BY A. G. LENNON

The OSPREY

The Osprey is all set to fly. It is an easily flown sport model, with interchangeable wheeled landing gear or floats.

This model was designed from the start as a sturdy, easily flown sport model, with interchangeable wheeled landing gear or floats, the latter designed specifically for the Osprey.

It was originally powered by an O.S. Max .45 FSR engine with a Davis diesel head and was flown for two years with this power. However, due to the very dirty, black exhaust residue, use of this diesel conversion has been stopped. Experience with another model powered by the O.S. Max .46SF, swinging an 11x8 prop, is convincing proof that this engine is ideal for the Osprey. The drawings show this engine, along with an 8-ounce fuel tank. A 3/4-inch Fox shaft extension permits better cowl streamlining.

Features of the Osprey include:

- Ducted, easily removed and low drag cowling.
- NASA droop and RAO slots ahead of the ailerons that permit very high, unstalled angles of attack, with effective aileron control for slow flight.
- Big, slotted flaps that virtually double the wing's lifting capacity. Together with the droop and slots, these permit slow, steep approaches and landings, and quicker takeoffs.
- Ailerons have a 2:1 differential, and have no adverse yaw!
- The floats run with spray well controlled due to the "chine flair" shown on the drawing. The twin water rudders provide excellent low speed control on the water.

Flying this model is a pleasure. It is stable, easily flown, adequately aerobatic, and is capable of a wide range of air speeds. The model has low aerodynamic drag and a very flat glide, so much so that full flaps are recommended for shorter landings, and half deployed for quicker, steeper takeoffs.

For engine starting, it is recommended that the model be inverted on your field box, thus turning the engine upright, for priming and easier starting. Use of a ball check valve in the pressure line to the tank is needed to prevent fuel flowing from the tank to the muffler when inverted. This valve is made from a two-piece aluminum in-line filter, with a 1/8-inch diameter ball bearing installed inside so that when the model is upright, the ball sits on the screen. When inverted, the ball falls away from the screen into the conical cavity and effectively seals it off. The ball valve should be positioned as close to vertical as possible.

Building this model is not difficult; the drawings are very detailed and the following is the assembly sequence for each major component.

WINGS

Assemble the flaps first. The flap pivot

arms will locate the flap support ribs of the wing. **Do not** drill the pivot holes in the arms.

The location of the flap support arms on ribs C and E is critical to properly locate the pivot hole for correct flap operations (see wing section EE). A jig for this assembly is recommended.

Cement cable sheaths to ribs A-D-G and short ribs F1 and F2 to rib F, and short ribs K to rib G. Those for installation alongside rib A will be installed during wing assembly.

One of the photos illustrates the wing assembly jig; 3/16-inch sq. balsa rails under the wing spars are used. The bases are pressed wood shelving, which are both rigid and straight. Note that the rails under the rear spar are close to the shelf edges, permitting the flap support ribs to hang out in space.

Assembly of ribs, spars and webs is straight forward. Install the cable sheaths at this point. These may be bent carefully, over a candle flame, before installation. Glue them securely in the sheath anchors and the ribs through which they pass.

Apply the balsa skins. Use of liquid ammonia on the convex side of the leading edge skins will aid this installation. Keep the wing's panels weighted down at all times during this process to assure a straight wing.

Aileron assembly is straight forward. When wings, flaps and ailerons have been assembled, install the flaps using the balsa alignment jigs shown in wing section FF to accurately locate them. Drill 3/32-inch diameter holes in the flap pivot ribs using the holes in the flap supports as drill jigs. Subsequently enlarge these to 1/8-inch diameter and install 1/8-inch O.D.x3/32-inch long brass tube bushings. The pivots are 3/32-inch diameter music wire, 7/32-inch long, and are inserted after covering the wing, flaps and ailerons. Check that the flaps operate freely, as shown in section EE.

FUSELAGE

Assemble the two sides, right and left, adding rails, uprights, doublers, servo supports, longerons, diagonals and 1/8-inch balsa corner strips behind the wing; add 1/8-inch balsa sheet from ahead of bulkhead #8 to the fin spar. Note, the cut out for the stabilizer and the cross-hatched 1/8-inch balsa sheet behind the stabilizer. This is cut out to install the horizontal tailplane and is then cemented back in place.

Using a fuselage jig, assemble the two sides, installing the cross pieces, top and bottom, and plywood bracing where indicated, the 1/8-inch balsa upper and lower corners, and bulkhead #8. Bulkhead #8 should be a subassembly with the tailwheel strut and linkage installed before fuselage assembly is started.

Add the plywood bulkhead #1, tank mount plywood, and receiver/battery box cover. Install the receiver and run the antenna down the fuselage, ready for installation in the fin.

Install cable sheaths for the rudder and elevators. Note that the cable is **without** sheathing at bulkhead #8, between the rudder cable sheath anchors. Glue the sheaths to anchors and other bulkheads.

Install the water rudder cable sheath anchors, which are designed to clamp on the sheaths, yet permit the sheaths to be withdrawn if floats are not installed.

The floats were designed specifically for the Osprey, with Sullivan cable linkage to the water rudders.

The Osprey has just landed.

HORIZONTAL TAILPLANE

Assemble the stabilizer and both elevators. Connect the elevators with the horn and 3/32-inch diameter music wire. Install double Monokote elevator hinges. Cover the assembly, install block tips and balance weights, but leave an area, both top and bottom, bare for cementing the tail to the fuselage. Attach clevis and cable to elevator horn and thread cable into sheath while inserting tailplane into its slot in the fuselage. Replace cross-hatched portions previously cut out; cement securely.

FIN

This is built on the fuselage. Before adding second skin, pull the antenna up through the holes provided, and anchor it with thread to the hole in the block tip. Add second skin.

RUDDER

This is a simple assembly, and is hinged to the fin during the covering process. Note the small block, below the plywood horn, that permits radiusing of the rudder bottom to conform to that of the fuselage.

FLOATS

Assemble bulkheads 4 and 5, the 1/4-inch plywood pads and triangular stock; and bulkheads 7 and 8, plywood pads and triangular stock as subassemblies.

Assemble bulkheads and sides in a fuselage jig, for accurate alignment. Add top 3/32-inch balsa sheet, 1/4-inch sq. balsa strips at chines, and forebody and afterbody keels. The drawings show the upper corner treatment clearly. Bolt float struts and spreaders in place, joining the floats before adding bottom sheeting and forebody chine flair strips. The water rudder cable sheaths should also be installed before bottom sheeting. Add nose and rear blocks.

COWLING

The drawings are explicit. Note that the lower detachable portion of the cowl is installed by sliding it **sideways from the muffler** side so as to engage the flat holddowns. The front holddown should be well into the slot in the 1/32-inch plywood cowl parting line formers when so doing.

When upper and lower cowl portions have been assembled from 1/2-inch balsa and triangular stock, the interior should be hollowed out to fit the engine and muffler installation. A drum sander and a Dremel tool will do this quickly and dustily. Adjust the cowl length to suit your installation, allowing a 1/16-inch gap between the spinner backplate and the plywood spinner ring/cooling air entry subassembly. The outside of the cowl is shaped to blend in with the spinner, fuselage and canopy.

CONTROLS/ INSTALLATION

The drawings show the six servo locations, receiver and battery locations and

switch installation. All control cables have the DuBro mini-link clevises glued with CA to the cable at the control surface ends. At the servo ends, the cable is likewise glued into the brass threaded couplings onto which the clevises are threaded. Control throws and trim adjustments are made at the servos.

The water and air rudder servos are "Y" connected to the receiver. Note the water rudder cable crossover (L.H. rudder connected to R.H. side of water rudder, servo, horn and vice versa), which permits the air and water rudders to act in the same direction.

Note also the aileron "double decker" horns that provide for a 2:1 aileron differential.

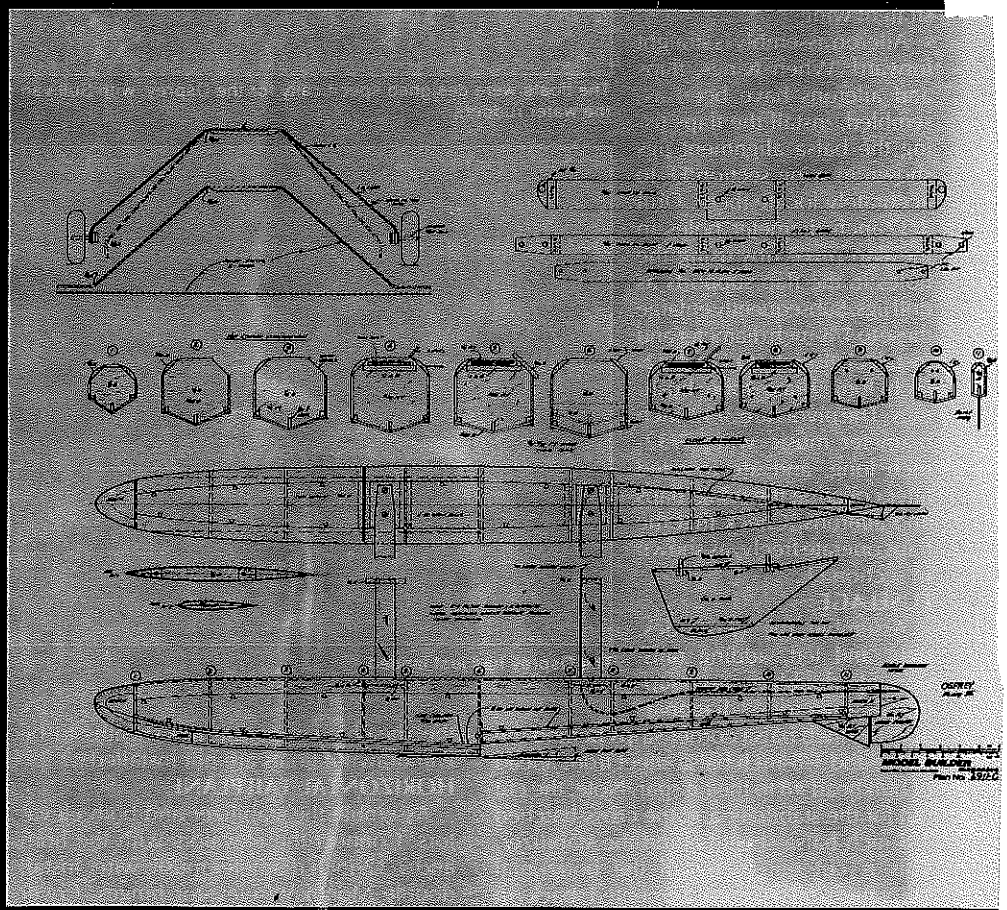
If floats are to be used, wrap the receiver and battery in plastic bags before installation, for obvious reasons.

COVERING

This model was covered with Monokote. Use your favorite plastic covering, but on the floats insure a 1/4-inch overlap and that *no bare balsa* is exposed. Balsa is porous and water will penetrate it as though it was not there. That's "hard experience" talking.

Hinging with double Monokote is used on ailerons, elevators, rudder and water rudders. This is flexible, gap sealing hinging that the writer has used successfully for many years.

Good luck. Enjoy this model; flaps will open up a new flying experience for you. ***MB***



The slotted flap underside is fully deployed showing hinges and clevis.

6911 3 of 3