SEAGULL

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I cannot remember for certain whether aeroplanes or boats were my first love, but I was building models of both in the late 20's. I have vivid memories of the Ideal Fokker trimotor, built up with hardwood spars, split bamboo wing ribs, reed tips, and a heavy basswood prop driven by umteen strands of flat rubber. Although I wanted to simulate Byrd, I never had the courage to attempt to fly the machine over even the smallest pond. But the yearning persisted and blossomed into premature flower during the WW II years in the form of control line canard seaplanes powered by Ohlsen 19's, all much too heavily built to fly well.

The breakthrough came in 1964 in Wilmington, Del. when I met Bill Northrop and radio control. This immediately regenerated the urge to fly something off water, and resulted in plans for a Tri-Squire, modified to fly off a single G-B float, even before I had become proficient in flying off the ground with reeds. It is interesting to note that the servos in that reed system were connected to the receiver with circuits pinched from some guy named George Wilson, who lived in Massachusetts somewhere, but whom I'd never met.

The modified Tri-Squire never materialized because I moved to New England, but I did build an .020-powered canard ship scaled down from the twenty year old ukie plans. It flew acceptably with an Adams actuator . . . on hand launch only. While I liked the simplicity of the small, under 20 ounce planes (Dick Jansson would claim shortly that they would fly only in a "negative wind" condition), I wanted something that would handle as well on water as in the air, and that meant motor and elevator control in addition to rubber.

About this time I met the George Wilson I'd heard about before and his friend Charlie French, both of whom were happily flying Sea Cats. I didn't like the looks of the Sea Cats, but I did admire their capabilities, both on the water and in the air. As a result I designed and built the Seagull's first predecessor, using Wilson's high-step concept, fiberglass hull and conventional balsa and wood wing. Unfortunately, the nose was too short and the ship buried when power was applied for takeoff. With a new nose and a .30 it just wouldn't lift off the water, but it would get up with a .45. It would also come down too, rather hard, so we salvaged the engine, built a new hull, added about a foot to the center section of the wing and came up with the prototype of the Seagull.

It is not a fast ship. It isn't supposed to be, because I cannot fly a bomb. It is able on the water, if given full up elevator while taxiing.. The tail should be held up, off the water, during takeoff. There is no need for up elevator until she breaks free, and not much is needed then. Torque effects are marked during takeoff. The left wing will drop and catch a tip float unless enough right rudder (and aileron) is held until flying speed is gained. Indeed, I've been wondering about the necessity of tip floats in a ship of this design, for I've found out that she will taxi and take off without them. The wind itself acts as a float, but it does look awkward on the water, something like a duck with a broken wing, until you give her power and off she goes. *(Art Snyder's "Lake Elsinore Garbage Scow," described and pictured in the September '72 issue of MB, operates in this manner. WCN)*

CONSTRUCTION

The original Seagull had a fiberglass hull, vertical fin, and motor pylon. It also had an all flying stab. A special hinge/control-linkage-mechanism allowed the stabilizer halves to be unplugged for transportation.

To make Seagull more simple to duplicate, the fiberglass sections have been redesigned in balsa and a conventional stabilizer/elevator has been substituted. Otherwise, the plans faithfully duplicate the original.

We are assuming that this is not your first model in the description that follows. Seagull is a docile bird in the air, not a difficult building project. But, it is not recommended for beginners. You will probably want to use your own ideas in many places. The choice of hardware has been left to the builder in most cases.

Before you start construction it may be well to check the section on finishing and waterproofing. Keep these elements in mind as you build.

HULL

The hull is in three parts: (1) the main section below the wing mount and turtle back, (2) the turtle back and, (3) the wing mount.

MAIN SECTION OF THE HULL

1. Build the center keel over the heavy dashed lines on the plan. The fore-keel extends from Station (Sta.) 1 to Sta. 9; the aft-keel and water fin from Sta. 8 to Sta. 16; the top-center stringer from Sta. 9 to Sta. 16; and former F-1 completes the main keel.
2. Add the left side of the bulkheads.
3. Add the landing gear support and then the left side covering. Note the splice lines on the plan.
4. Remove the left side from the plan and add the right side of the bulkheads.
5. Add the right landing gear support and side covering. Make sure the keel is straight as you add the covering. Building with the hull inverted and pinned down is recommended.
6. Add the aft-bottom planking extending from Sta. 6 to Sta. 16.
7. Add the step riser and then the fore-bottom planking.
8. Add the framing around the front hatch and the hatch floor. Framing may be added around the opening under the wing mount if you plan to make a waterproof hatch under the wing. (Refer back to the Seahorse II, May '72 MB, for more detail on this.)
9. Add the top of bulkheads 1 thru 5. Note that 1A thru 4A are only tack-cemented since they will be cut loose later to form the hatch.
10. Add the stringers and top covering from Sta. 1 to Sta. 6, bearing in mind the places that will be cut away later to free the hatch.
11. Use a razor saw to cut the top sheeting between 1 and 1A and 4A and 4B.
12. Add the nose block, shape it and sand it as you sand the hull itself.
13. Add the windshield: Either clear plastic or fill-in with blocks.

TURTLE BACK AND FIN

1. From Sta. 9C to Sta. 16, the turtle back and fin is built like the hull, over a center keel. Construct the keel using the heavy lines to determine the outlines and splices.
2. Add the left bulkhead halves then cement this assembly to the top of the main hull.

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3. Add the right bulkhead halves and the stringers.
4. Install the rudder and elevator control linkage at this time. A short length of Nyrod where the rudder linkage goes through the hull will serve as a water seal. Nyrod can also be used to conduct the elevator motion in the path shown on the plan.
5. Add the top and fin covering.

WING MOUNT

This unit will become part of the wing and may be attached using nylon screws, or rubber bands and dowels.

1. Add formers 6A thru 9B and the framing under the wing. Tack-cement this assembly to the main hull since it will be removed later.
2. Tack-cement the balsa block behind 6B and add the top covering from the block to 9B.
3. Shape and sand the mount to fair with the main hull and the turtle back.

Mounting the wing to this section is described in the following part of these instructions.

WING

The wing construction is a conventional four-spar arrangement. Washout by following these steps:

1. Build the bottom sheeting over the plan.
2. Add the bottom spars and ribs. Don't forget the dihedral and pylon spacing for the central rib. Glue the ribs to the sheeting near the leading edge by sliding slivers of balsa under the sheeting, forcing it up against the ribs.
3. Add the sub-leading edge and the piece to which the aileron will mount.
4. Add the aileron linkage and holes for the tip float dowels.
5. Add the dihedral braces, trimming away the ribs as necessary. Don't forget this step; we had to add them later, on one wing, by making slots in top covering . . . came out O.K., but took a lot of tongue biting.
6. Add the washout by unpinning as necessary the tapered part of the wing and lifting the rear tip until the tip of the rear spar is 1/4 inch off the plan. Make sure the portion near the leading edge, and all of the center wing section (untapered part) is down tight on the plan. Add a block or two under the trailing edge and pin them in place. Note: If you are guilding the wing without ailerons, lift the rear wing tip 3/8 in. off the plan and procede as above.
7. Now, add the top sheeting and your washout will be built in to stay.
8. Sand the tip flat and add the tip covering.
9. Build the second wing half similar (but opposite hand, please!) to the first but add the first half to the second at step five. This will automatically establish the dihedral.
10. Shape the pylon support and build the motor mount and tank structure onto it. Omit the 1/8 balsa pylon support outer covering until the pylon is mounted on the wing.
11. Cement the pylon into the wing and add 1/8 balsa sheeting each side of the pylon support, fitting it to the wing carefully.
12. Build the ailerons.
13. Fit the wing to the hull by removing the balsa block at the front of the wing mount.
14. Cut away the top covering of the hull at bulkhead 8P to fit the wing and pylon. The framing under the wing must be trimmed to the dihedral angle.
15. Cut away the balsa block as necessary and glue the wing in place.

TAIL

The stabilizer may be permanently cemented to the vertical fin or attached with nylon screws and blind nuts. We prefer the latter; it takes a pretty rough landing or moderate "crash" to do much to a T-tail.

The elevator control horn assembly is a standard U-control elevator horn. Add the top section of the vertical fin after the elevator control linkage is adjusted and working freely.

The stabilizer, elevator and rudder are of obvious construction and need no comment. Hinging is up to the builder; there are many fine hinges available from your hobby shop.

TIP FLOATS

The tip floats are built like the hull, using a center keel with bulkhead halves attached to each side. Wet the balsa sheeting if necessary when covering the floats. The mounting plate angle should match the dihedral angle or be slightly less . . . the tip floats can splay outward a degree or two to help on wing-down landings. Use plenty of elastic to hold the floats on; they take a fair beating and should be quite rigid.

LAND GEAR

The land gear is of 1/8 music wire and may be omitted if you are a truly nautical type (land flying has been the ruin of many a flying boat). The gear plugs into brass tubes that go all the way through the hull.

Bind and solder hooks on each half of the gear and connect the two sides with a few strands of rubber. This may not be beautiful but it does hold the gear in place nicely and adds some spring to the gear.

FINISHING AND WATER PROOFING

The inside of a seaplane should be water proofed as you go along, with a coat of dope (2 parts dope to 1 of thinner) or eposy (1 part Hobby Poxy II to 1 part thinner).

We still prefer silk and dope for seaplane covering, though Monokote should certainly do the job. If you go that route, be very sure that all joints in the film are water-tight.

The fore-bottom of the hull may be fiberglassed. We use silk. Experience says that fiberglassing adds little but weight. If you hit hard, the bottom breaks . . . fiberglass or no fiberglass.

A water-proof hatch under the wing is the ideal way to keep water out of the hull. In this case, the whole hull becomes a waterproof container. If the wing is knocked off, the servo plugs come apart and the hull floats away from the wing. If the wing servos are in waterproof compartments, you can be back in the air as soon as the epoxy hardens.

The hatch and wing mount (plus the hatch under the wing mount if you use one) are water-sealed using a strip of closed-cell sponge rubber, the kind that doesn't dissolve in oil. Some Scuba Diving shops handle this material in 1/8 inch sheets. It's used to repair wet suits. The pressure of the screws or rubber bands will make a good seal.

CONCLUSION

Seagull is a magnificent bird! We have watched many seaplanes perform and Neil has to get top credit for this one. It's up on the step about as soon as you apply full power, and it's in the air fifty feet later. A tendency to tip stall has been counteracted by washout. This was proven in the original by reworking the ailerons. Better aileron control has also been added by suggesting less dihedral if ailerons are used, and, by increasing the area of the ailerons.

Build your Seagull light. The original weights are shown on the plan, but it should be possible to build a Seagull that weighs less without cutting into the strength members.

Good Luck, and as Neil would say: "Happy Landings!"●

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