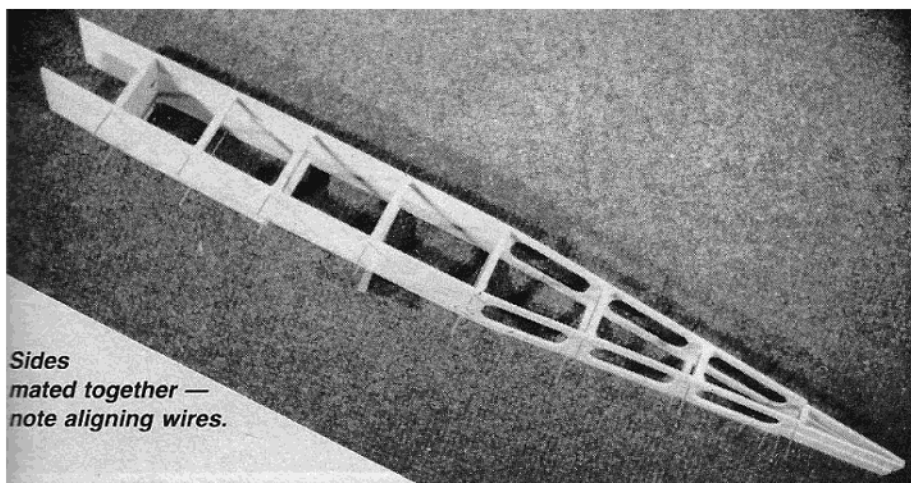
Wing..... Balsa, Ply, Fiberglass

Empennage..... Balsa

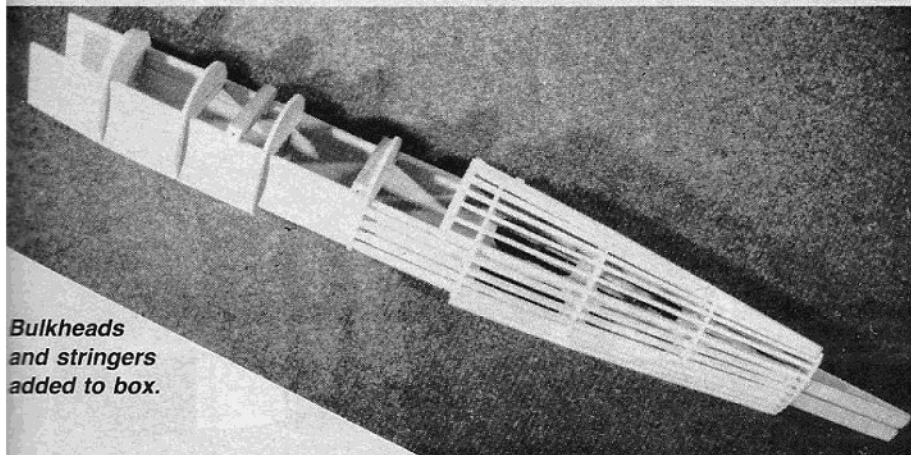
Wt. Ready To Fly..... 86 Oz.

Wing Loading..... 16.16 Oz./Sq. Ft

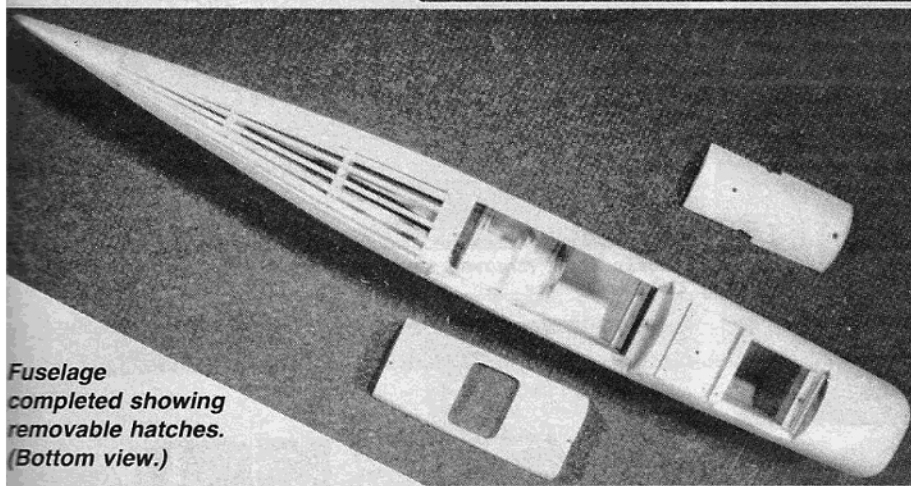




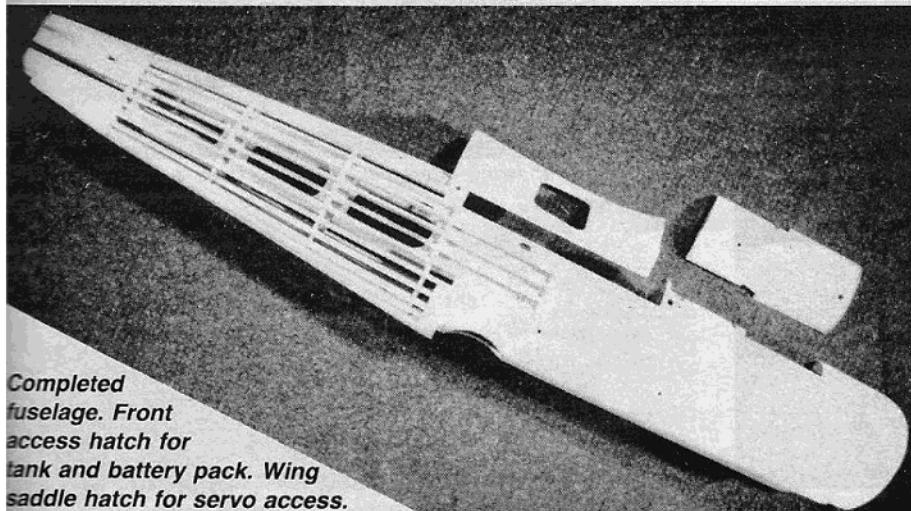
Sides mated together — note aligning wires.



Bulkheads and stringers added to box.



Fuselage completed showing removable hatches. (Bottom view.)



Completed fuselage. Front access hatch for tank and battery pack. Wing saddle hatch for servo access.

"Notice the color," I prompted.

"Yes, it is green," she said.

"You did say something green," I reminded her, "of course I'll have it out flying once in a while, but it will be right there most of the time."

"You're so thoughtful, dear," she sighed.

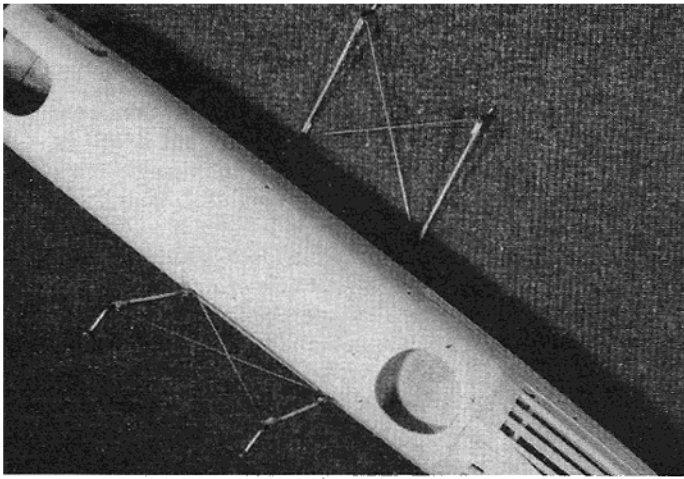
CONSTRUCTION

If you are considering building the Green Hornet, you have probably built a number of kits or maybe scratch-built from some of the many fine prints offered by RCM. Either way, look the plan over very carefully and you will find it's merely a box with a few round formers added, the wings and tail are quite conventional. There is an extra wing to build, but there is no thrill like a biplane floating in for a landing. Cut out the various parts very carefully, assemble with some thought and I know you will be successful. Most scratch-builders are designers at heart, so feel free to change things to suit yourself; but maintain the basic parameters as they are critical to successful flight. Bear in mind that biplanes are notoriously tail heavy, so don't hesitate to add lumber to the front end. Much better to add weight in construction to add strength, than in a dead lead weight.

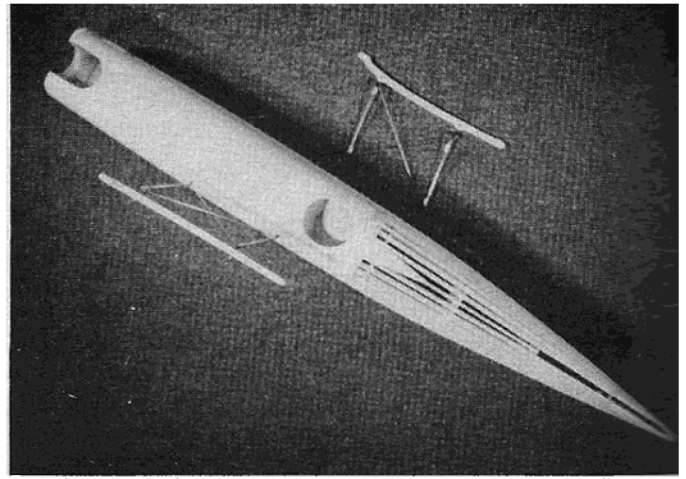
Fuselage:

Start by making the sides of the "box." Each side is made from a sheet of 3/32" balsa with a sheet of 1/64" ply contact cemented to both sides. I like to rubber cement the plans to the sheet of wood. (By the way, plans are not all that expensive, when scratch-building I usually send for two, one to cut up and one to build by.) Anyway, glue the two sides together in spots that will fall out when you cut out the lightening holes. Now cut the two sides together, add the 1/16" ply doublers to the inside front end of each side, and drill the 1/16" diameter holes in front of all bulkheads as indicated. When the two sides are cut out as one, they will separate when you remove the lightening hole areas.

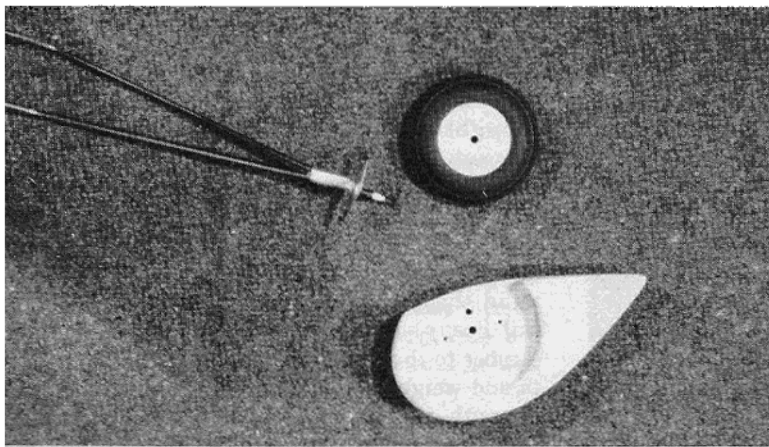
I like to use the RCM Fuselage Jig (RCM Feb. '72), but whatever method you use, place the sides over the top view. Make certain the two sides are parallel and at right angles to the building surface. Thread short lengths of 1/16" diameter music wire through mating holes from one side to the other; this will help line up the two sides. Glue 1/4" sq. balsa separators in place along with the 1/4" ply firewall and the triangular braces, right behind the firewall. Before you



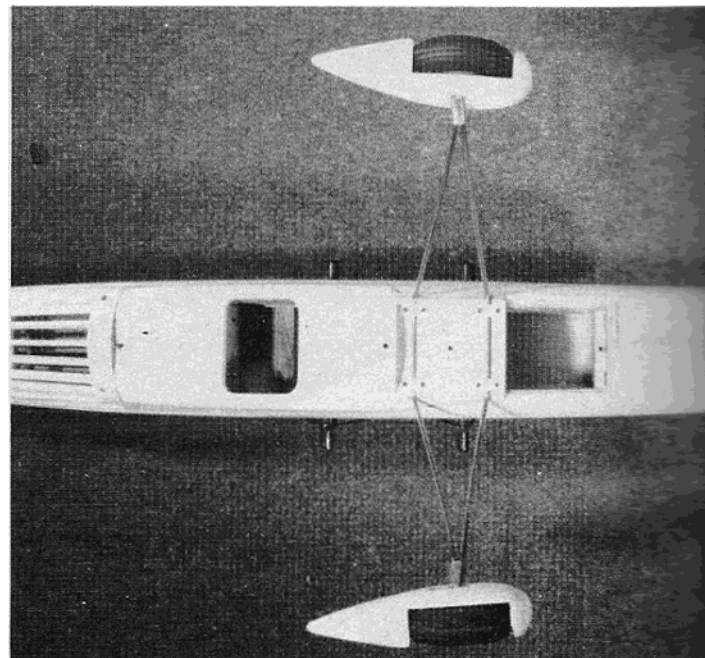
Cabane struts are removable in both bolt-on and rubber band versions. (Bolt-on version shown here.)



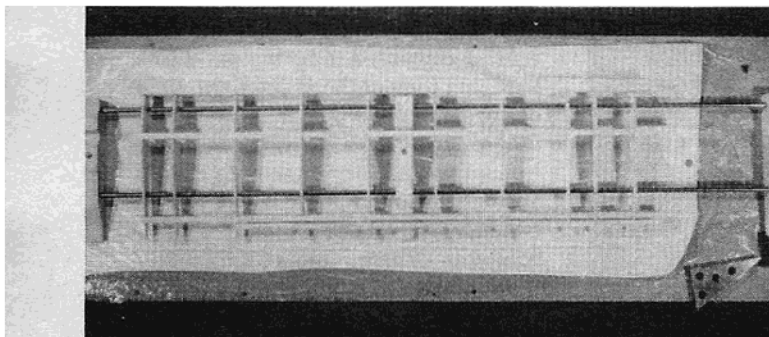
Ply wing saddle added to struts for rubber band hold-down.



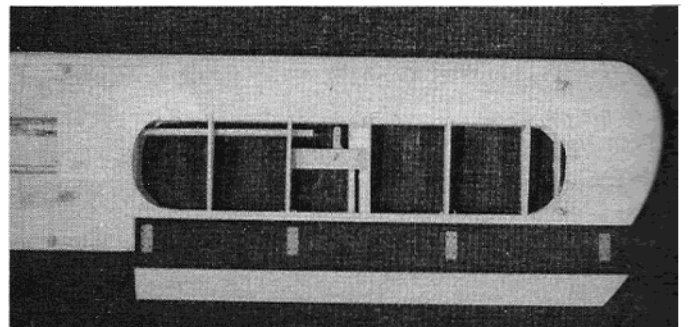
Landing gear with flange soldered to attach wheel pant.



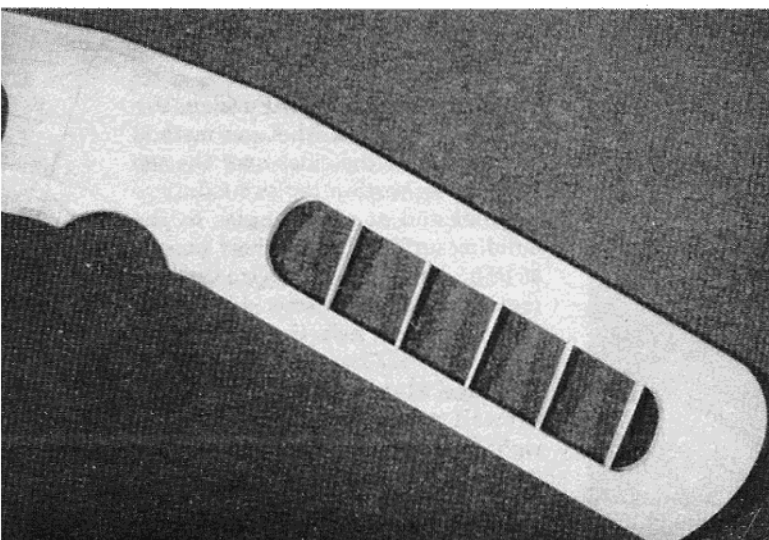
Access hatch removed showing landing gear attached with Goldberg straps.



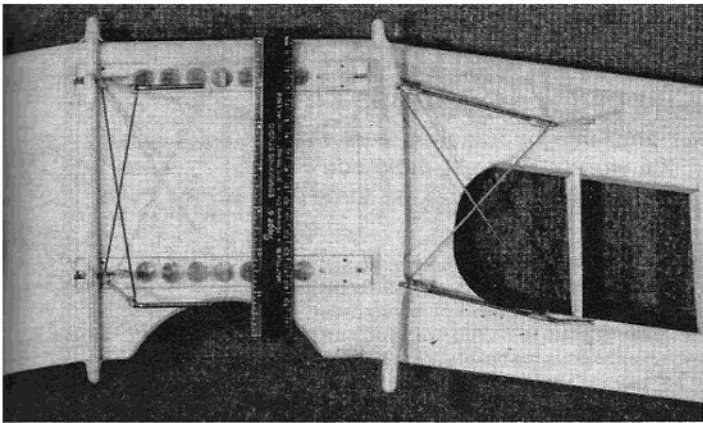
Wing set-up on wing jig using 1/4" drill rod.



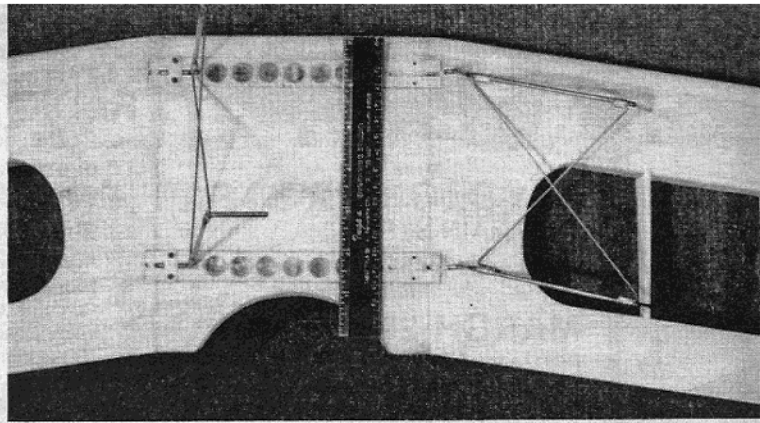
Lower wing showing aileron installation. Uses a fiberglass pushrod.



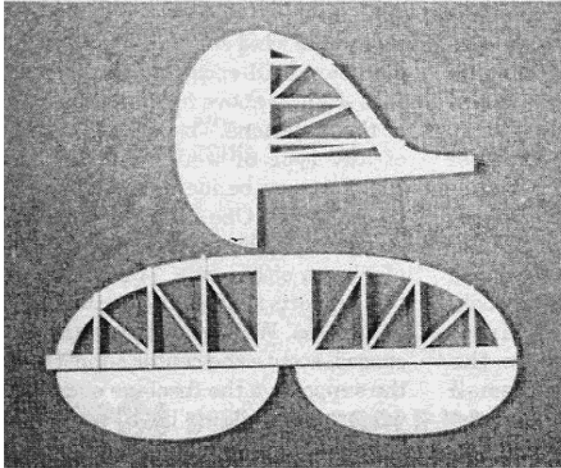
Upper wing has sweep back and no dihedral.



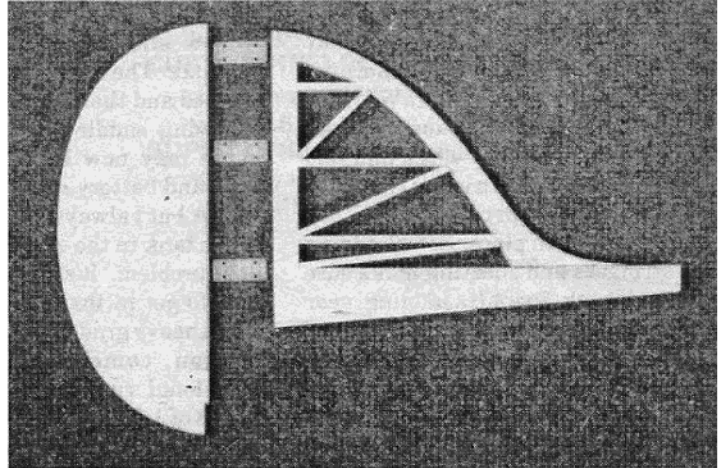
Cabane struts with saddles for securing top wing with rubber bands.



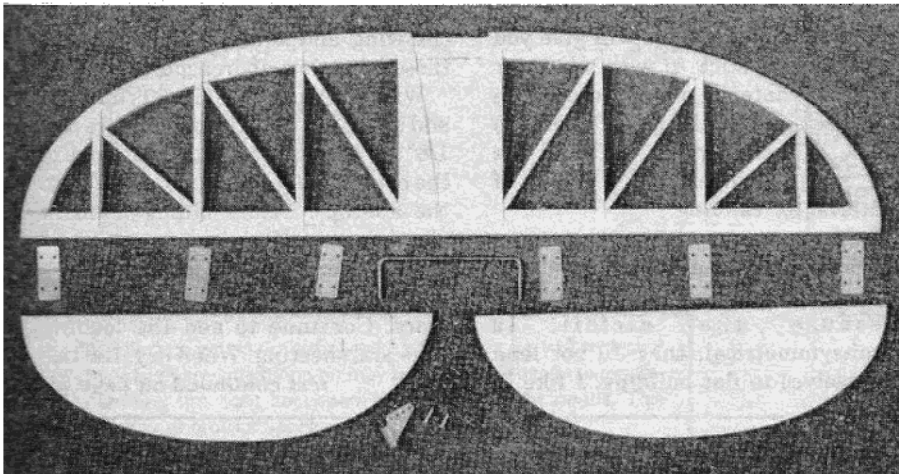
Cabane struts for securing top wing with 2-56 socket head cap screws.



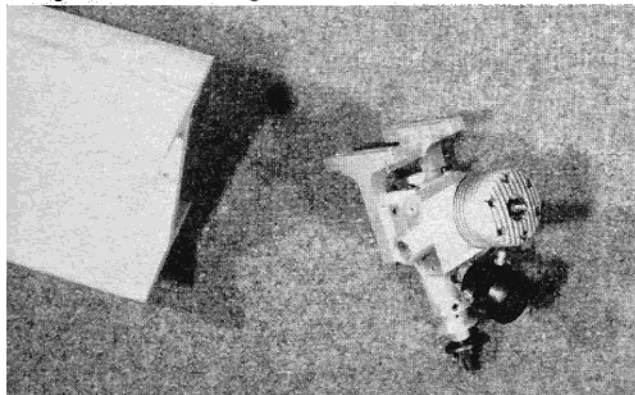
Tail assembly rough framed ready for sanding to shape.



Rudder and fin completed.



Designer makes own engine mounts from aluminum "I" beam.

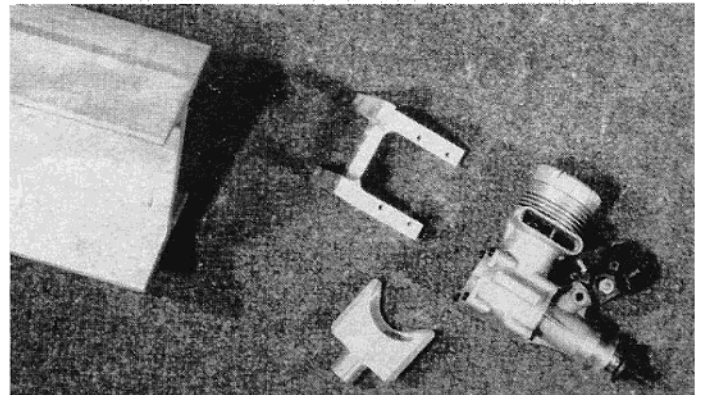


put in the firewall make sure you have the holes drilled and T-nuts in place for your motor mount.

While this box section is drying, cut out the fuselage formers. Notice that F9 does not have stringer slots. The end of each stringer is notched $1/8" \times 1/8"$. This notch fits up against and over this last former. Remove the box section from your jig, bevel the sides where indicated and remove all of the $1/6"$ diameter wires except the first pair.

Stab and elevators completed. Wire joiner fits into ply inset.

Exhaust header machined from aluminum bar stock.



The first bulkhead (1/4" ply) may now be placed in position by sliding it over the tail end of the box. With the first bulkhead in place, thread through the next two wires and add the corresponding bulkhead. Continue this process until all bulkheads are in place. Before adding the stringers and sheeting make sure the fuel tank support, landing gear platform, servo rails, switch and charging harness and pushrods are in place. Also add the 1/2" sq. hardwood blocks that support the cabin struts. Now is also a good time to temporarily mount your engine and thread through the throttle control cable.

Rudder and Elevator:

Both the rudder and elevator build flat on the plans. Construction is straightforward, just try to keep it light, but strong. Also remember to add the 1/8" sq. balsa strips to the top of the stabilizers and sand to a gentle airfoil as indicated. A little lift in the caboose sure is nice on those long slow, cocked-up approaches.

With the rudder and elevator complete, fit them to the fuselage, locate and cut slots through the tail end of the fuselage for the pushrods. Arrow shafts were used on the original. The fuselage may now be sheeted and the stringers added. Also the wing saddle and the fuel tank hatch may now be added. The fuel tank and battery hatch is a matter of choice, but I always like to have access to the tank in the event there is a fuel flow problem. It's always nice to be able to get in there and have a look. Use a heavy grade of balsa for the nose section, comes in handy on the occasional runway kiss. Add small pieces of 1/8" sheet balsa between the stringers where the stringers meet the half bulkhead under the headrest and where they meet the wing saddle. Sand these pieces slightly concave between stringers. This will give you something to stick to with whatever covering material you choose. With the fuselage complete, block sand to shape. All sheeting is 1/8" and the 1/8" x 1/4" stringers allow plenty of material for sanding.

Wings:

There is nothing tricky about the wings. However, a couple of tips. Because the airfoil is semi-symmetrical, 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 drill rods with an equal number of ribs on either side. The remaining two supports are threaded on outboard of the ribs. With everything properly spaced, secure the center support and the support on the fuselage end of the wing to the building board with wood screws. Then place a 1/8" shim under the back edge of the support nearest the wing tip. This will give a little negative incidence to the last third of the wing and again avoid a stall on those long slow approaches.

With the wings held in this manner add the spars. Note that there are two 1/8" x 1/4" spars on the trailing edge of the bottom wing. These two spars form the ailerons. Before gluing them in place, space them with scraps of 1/8" sheet placed between ribs where they will not become permanently glued in place. Continue to add the leading edge and sheeting. When dry, the two 1/4" diameter drill rods may be carefully removed, freeing the wing section from the building board. Carefully cut the ailerons from the bottom wing panels. Line the front of the aileron and back of the wing with 1/16" sheet. The two bottom wing panels are joined together with a 1/4" block under each outer wing rib to give the proper dihedral. The two top wing panels are joined to the center section, flat with no dihedral. If you are building the version with permanently secured wings, remember to add the hardwood blocks that form the anchors for the cabane struts. If all four main cabane struts are identical and their anchor points are as shown, the proper top wing incidence will be achieved. Wrap the cabane cross bracing with light, bare copper wire, but do not solder in place.

Assembly:

Assemble the completed components except the landing gear and set it up on a flat surface a little larger than the model; I like the dining room table. Hold the model together with rubber bands, with the main thrust line of the fuselage parallel to the table. Now make sure everything is symmetrical. Adjust the cabane struts for the proper top wing location. Measure to make sure each wing tip is equal distance from the end of the fuselage; the wing tips are equal distance from the fuselage; the tips of the elevators are equal distance from

the nose and from the fuselage. When all is level, vertical, and symmetrical, permanently secure all components by gluing the tail section in place, drilling the bottom wing bolts in place or gluing the 3/16" half dowels to center the bottom wing if you are building the rubber band secured wing version. Whichever version you build, carefully remove the cabane assembly and solder all cross braces together.

Before covering, be sure to fiberglass and resin the upper and lower surface of each wing. There are no main wing spars, all wing strength is obtained from the fiberglass. A much greater strength to weight ratio is gained from the wing skin than from spars. Also heavily resin the entire nose section inside and out back to the landing gear. A word on the landing gear. Keep the wheel location where it is and give the wheels a little slant-in and a little toe-in. Also, don't use a smaller diameter music wire for the main gear or the tail wheel. More good take-off runs are ruined by a weak landing gear system. Cover your model with your favorite material, but try to keep it light, I don't advise glassing the entire model, too much weight in the caboose.

When covering is complete, wrap all removable components with one layer of Saran Wrap, Handiwrap, or the like. Place a light bead of clear silicone on the mating surfaces and reassemble the model to its finished configuration. Quickly remove excess silicone, as it is hard to remove from most covering materials when dry. This will give you a fuel tight model. When complete, take your jewel out in the boondocks and run a few tanks through the engine at all power levels. Check to make sure everything is where it should be. Also don't forget to range check the model in the area you intend to fly.

Sweeny's test flights of the Green Hornet went well. This is a fun biplane to fly and I know you will enjoy yours as much as I am enjoying mine. It has no vicious tendencies, will not snap over on those slow cocked-up approaches, yet will do all the good maneuvers. Mine hums pretty well on a regular K & B 40. I suppose if you put a Hot Schnuerle ported 40 up front it will terrorize the skies, but, believe me, a stock 40 is more than enough.

Well, I was at peace with the world, smoking my pipe and reading the latest issue of RCM, when my everloving wife walked up --- she

doesn't really walk, she flows --- and commented, "Your green biplane is a real beauty dear, but what I really had in mind was something green and growing."

"Okay dear," I came right back; when you have a good thing going, you don't fool with it. But this did pose a problem. Dedicated modelers are very resourceful, and I'm no exception, I have a lot of faith in myself. And sure enough, after ten seconds of carefully concentrated thought on one subject, it came to me. So I am now busy mixing a large vat of green dye, into which I will individually dip each midget. After all, they do seem to grow and they spend a lot of time in the backyard. I am sure this will please my everloving wife, and any girl as pretty as mine deserves the very best.

Happy landings.

**From
RCModeler
Dec. 1984**