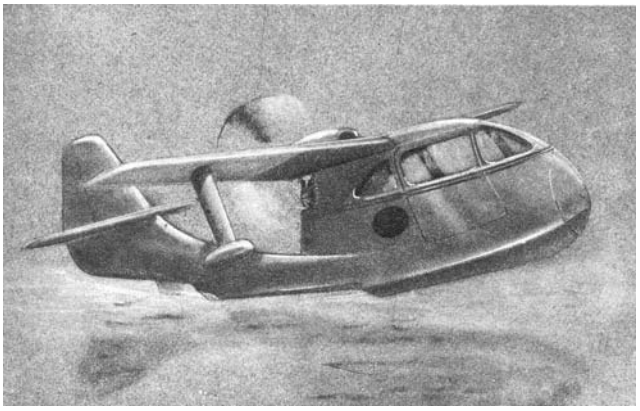
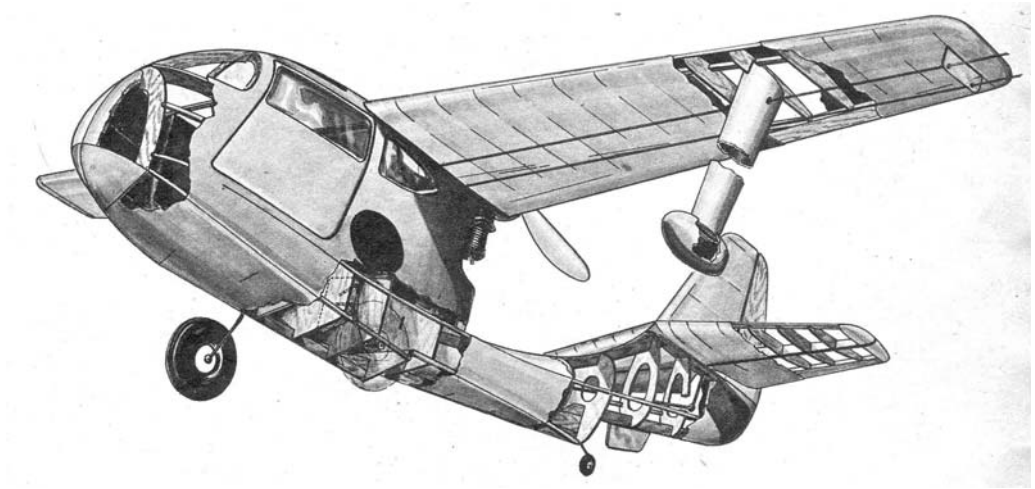


‘SEABEE’

by MARSHALL S. GREEN



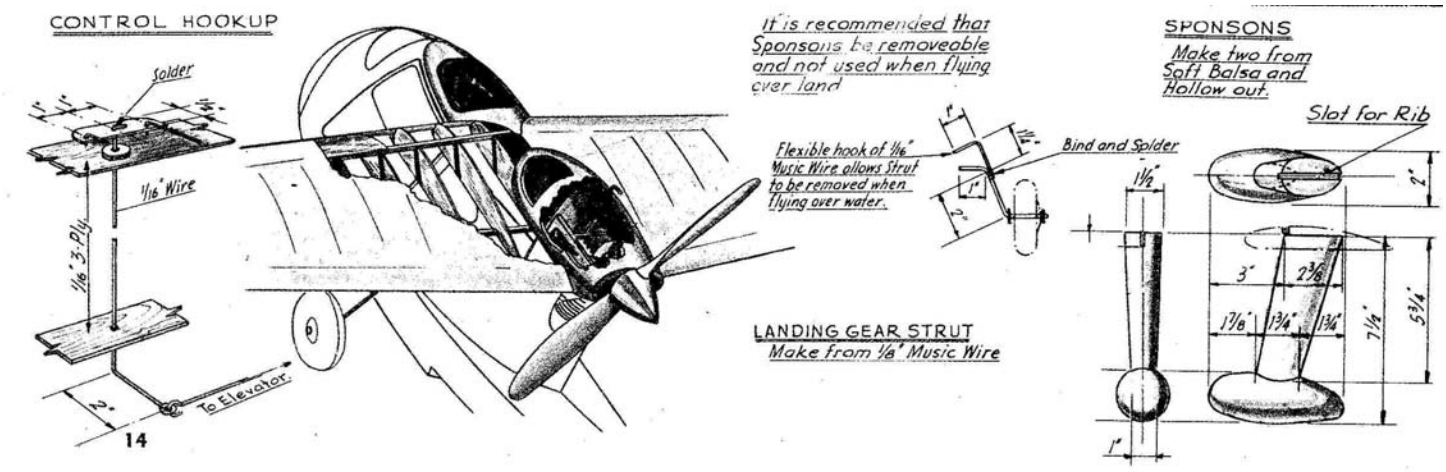
FOR the many control line fans who get a real kick out of realism, no greater thrill can be experienced than piloting this miniature of Republic's smart, new, personal amphibian. This particular scale model has been designed to take off and land on water, which in itself constitutes a major incentive to build it.

Since drawing up the first set of plans many revisions and structural simplifications suggested themselves; these have all been included here and it is thought that anyone with a little model building experience will have no difficulty in following the drawings and the text.

LAYOUT—Having fastened a 40" x 60" piece of clean, uncreased brown wrapping paper onto the dining room table with scotch tape, start by laying down the centerline for the plan view and the base line for the elevation and then completing the two grids of 1/2" squares required for each view; be exact and keep the lines parallel, for upon accuracy depends the fit of all formers and bulkheads and the ease with which the hull can be finally sheeted.

With the aid of given dimensions and the grid, draw up the elevation (side view) and plan, flow in the curves smoothly with "french curves" and "sweeps," if available; if not do the best possible by freehand for small curves and, for the long sweeps, a straight grained piece of 1/8" x 3/16" hard balsa strip in place of a regular "spline." The balsa spline works every bit as well as a Copenhagen ship sweep and has the extra advantage of being adaptable to any desired contour. Despite the fact that neither side view nor elevation is used in actual construction of the hull, they are imperative for checking the accuracy of bulkheads and as a guide to the shape of nose block, formers, engine nacelle, as well as for building the

empennage.



HULL—Lay out bulkheads as shown, transfer all but Stations 1 and 6 onto medium 1/8" sheet. Bulkheads No. 1 and No. 6 are cut out of 1/8" 3-ply. Check each station with the drawing and make sure that notches for strake, chine and stringers are accurately located. Bulkhead No. 4a has cemented to it a block made from a piece of 1/2" thick oak, maple or similar hardwood in which two holes are drilled as shown. The landing detail gear on sheet No. 2 should explain the function of the block.

Actual assembly can now start. Unlike the majority of models which are built over the plans in the initial stages, the contours of the *Seabee* made this impractical and the construction method known as "building in air" was resorted to. This means that excepting for the keel and flying surfaces which can be assembled directly on top of the drawing, all structural components starting with the bulkheads are added and cemented in place while the structure is held free from the construction board.

Check perpendicular inclination of bulkheads against the layout and sight along keel, fore and aft, to see that they are in perfect alignment behind each other.

Lay in 3/16" square chines and sheer beams, formers, wing platform, etc. to complete the basic structure. Then, with the sketch on sheet No. 2 as a guide, make up the control mechanism and install it in the hull. Make sure that tie-rod to the elevator does not bind on any of the bulkheads it passes through. Cut out sea-rudder from thin alum. and attach it to the keel.

EMPENNAGE — Before sheeting the hull it is recommended that the stab and elevator be made and assembled complete with hinges and control horn. The only uncoventional feature of the empennage is the inverted stab which is sanded to an approximate Clark-Y type of profile after assembly. Cloth elevator hinges are quite satisfactory. Cement stab, elevator, fin and rudder as a unit to the boom, then couple up tie-rod and elevator horn so that movement is smooth, free and without excessive play.

SHEETING—Were it not for the fact that an extremely flexible piece of 1/16" sheet were used on the original, some difficulty might have been encountered in sheeting the boom above the strake between stations 9 and 11. However, if flexible sheet is not at hand, this section can certainly be planked without any trouble. The rest of the hull takes sheets in 2" widths of soft 3/32" balsa without the remotest chance of splitting or causing any grief. Do not sheet above former A, between stations 1 and 4; instead use strips of 1/16 sheet to form window outlines—window aft of station 4 is fretted out of the sheet covering.

WING—Lay out the wing and cut out required ribs from medium 3/32" balsa. Form trailing edge and assemble each half-wing separately; when dry, fasten together with appropriately shaped 1/16", 3-ply gussets so that each tip is raised 1-1/2" above horizontal. Apply soft 1/16" sheet to leading edge and, if desired, 1/16" and 3/16" cap strips over each rib.

From the plans, shape up the soft balsa block which contains the window above the wing platform between stations 2-a and 4, hollow it out to save weight and cut out the window opening. Attach this block to the l.e. as indicated.

Check contours of engine nacelle against motor to be used before carving and hollowing. The nacelle is then also permanently attached to the center section.

In the original model the wing was cemented to the hull, there being no transportation problems to contend with. However the center section is so designed that the wing can be made removable if deemed advisable. Sponsons are carved according to the drawings and are made removable for overland flying. Reinforce ribs at sponson junction point—this was not done on the original but the particular rib in question was made out of 1/8" 3-ply and considered to be stout enough to stand up under imperfect landings.

FINISHING — Complete the ship by carving out the nose block to specifications and set about the task of sanding down the 3/32" sheet "skin" with progressively finer grades garnet paper until it is about 1/16" thick and satin smooth. Apply two coats of filler, sanding after each coat, then follow with two coats of lacquer or dope. Sand lightly with 4/0 wet-or-dry and then cover with a good grade of tissue. Dope at least 4 extra layers of Silkspan onto the bottom to insure water resistance and again use the wet-or-dry. Finally, apply 6 coats of pigmented dope or two coats of good grade enamel and set aside to dry.

FLYING—Connect up control lines and move ignition components about until the c.g. falls in the location shown. Inspect the surfaces for correct trim and the *Seabee* is ready for its first test flight.

At the time of writing the ship has not yet been tried on water, local ponds being ice bound, so no hints can be given of its behavior under these conditions. From the test flights over snow which have so far been made, the indications are that flying over water next Spring is going to be successful.

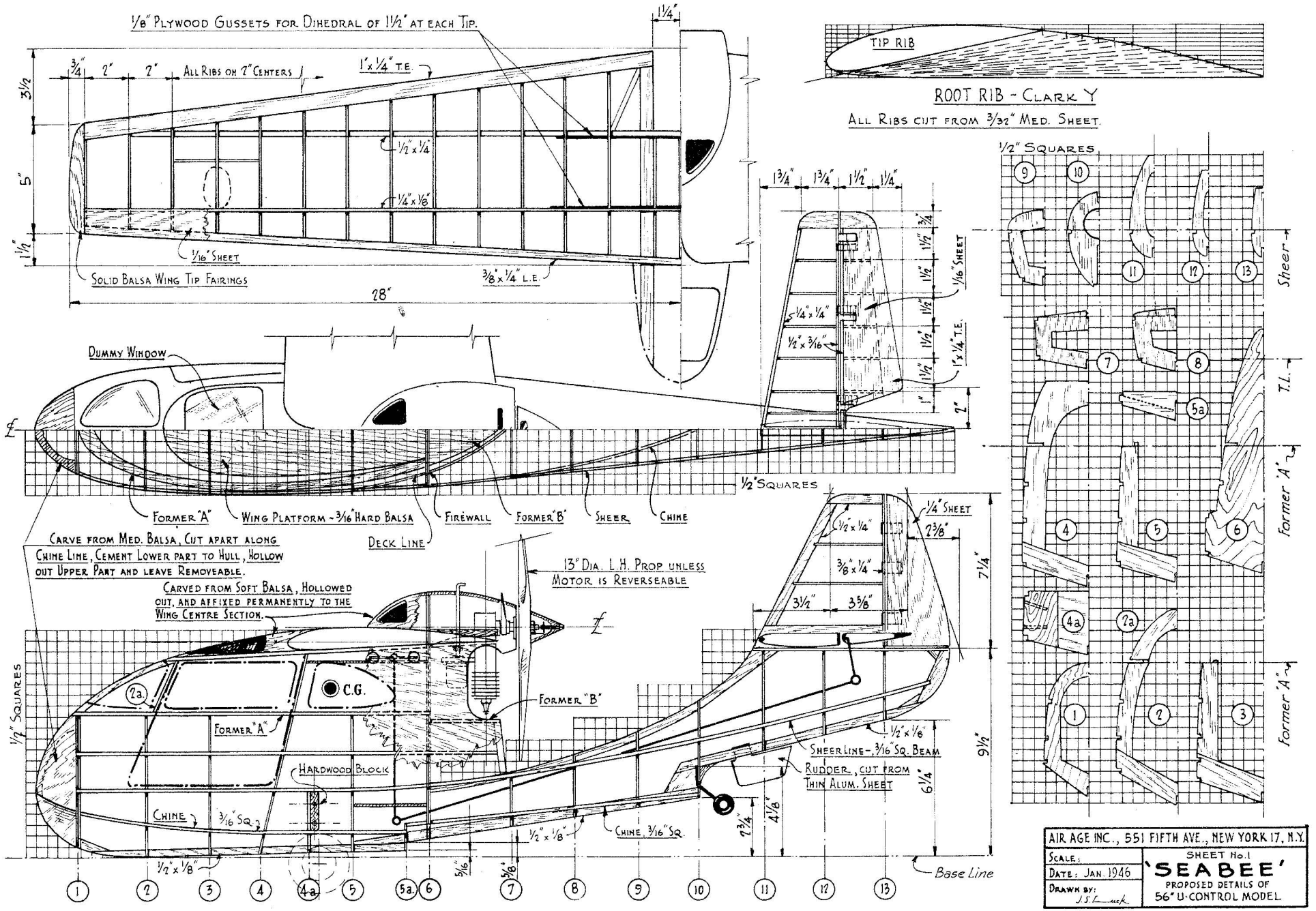
Test flying should be done with caution until best c.g. location has been determined and the controlling influence of the elevator properly assessed. With a motor of .29 displacement the ship flies extremely well and safely, is easy to handle and rather slow (perhaps 25 mph), but it requires rather a long takeoff run and for this reason it is suspected that such a small motor would not take it off water.

It was after a motor of .60 displacement was fitted that trouble developed which needed drastic corrective measures. The increased speed promoted a noseover tendency which full up elevator would not overcome. Happily the ship was flying quite low and no damage resulted. A new stab was built with an inverted section and the trouble was entirely eradicated making it certain that no difficulty will arise when the ship is eventually tried in its proper element.

It should be mentioned that the model appearing in the photographs has been regarded throughout the trials as a guinea pig and no attempt was made to "dress it up." Final tests having now been successfully concluded, the model will be finished properly.

To those readers who are diehard "free flighters" it is believed that the *Seabee* offers something new in Class B models. The original ship weighed 39 ozs. ready to fly, but the structure has been greatly lightened in the plans and it should be possible to build to 36 ozs. which will give a wing loading of about 12 ozs. per square foot.

It is further suggested that the boom be lengthened some 2" and the horizontal tail area increased by 50% to give better longitudinal stability. Also, the wing profile should be more in keeping with desirable free flight behavior and could better employ an airfoil similar in characteristics to the N.A.C.A. 4412, Gottingen Sections 398 or 398R or similar high lift section. It should be borne in mind that in all pushers c.g. location is of paramount importance and upon its ideal location will largely depend the stability of the ship. Much time and effort must be patiently expended until correct balancing point is arrived at; only then may the ship be allowed its head under full power.



AIR AGE INC., 551 FIFTH AVE., NEW YORK 17, N.Y.	
SCALE:	SHEET No. 1
DATE: JAN. 1946	'SEABEE'
DRAWN BY: J.S. Lynch	PROPOSED DETAILS OF 56" U-CONTROL MODEL