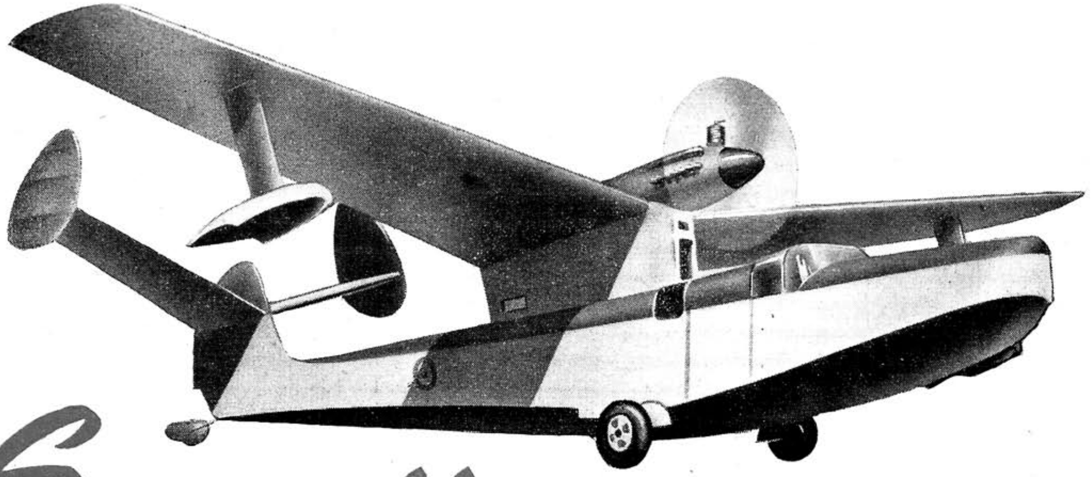

Seagull

BY M. W. PAYNE

WITH a speed range of 54 to 260 m.p.h., or roughly 5 : 1, the *Seagull* suggested itself as a very promising flying scale model. It was designed towards the end of the war to replace the *Sea Otter* on A.S.R. duties, but the new design was a great improvement over any previous amphibians. The *Seagull* has variable incidence wings (which were developed earlier in the experimental Dumbo by Supermarines), which, with full span slots and flaps, a retracting tail wheel cum water rudder, and generally clean lines, including a long planing bottom accounts for its wide speed range. The Griffon power plant and its contra-propellers, identical to those of the *Spitfire* 21-24, accounts for the exceptional top speed of 260 m.p.h.

As a subject for modelling, the *Seagull* is almost ideal. Its clean lines, large area, high wing and ample rudder area together with its high thrust line contribute to produce a most realistic, safe and strong model. As planned, the model is very strong. It breaks down into six units for portability, and each unit is in itself as strong as is possible. A few large structural members in the right places are worth double their weight of weak detail construction. In its high position, protected by a long nose, the propeller is indeed hard to break, and the high thrust line simplifies adjustments. The high wing enables scale dihedral angles to be used, and the wing itself is unlikely to suffer damage, while the floats knock off.

The entire model weighs 26 oz., of which 2 oz. only is dope, so the effort is well worth expending on a good finish, particularly on the undersides if water flying is contemplated. The wing loading is moderate and the glide is stable and of average speed. The long nose prevents nosing over (flying boat hulls have their uses even over tufty grass !) and a wire skid may be let into the forward $\frac{1}{8}$th keel if flying from or near runways. The wing is rigged at a slightly negative angle of incidence, and the tail even more so, which results in a nose-high glide giving a resemblance to the " set " of the real aircraft in the air.

Hull Construction

Lay out on the plan the assembled keel, pin down the top longeron aft of the cockpit and cement the port half-formers. When dry, add starboard halves and true up. Add the ply facings to F5, having pre-drilled the undercarriage binding holes, and then the chine longerons. These may have to be steamed, especially towards the bow. Do not add rear under-stringers until after planking. Use plenty of cement on the forward keel/frame joints. Cement F 11 and F 12 to keel, and assemble the tail pylon " off the plan," checking it over side view before cement is quite dry. Now solder the main undercarriage wire lengths together and wire the unit to F 5 (rear) with plenty of 10 amp. fuse wire, and solder this lightly to prevent the undercarriage from sliding to and fro. The tail wheel wire legs are next cemented firmly in the " V's " formed by keel and chine longerons, and the water rudder built up around it with 3/32 in. laminations. The hull may now be planked with $\frac{1}{16}$ in. sheet using large sections for sides and top panels which are flat. The tail pylon is also planked, but forward of F 11 is tissue covered. Care is needed when planking the underside of the bow. Use narrow planks and fair off the bow with blocks above and below the section of vertical planking in front of F 1. Now slide the wing tongue down F 6 and thread the centre-section ribs of hard $\frac{1}{8}$ in. along it until they pick up with the extrusions on F 6 and F 7. The angle of incidence is thus automatically built-in and care should be taken to ensure good fits, and to use plenty of cement. Join up the L.E. and T.E. of the ribs and sheet cover the centre section over the ribs. Cut the sheet pylon sides longer than necessary and obtain a good fit top and bottom by trial and error. Then trim for length, noting the slope of the rear edge and the flush fit on the sides of F 5. Window holes should be cut before fixing, and thin acetate sheet cemented inside for windows. Curve and fit the block radiator intake as in the diagram and sand smooth with the face of the sheet sides. Cut out the rear cabin windows in the hull and cement acetate sheet inside.

Trim up the cockpit outline and build up the frame of 1 mm. ply and scrap balsa, and cover with small panels of acetate sheet. Now cut and fix engine bearers and circular front former to F 5 using large gussets behind *only*. Build in slight right sidethrust and slight downthrust from datum line. The hollowed block under the bearers stiffens up the assembly and the finished engine mount is very strong. A removable cowling is built of $\frac{1}{16}$ in. sheet and trimmed off to fit around the engine. (N.B. The cut-out was removed from my Amco 87 and the vent pipe plugged, to assist cowling clearance.) Add more cement to bearer/F 5 joints and plank over the top of centre section engine cowling. A $1\frac{3}{4}$ in. screw-on plastic spinner fits snugly, and although the real aircraft has contra-propellers, and a longer spinner, the general effect of the model assembly is quite reasonable.

Tail Surfaces

These are quite orthodox. First assemble the spars on the dihedral braces. The angle may appear excessive but is true to scale. Thread on the ribs and build each side of the elvators flat on the board. The central fin, with its aluminium hinged rudder, takes the place of part of the centre rib, and picks up directly with the base which in turn sits on top of the tail pylon and is held by rubber bands over dowels shown on the plan. Gusset the spars to their correct position on the base, and cover the top surface of the L.E., and around the central fin with 1/32 in. sheet, and cap all ribs top and bottom. Note that the spars are over-length and engage in holes in the structure of the endplate fins. Note also that these fins have flat inner surfaces and cambered outer surfaces, both to facilitate assembly and covering, and because the effect of toed out fins seems to confer added stability.

Wings

The main wing spars are so located that a 3 in. wide sheet of 1/32 in. will comfortably cover from the L.E. to the top spar. Ribs 4-8 may be hollowed. All ribs are capped on top and the panel between ribs 1 and 2 is sheet covered after the boxes have been built in. Wedge or pin (or both) the wings against the centre section to the correct dihedral angle, and build the boxes tightly around the tongues packing them up and down to the spars with webs so that the spars take loads directly, and not only through the ribs. The wings should have $\frac{3}{16}$ in. washout at the T.E. tip. Fix and pin in place permanently, some neoprene tubing against rib 10 and the spar face, and gusset well top and bottom with large pieces of $\frac{1}{8}$ in. sheet. These are important as they absorb all the blows from the top corners of the float struts. The pegs in the spar for rubber band fixings should be well bedded in and project about $\frac{3}{16}$ in. Face rib 1 with 1 mm. ply.

Floats

These are necessary to bring the c.g. position forward and should weigh $\frac{3}{4}$ oz. each when completed. Construction is from four vertical laminations of $\frac{1}{2}$ in. sheet, of which the two centre pieces are carefully hollowed. The laminated strut plugs into these, and its upper end engages the underside of the wing through a shear pin (such as a match stick) plugged into the tubing in wing and strut, the whole held firmly by a small rubber band as shown in the plan.

Covering

Cover the entire model with "Modelspan" of normal strength and give two coats of strong clear dope. Triple cover the underside aft of the step over the stringers, and give the inside of the engine compartment three coats of grey dope. Finish the model in standard naval camouflage. Dark sea grey on upper surfaces and cream beneath and up the sides to the datum line. Both pylons are all cream, but all the rudders are grey. Floats are cream, but their tops and struts are grey.

Flying

Ballast until c.g. is under the main spar. Pack up the L.E. of tailplane $\frac{1}{4}$ in. (Yes, a quarter-of-an-inch!) and allow model to make take-off runs, gradually reducing the packing until the aircraft flies itself off. This method avoids dangerous hand glides, or a series of ever-increasing stalls in the glide from a power climb. The central rudder is fairly sensitive and small adjustments only should be made for a very wide right-hand circle. Slight downthrust is built in already, but a high thrust line should require little or no deviation from the normal. (For r.o.w. slightly more downthrust should be used to avoid digging-in.)

The Amco 87 is quite a small engine to power a 4 ft. span aircraft weighing 26 oz., so use a fine pitch propeller and let the engine develop its full power. Allow as little clearance as is safe between propeller tips and hull top to gain maximum diameter.