OSKER

The Ocopogo (Lake Monster) Meet is held every year on Lake Okanagan, in Vancouver, Canada. Of the five dozen planes which usually compete, the most popular is the Osker. / T.R. Thorburn

ABOVE: Big Osker (the 60-size version) successfully completes the author's favorite maneuver, a Slash-and-Go. (Photo by Ed Parkinson) RIGHT: Author holds the original prototype Osker. A muffled OS 40 is ample power for clean ROWs, as well as aerobatics. The short moment arm afforded by a pylon mounted engine is a definite asset in pitch maneuvers.

OSKER

Because I live in Vancouver, Canada, with the sea only a stone's throw away and many lakes resting still between the mountain peaks, I was moved to build a seaplane. That was four years and many seaplanes ago.

Difficulties always arise when I try to fill the car with picnic and camping equipment, and then try to stuff in a six-ft. seaplane wing and a five- to six-ft. fuselage. Then follows the cramped drive to the flying site. Out for a flight and. . .sploosh! Wet servos, as usual! $%&*/†! Oh well, to the beer and sunshine for the day, while everything dries out. A beer, a chair and thought. Scratch, scratch—a finger full of dandruff and a thought: receivers sealed in plastic bags inhale water because the air in the bag contracts when the bag is immersed in cold water—thus a wet goodie.*

Scratch, scratch—another thought: an upright glass will hold water, but turn it upside down and it will not. *(That's really profound thinking. It must have been the beer—Editor.)* To date, all high-wing seaplanes use an upper access hatch to the radio compartment—the upright glass. An inverted glass, if used, would have to be held above the water. This would eliminate direct contact with cold water temperatures, thus reducing any water inhalation which may occur. Now, to keep the radio dry, we may as well put a lid on our inverted glass (the radio compartment) to prevent any splashing.

Scratch, scratch, flick—another blob of dandruff lost in the sand. How can I put the radio together, so that there are no extension plugs and only one radio compartment? Let's see—motor on wing, ailerons on wing, elevator on. . . wing? Rudder on. . .wing? Ah! The whole radio in an inverted glass on the wing. Now what do we land on: a ski or a float? As usual, a float. Motor on a wing, wing on a glass, glass on a float, with the radio under glass—you're crazy! Let's try it.

The result of those misguided thoughts was Osker, my mid-sized seaplane. The desire was for a 35-45 size aircraft that would fit on the back seat of my car. Simplicity of construction and economy were considered, since sea birds eat a lot of green stuff.

Osker has a 56-in. span with a ten-in. chord. I was also after some performance, so I wanted the aircraft to be as neutrally stable as possible. This led me to the symmetrical wing with no dihedral. The angular difference is 0°-0°. However, with the high thrust line, I knew some up thrust would be required. How much was uncertain, so I made it adjustable—this was accomplished by an adjustable engine pod.

With these thoughts fabricated, I went to the seaside and gave Osker a try. What a shock! I did not bother checking the balance and I started off with 3° up thrust. Osker took off in five ft., jumped up eight ft., down five ft., up ten and down four. After two min. of this, I managed to flop her on the water. Balancing was achieved with nose weight and a few flights later, 1½° was found to be the best thrust angle. Now she will do double stall turns, inside and outside loops, etc. Now, if you are interested, take a clean swipe over your workbench and let's go!

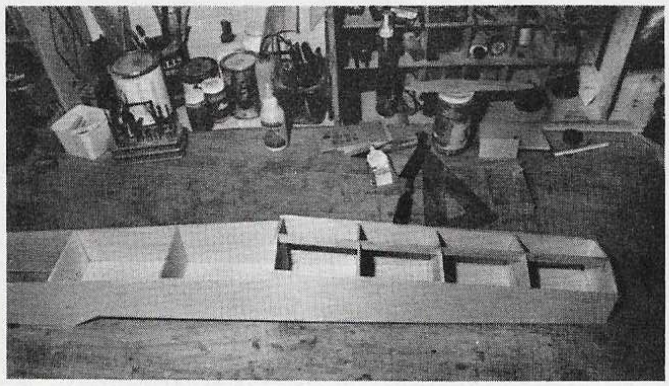
CONSTRUCTION

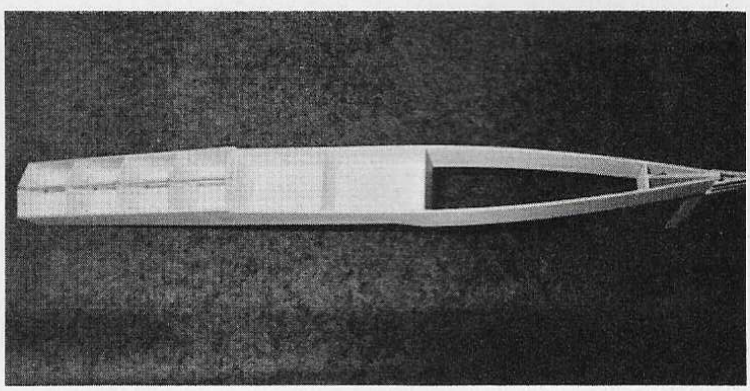
Start construction by cutting out the sides of the hull from 1/8 x 4 x 48" medium weight balsa. The widest bulkheads in the hull utilize four-in. wide stock. The top keel is 1/8 x 4" stock. Cut the front bulkheads to size, and the top keel to length. Assemble the bulkheads and the keel on the fuselage sides upside down, checking for alignment. Put the center keel in the front. Sand the front hull to correct profile, and plank the bottom. Lift the hull from the board and install the sub-rudder; then finish the rear with cross planking. Put the one-in. sq. stock on the top front, sand flush when dry, and then cross plank the top bow. Carve and glue the nose block. This gives you the basic hull, with minor finishing details to be completed later.

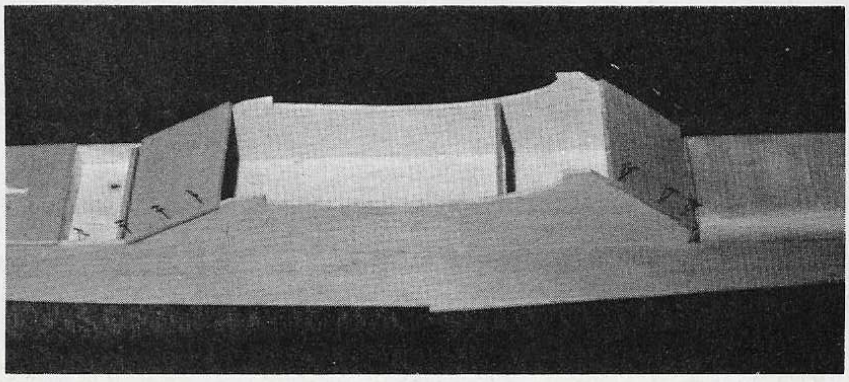
Now, on the top of the hull, build the (glass) cockpit or cabin assembly. Do not glue this assembly to the hull. At the same time, build the rest of the tail assembly. Cut the sides of the cabin and install the doublers and triangular stock in the four corners. Dry pin the cabin sides in position on the fuselage. Now cut and glue on the front and rear window pieces. Let dry, then remove the cabin. Now turn it over, and finish the wing with dowels and bolts. Check the cabin fit as you go. Cut and sand the tail surfaces, and mount as shown on the plans. Now the fuselage and tail assembly is finished.

Wing: The original has a built-up wing, but the aircraft has been built and flown with a foam wing. If you wish to

* *Although this thinking may, at first, appear logical, a more reasonable explanation would be that it is not the contraction, specifically, that causes the condensation. Rather, it is the cooling effect on a hermetically sealed bladder. A bag sealed at building room temperature will condensate when the volume of air is compressed, either by lowering the temperature (a cold lake bath), or by changing the barometric pressure. The latter can occur just by flying at high altitudes. Usually, this effect is not significant enough to cause radio problems, unless you seal your radio initially in a very humid and hot basement. More probably, the bag isn't sealed properly, and allows outside H_20 to seep in. The model shown here has an air vent (the antenna tube), which maintains pressure and temperature stability.—php*







ABOVE: The hull builds upside down on the bench. Bulkheads, top and bottom keels allow a properly aligned box-like structure. ABOVE RIGHT: Fuselage builds quickly, since there are no slow-downs for linkages, tank and radio installation. An hour of work to this point (if you're slow). RIGHT: Cabin compartment is a simple shell. Fit it, but don't glue it to the fuselage —it's later integrated as part of the wing assembly.

use foam, use a bottom hardwood (spruce) spar, at least two ft. long through the center section of the wing. The built-up wing has the hardwood spar doubler. A top spar is not necessary, since all top sheeting is continuous. This is not true of the bottom, where holes have to be chewed in the wing to accommodate the radio.

For the built-up wing, use 1/4 x 1/4 x 48" spars (two top and two bottom). To achieve the full span, slide two spars along each other and mark their overlap. Check for warps and glue together. (Do not worry about the 1/4 x 1/4" tip spar, unless you wish to build it up to 1/4 x 1/2" for convenience.) This spar system is handy, as it doubles the strength in the center, where it is stressed the most. Make a rib template, and cut the number of ribs required, or cut the foam cores. Do not forget the center 3/16" ribs next to the cabin. Now glue the 1/2 x 1/8" hardwood doubler to the bottom spar. Construct the rear spar in a similar fashion. Take a deep breath, and slide the spars into position in the cabin. Then slide the ribs into place. Build this dry or wet, as you wish. I found it was easiest to do the cabin and the base ribs wet, with the rest dry and pinned in position.

Next comes the important part. While this is drying, again sweep your messed-up bench clear. Place the wing and cabin upright on the bench, and weight the cabin down. Then provide supports and weights at four points (tips and half-span) on each wing panel, center spar and rear spar. Do the same to both sides. Also check to see if you aren't making an anhedralled seagull out of an Osker. To check warps, stand back from this plucked pigeon with its wings in traction, and visually align the front and rear spars. The wing alignment will be true when the visual space between the top or bottom main spar closes simultaneously with the rear spar, as you slowly raise and lower your eye level. When this is set true and straight, then sheet and cap strip the top of the wing without moving it. Repeat the process with the propping, only this time with the cabin upside down. Sheet and cap strip the bottom of the wing. Now you can add the 1/4" sheet tip ribs. Install the aileron horns. Close the gap between the wing sheeting and the rear window with 3/16" scraps.

At about this stage, you could add the radio and paint, giving you a sailplane for the lake; but I believe that castor oil helps waterproof Osker's coat.

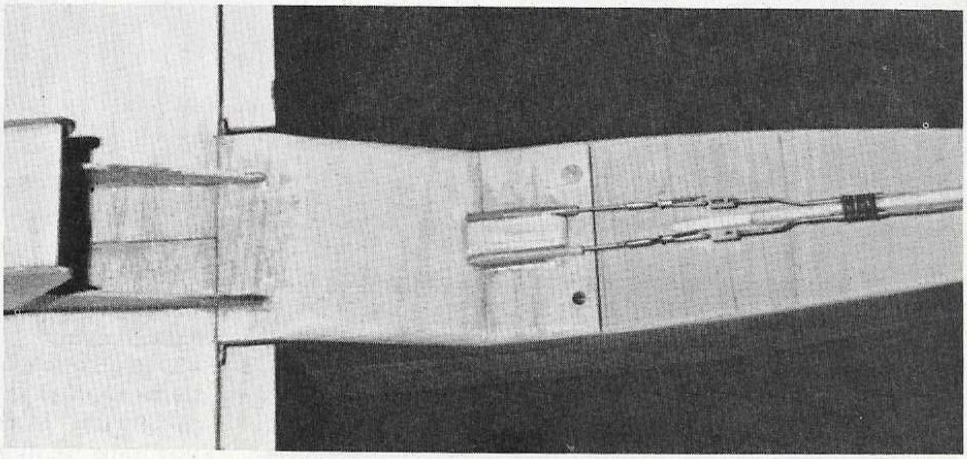
Cut the engine nacelle parts from 1/8" plywood. Use epoxy to assemble these parts. Mount the vertical nacelle fins on the wing with epoxy. Let dry, then build a solid epoxy putty fillet along these units to increase the strength. After all this is dry, drill the units and mount the nacelle. Assemble the parts and you have the basic woodwork completed. To finish the hull, put the chines on the hull, and fiberglass the front portion of the hull only.

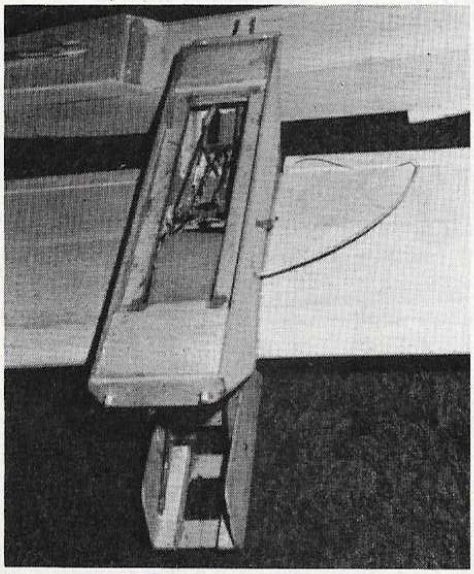
Now to the finish. I do not believe in playing flying saucers with fine china or vintage pewter, but rather in flying functional aircraft. My best finish is developed with two to four coats of clear and two to four coats of color—all sprayed on. Finish as you like, but keep in mind waterproofing. For example, I spray painted my wing twice before covering.

Install your radio and hook up your servos, using short lengths of copper tube and 1/16" wire, or nyrod pieces with wire stiffeners inserted. Use nyrod to connect the switch, and a six-in. length of inside nyrod for the antenna outlet, mounted tight under the wing. The only different detail is the rudder and elevator connections; I used nylon clevices on the servo end and 3/32" copper tube, with one end flattened, on the surfaces. Mount your engine, balance and head for the blue water!

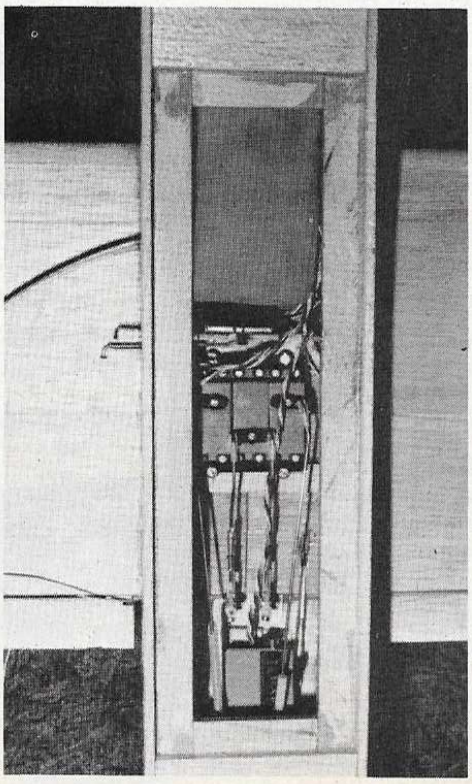
Text continues on page 94
Plans on following page

AAM Sudden Plan Service also has available a full-size plan for the 60-powered version of the Osker. See the Plan Service page for details.

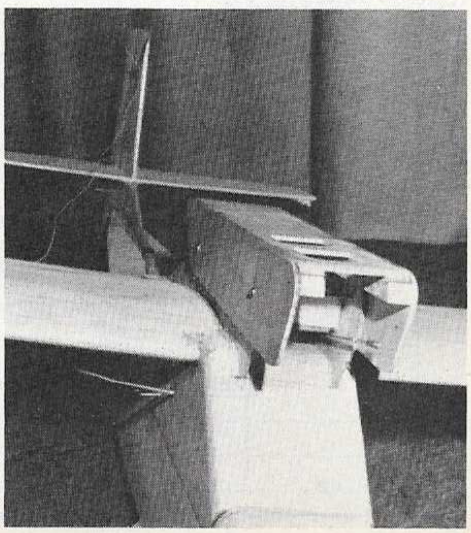




ABOVE & RIGHT: Just like a waterbed, the radio bay keeps the gear comfortable, yet dry. Principle is the same as hydro-boaters use. The radio is sealed in a waterproof box. A gasket of silicone adhesive is laid in around the edges; then a 1/8" plexiglass plate seals the compartment. Radio under glass.



ABOVE: Pushrods are music wire through Nyrod sheaths. Clevis connections are accomplished by snapping a Kwik-Link into a modified nylon clevis. The nylon clevis has the pin arm removed. From clevis to tail, straight music wires are supported, a la Ukie, by pushrod guides affixed to the vertical fin. BELOW: Detail shot of the engine nacelle. Note the throttle clevis installation. Lots of plywood, epoxy and Epoxolite needed here for strength and rigidity.



OSKER

(Continued from page 27)

FLYING

On your first run, do low speed taxis. Occasionally get up on the step and do high speed taxis to get used to the water handling characteristics. Now, if you are as itchy as I usually am (there is a limit to a man's patience: about 1/4 tank!), push the throttle lever. Pull the stick back until she is on the step, then back to neutral. Hang on as speed builds up, and then lift her off. If you are interested in a larger aircraft, then add 10% to all dimensions, except the hull width, and you will have a 60-sized machine.

I have built several of the larger version, and they are really outstanding performers. There are more of the "stretched" versions being flown in our club, than the original 40 size (probably because there are more 60s in our group).

Good luck and Happy Splash-and-Go!