968

by John Hunton

Pulp-fiction character Bill Barnes' steed comes to life as an RC electric-powered "Fantasy Scale" model

Photo by Stew Meyers

Snorter

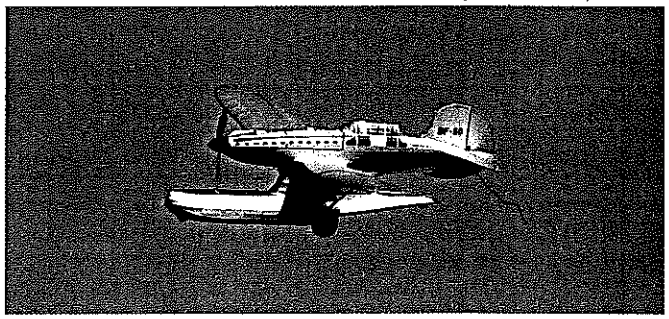
ohn Hunton holds the Snorter. It was intended to be a choolyard flier that wouldn't nose-over on landing. Ashley ullivan photo.

TYPICAL ELECTRIC-POWERED models are fine for flying in nearby grass fields; however, with small scale wheels, they tend to flip over on landing. A more suitable model might be a seaplane—one with a large central float to "skizz" onto the grass when landing.

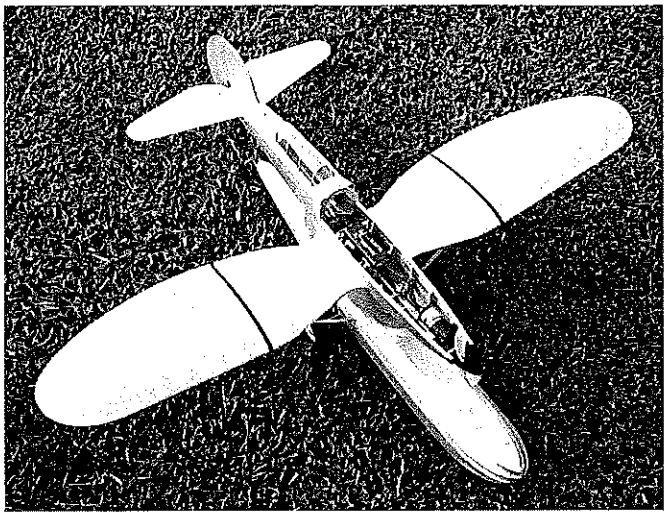
I vaguely remembered that an airplane design of one of the 1930s pulp serial characters—Bill Barnes—had a large central float. I found a three-view of that airplane on the Internet by typing in the keywords "Bill Barnes." During many months following, I drew and built a "Snorter" amphibian model. It has a 42-inch wingspan, 300 square inches of wing area, weighs just less than a pound, and the original was powered by a Speed 400 motor with six cells.

The completed model was test-flown, and it lived up to expectations with completely successful landings on grass. The

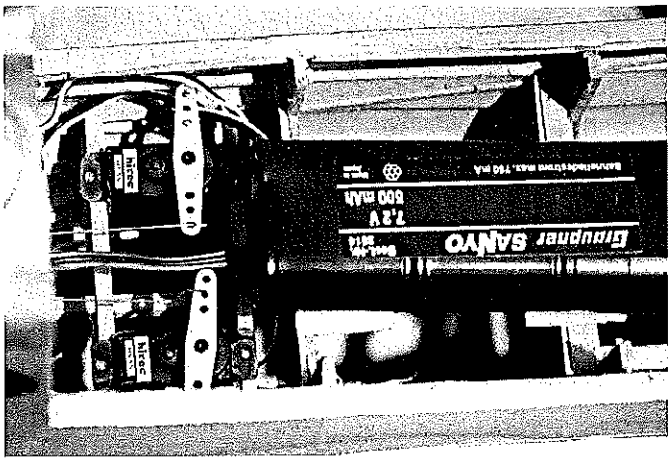
Photos by the author except as noted



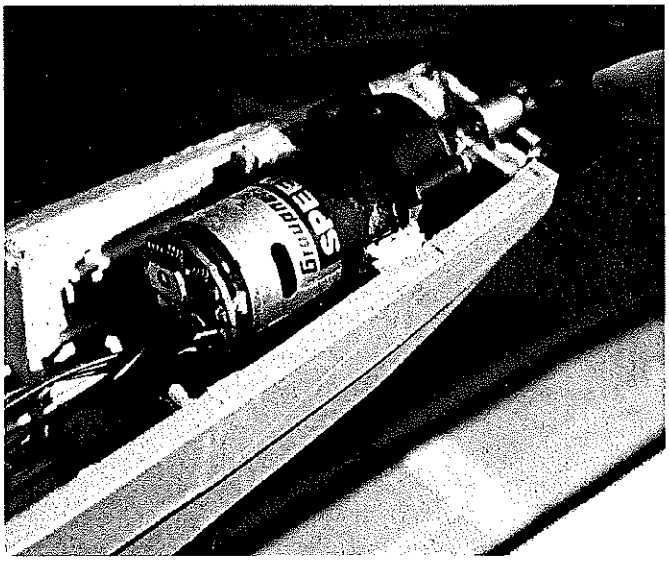
It flies well. Small weight in right wingtip counteracts torque effects and helps model remain in good trim with power on and power off. Sullivan photo.



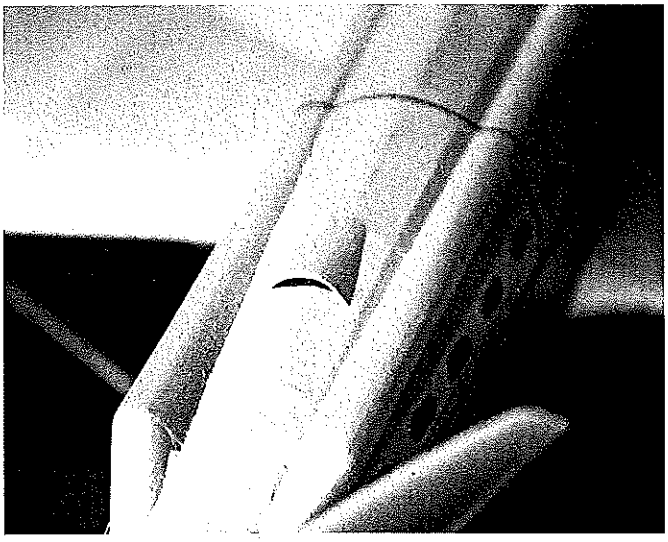
Interior is readily accessible with top of fuselage removed. Outer wing panels are taped in place with automotive trim tape.



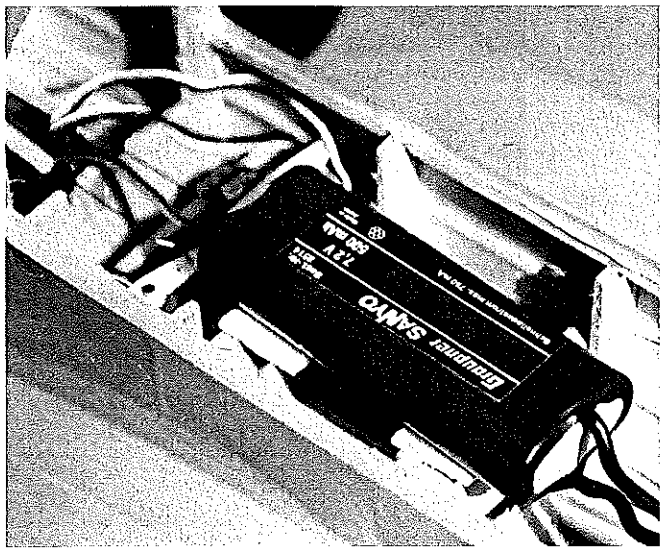
Two Hitec servos are nestled between the battery and the cabin. The receiver is mounted on the cabin floor. Tight but neat!



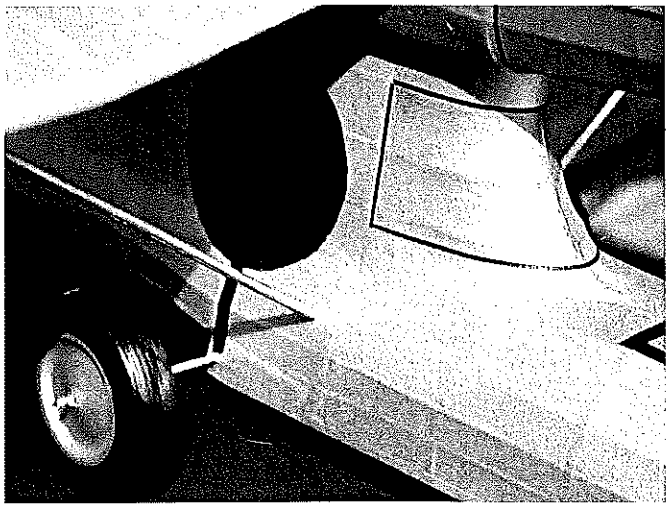
A 4.1:1 geared Speed 400 motor with 8 x 6 or 9 x 6 propeller works well. Motor is mounted in balsa crossmembers and seated in silicone (or epoxy).



Simulated carburetor air scoops are formed from 1/32 balsa, wetted, then dried over curved form. This balsa molding is simple and effective.



A six-cell battery pack gives good results with stately, scalelike flight. A seven-cell pack would give peppier performance.



Simulated radiator areas were masked, then sprayed with Testors copper paint. Chart tape was used to outline painted area.

test flights also showed that the Snorter design was exciting to see in the air, with its unusual float, extended cabin, and elliptical wings. It seemed to provide an exciting view from every different angle.

End of story and onto construction? Nah!

After building a Snorter, I reviewed the Bill Barnes Web page again, in much more detail. This is an excellent site that is maintained by a David Dodge. It seems that the Bill Barnes character and his airplane designs came to life during the 1930s in some pulp magazines, later appearing in *Air Trails* magazine. Then Mr. Barnes drifted off into oblivion in other pulps, to leave only vivid memories of stories and airplane designs in many minds.

In the well-organized Bill Barnes Web pages, there is a riveting history of the many authors and designers, information about many other characters of the 1930s, and great sketches and three-views of the associated airplane designs.

After reading all of the Bill Barnes Web pages, the saga inspired me and I sent Mr. Dodge photos of my Snorter model. I also made up a story in 2002 that Paul Cornielusson edited. Mr. Dodge kindly put this information on his Web site. I think you will enjoy reading about Bill Barnes at http://home.att.net/~dannysoar5/temp.htm. Following is the 2002 Bill Barnes saga, which I titled "A Special Mission for the Snorter: Bill Barnes Jr. in Action."

"At the request of the President of the United States, Bill Barnes Jr. agreed to use the fabled airplane named the 'Snorter' on an urgent mission that demanded its unique capabilities. The original Snorter had been fully maintained in secret storage since the 1930s, and now it was needed.

"The Snorter could fly very fast and low, barely skimming waves. With its wooden construction and stealthy reflection shielded engines, it was nearly invisible to radar. Its two special 12 cylinder diesels had an infrared signature that was undetectable with look-down detection systems. It could be refueled at sea, eliminating any telltale aerial refueling.

"The Snorter was the only airplane in the world that could get in undetected and close enough to the movable man-made island (now known as Terror Harbor) to pop up and get a quick glimpse of what the arch villain, Dr. Hisson, was up to now. One photograph of the island, digitally transmitted back to the Homeland Defense Agency, would show what the next dastardly threat to the world might be.

"Bill Barnes Jr. was cruising efficiently at 400 knots now on his mission. The Snorter was flying just over the whitecaps, its large

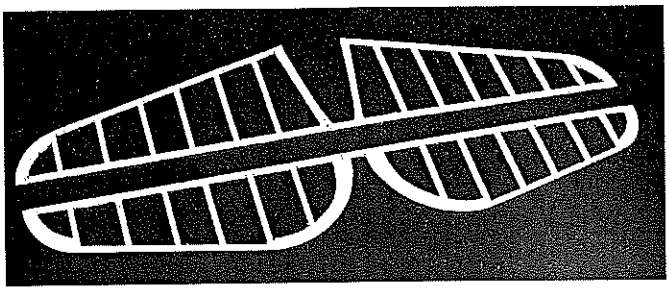
Alternate Power Sources and Motors

The normal "cruising" flight time for the Snorter is roughly seven minutes with the geared Speed 400 can motor and a six-cell Ni-Cd battery. If you install a three-cell Li-Poly battery and retain the can motor, flight times will increase to approximately 10 minutes. If you install a Dymond PJS 300 external rotor motor (or equivalent) and use a three-cell Li-Poly battery, flight times will increase to roughly 16 minutes.

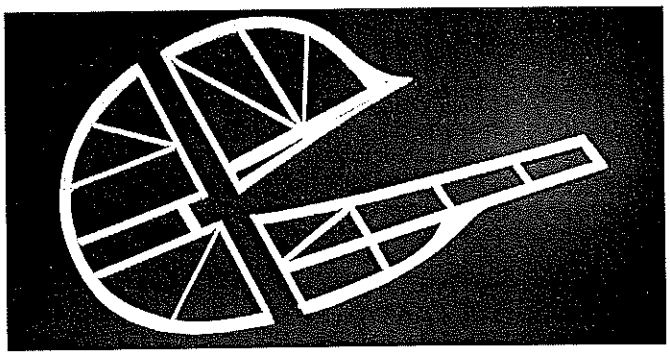
Changing to the external rotor motor will save approximately 1 ounce of weight. Changing from the Ni-Cd to a Li-Poly battery will save an additional 2 ounces. Using the external rotor motor and Li-Poly battery will save a total of approximately 3 ounces, which is a significant weight reduction, and performance will increase proportionately.

However, the Snorter is not an aerobatic model. It is good enough for me just to see this unusually beautiful and graceful model in the air and take joy in admiring its complex shapes as the perspective of the view changes while it passes by. Ben Tinsley's 1930s creation is truly ageless. MA

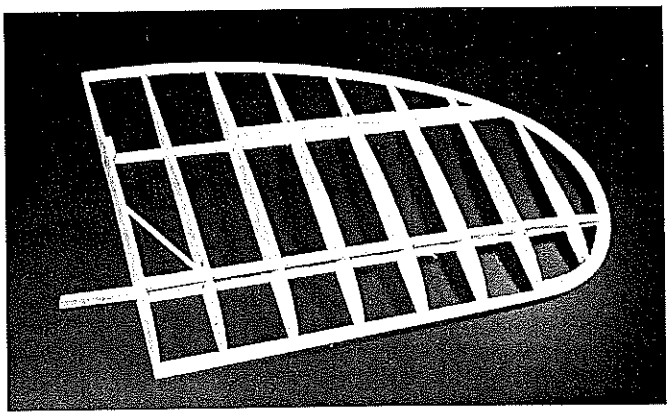
—John Hunton



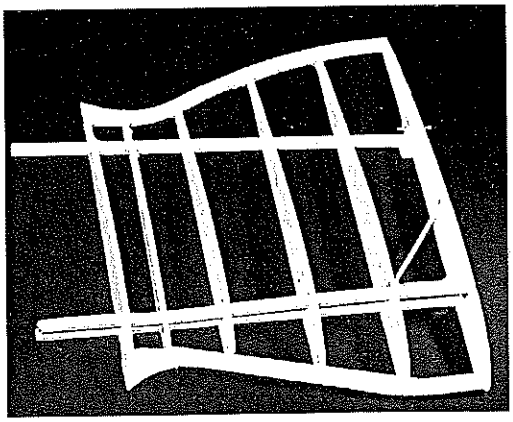
Fin, rudder, and ventral combine to form one of the model's focal points. It's an unusual and character-filled outline!



Easy-to-build stabilizer and elevator assembly is typical of rubber-powered models. Be sure to round off all edges to allow a smooth covering job.



Wing construction is straightforward. Inner panels are permanently attached and outer panels slip into sockets. Considerable washout is built into wings for good stall stability.



Placement of root rib on inner wing panels is critical for proper incidence. Root rib must be faired to fuselage with small balsa scraps.

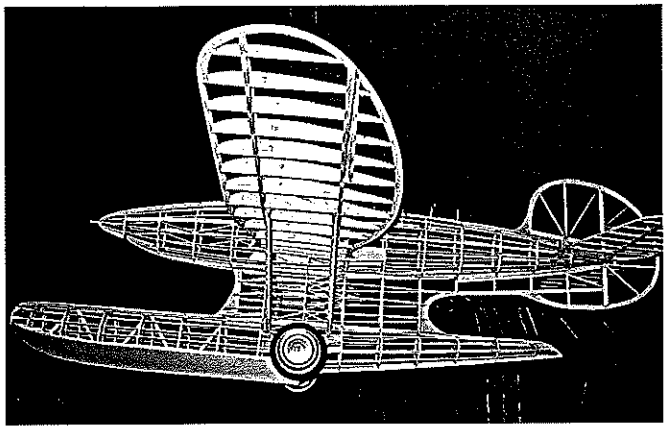
main float wet from ocean spray. When cruising, the Snorter used only one of its diesels in order to save fuel, but on approaching the island, Bill Jr. fired up the other engine and its contra-rotating propeller.

"Airspeed was climbing well past 500 mph now, this speed achievable because all defensive weaponry had been removed to aid in stealth and speed. A special 'look-up' camera had been installed in the Snorter for the desired overall shot of the island.

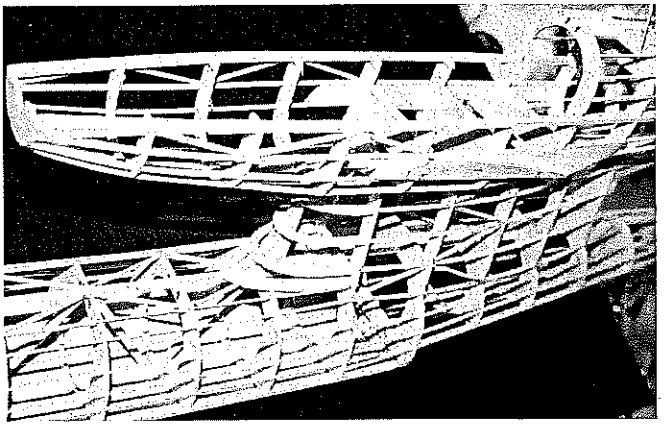
"Of course, the diabolical Dr. Hisson had tracked all satellites and he always covered up his operations when they passed overhead. Snorter was going to make its run between satellite passes to catch the island with everything exposed for the camera's eye.

"The island grew large in the windshield and it was time for Bill Jr. and the Snorter to pop up. When Bill Jr. pulled on the yoke, the G-meter read 9. He slammed the stick to the right to start the roll and was immediately inverted over the island. The upward-looking camera, which was now facing downward, was triggered.

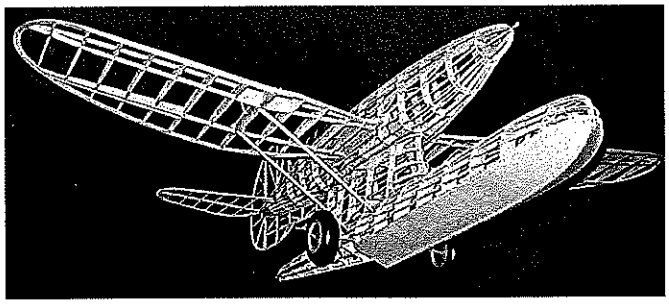
"Bill rolled to level again just past the island, at just a few feet



The model's framework hung in John's workshop for many months. The sculptural qualities are apparent.



Although not recommended as a first stick-built project, construction is typical of most rubber-powered models. Craftsmanship can be learned!



All diagonal bracing is added after the final framework has been completed. Wheels are from a Chubby Lady ARF.

The fuselage is actually fun to build, and it has an artlike quality when framed up. Take your time and enjoy it!

Snorter

Type: RC Electric

Wingspan: 42 inches

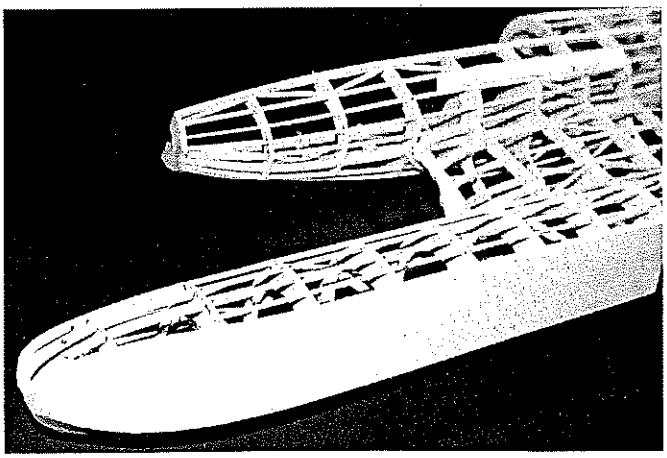
Power: Geared Speed 400 on six or seven cells

Flying weight: 15.5 ounces

Construction: Balsa and plywood

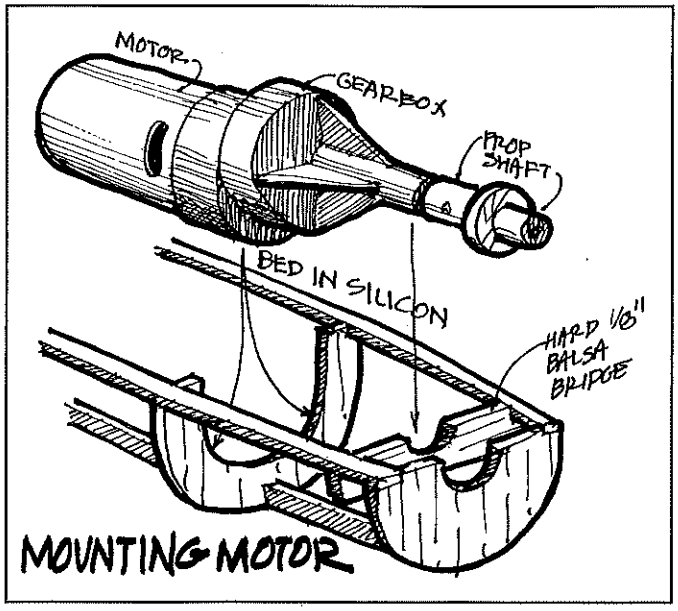
Covering/finish: Silk and modeling dope

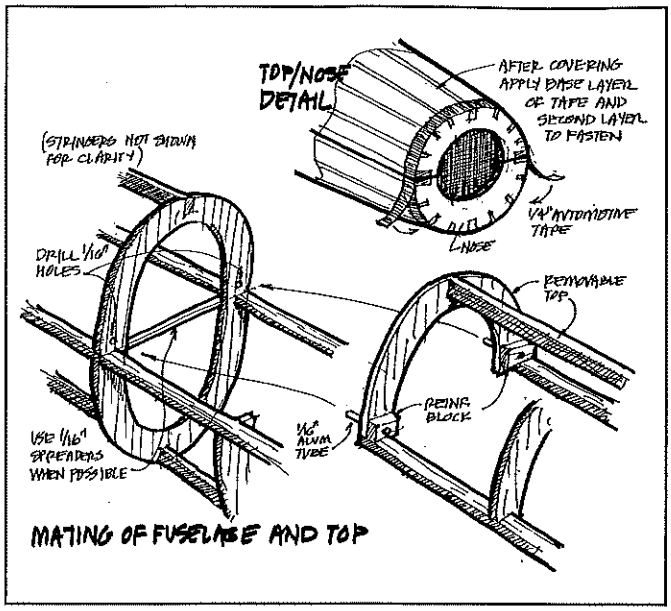
See pages 176 and 177 for Snorter plans.



The major contact area of the "slipper" float is covered with cross-grain balsa for added strength.

Drawings by John Hunton





over the rolling waves. The invaluable photograph of Dr. Hisson's island was automatically digitized and transmitted home.

"During the quick flash of vision that Bill Jr. had over the island, he realized that the mission had been a success. All manner and kinds of hardware had been exposed on the tarmac. But one thing caught his eye. In that quick glimpse, he had seen an airplane sitting on the tarmac, propellers turning. It was pointed in the direction that Bill Jr. was going. If this was the Hisson Special, it would be the only propeller-driven airplane that could catch the Snorter.

"The Hisson had originally been designed by Bill Jr.'s father as a follow-on to the Snorter, and with design input from Bill Winter, the Hisson was even faster. But the plans had been stolen. Now Bill Jr. knew who had stolen them: the sinister Dr. Hisson.

"As Bill Barnes Jr. sped from the island in the Snorter, he glanced behind briefly. A chill ran down his spine. There was the Hisson Special, in firing position, directly behind him. His mind raced, but what could he do?

"To be continued ... "

CONSTRUCTION

Looking at the Snorter's framework photos, building one might

seem daunting. However, it is similar in construction to many rubber-powered model designs and is really not that difficult to build. You can take pride in doing it yourself with this model, and the result is rewarding—especially when it comes to the fuselage. This airplane's shapes have good sculptural content. From the time you get the fuselage on wheels, you will have something nice to look at.

Looking at the photo of the frame, you will see many diagonals in it that are not shown on the plans. These temporary members are inserted to keep the frame stiff during the sanding-and-shaping process. Use them on any "floppy" part, and remove them if you want before covering. Be sure to use these diagonals on the wings and empennage to help when sanding.

Consider weight when you are selecting balsa; keep it light. The only parts that require firm wood are the ¼ x ⅛ balsa fuselage longerons and the main wing spars.

Begin construction by cutting parts with a #11 X-Acto blade. A secret to keeping the blade sharp for long periods is to be conscious of the substrate over which the pieces are being cut. I use foam-core board, which is available in retail department stores.

The fuselage and main float are built together—one side first, and then the second side onto the first side. Soak the longerons in water where they curve or split and glue before installing. Pin the top and bottom fuselage longerons in place, running uncut through the cabin area. Install the formers to the longerons, being careful to place them vertically. (A small triangle will help.) Install the side longerons, noting that the fuselage top is built with two ¼ x ⅛ longerons at the parting joint. This joint will be separated later.

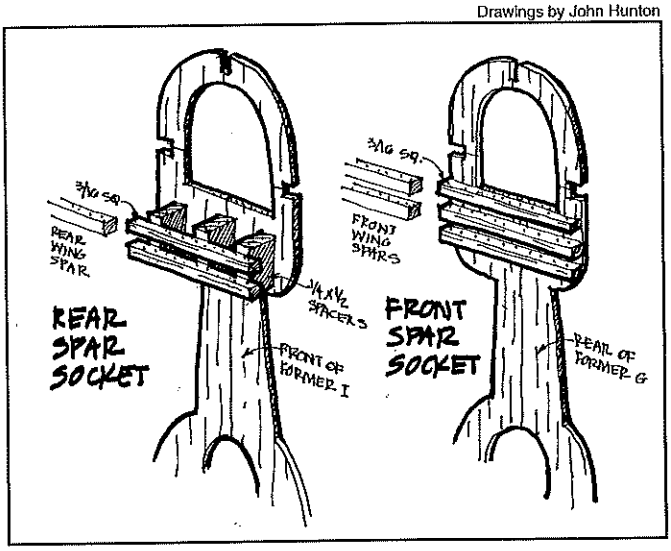
Install all stringers. Take up the first completed side and install the opposite formers and longerons, and then add the stringers. Install small 1/16 square crosspieces across any former that might need additional bracing. Sheet the bottom of the "slipper" float.

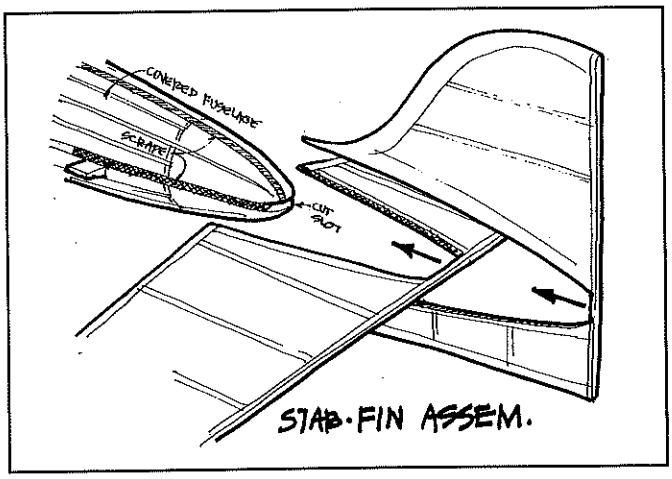
A critical part of fuselage assembly is getting the wing root ribs installed accurately. Notice the large angle of positive wing incidence at the root. Do it that way because Bill Barnes knew what he was doing. Fair in the root rib with scraps of balsa and sand smooth. All diagonal braces shown in the skeletal photos can be added now.

The remaining work will seem simpler with the fuselage framed up, but you can be extremely proud of what you have built so far, and it looks great. Be patient when sanding because having a smooth frame will produce a smooth finished surface. Use a small block with sandpaper glued onto it to even out the frame. Some modelers will want to undercut the formers between stringers, but I left all formers in the fully rounded shape.

I built the prototype without active ailerons, and it flies fine with just rudder and elevator. The wings are designed to be

Drawings by John Hunton





detached at the strut attach point. Decide now if you want ailerons or not. If you do, you may want to attach the wings permanently.

Pin the lower spars over the plans. Slip the ribs over the spar and glue them into place. Install the upper spar. It may help to cut the upper spars for the inner wing panels from sheet because of the

curvature. Dry-fit the LEs and TEs, remove them, and do most of the rough shaping on them. Glue these parts into place. After the wing assemblies are dry, sand them lightly with a large block.

Assemble the tail-piece outlines over the plans, installing the spars (harder balsa) and then the crosspieces. After the parts have dried, block-sand them smooth and flat in place on the board. Putting a radius on the edges of the tail surfaces seems to be an onerous chore. Make a small block with the proper inside radius, and work it around the edges to provide a perfectly round edge. The temporary diagonals help a great deal here.

The wing struts are made from ⅛ x ¼ firm balsa. Shape the struts to a streamlined cross-section, and then add two threads on each side, bedded into glue, for reinforcement.

Covering: After trying several covering methods on the prototype fuselage, including Japanese tissue, heat-shrink materials, etc., I settled on lightweight silk applied with Sig butyrate dope for working around this aircraft's many curves. Silk is an incredibly flexible material.

Predope the entire frame, and lightly resand it. Cut a piece of silk oversize, sprinkle it with water, redope the area, and pin the silk into place, making sure that any wrinkles around the edges are minimal. If the silk on a rib, former, or stringer will be in tension, use model cement to adhere it so it will not pull loose later. If wrinkles appear, use your covering iron to remove them.

Use 50-50 thinned dope to seal the silk, and then apply two more coats of butyrate clear. I brushed on a thinned coat of silver dope, lightly sanded the frame, and then sprayed on the final coat, keeping it light. When using butyrate dope, small wrinkles will disappear with time or they can be heat-gunned out. I covered all flying surfaces, including the large subrudder, with CoverLite applied with the Sig adhesive.

Final Assembly: Presuming that you kept the flying surfaces relatively flat during covering, now is the time to warp them. Slip the inner wing panels into the fuselage. The wing root rib at the fuselage is at approximately 4° positive incidence. Apply heat and warp the panels so that they are at roughly 2° at the end of the inner wing panel. Sight from the nose to see that both panels are equally bent.

Install the wing struts to stabilize the inner panels. Slip the outer wing panels into place, and warp the tips so that the flat bottoms are even with the fuselage centerline or at zero incidence. (The incidence reference here is to the flat bottom—not the true airfoil chord line.)

Install the empennage with reference to the wing for accurate alignment. Install the horns, hinges, sheaths, servos, and lightweight pushrods. Control-surface movement should be at approximately 20° from neutral.

Install the motor with propeller and the receiver. This leaves the battery pack—the heaviest item—remaining to finalize the balance point. Make sure that the model balances where indicated, even if you have to add ballast front or rear.

I added all trim to the prototype with a felt-tipped pen for light weight. I suggest that you do not fly the model off of water or use the tip floats.

Flying: I used a Speed 400 motor with a 4:1 gearbox and an APC 8 x 6 propeller in the prototype. With the concept that this model should fly realistically, I used a six-cell battery. Of course, using a seventh cell would add to the available power.

The prototype has been upgraded with an external-rotor motor (outrunner type) and Li-Poly cells, still driving the same propeller. Flight time is doubled and performance is increased nicely. The full-scale Bill Barnes Snorter was to be powered with two 3,000-horsepower Barnes diesels, and it had contrarotating propellers.

Since the Snorter presents an unusual countenance in the air, keep it close in until you get used to its shapes, and you will find that it is a fine model to fly. Keep speed up after hand launching until it achieves plenty of altitude. Keep a little power on for improved rudder authority on landing.

Observe how the model tracks during a straight flyby. If it yaws one way or the other, use the semifixed ailerons to counter this effect. A bit of right aileron will cause the model to yaw to the left. The opposite is true for left aileron.

I hope you enjoy the Snorter and its heritage as much as I have. This model will mean a lot to many people at the flying field and will jog many memories. Don't tell them right off what it is; let them try to guess for a while. MA

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