

# Loening Amphibian

by WALTER A. MUSCIANO

EVERYONE is familiar with Admiral Richard E. Byrd's North Pole expedition on which he used the Fokker trimotor *Josephine Ford*; however few are aware that without the data accumulated on his previous North Greenland expedition in 1925 this flight would have been impossible. The hazardous flights over the "Greenland Ice Cap" (the world's iceberg factory) required rugged utility aircraft capable of land and sea operation and strong enough to withstand the terrific winds often encountered at this point. The U. S. Navy had no airplane that could meet these requirements, but the Army had. Consequently three Loening amphibians were acquired for use on this expedition and were designated NA-1, NA-2 and NA-3.

Although the planes indicate a Mite diesel engine, the model can be flown with electric spark ignition engines from .099 to .199 cu. in. displacement using *Liquid Dynamite* to "dieselize" them. A dieselized Arden was successfully used for quite some time. The elimination of coil, condenser and batteries allows more weight to be put into the ship's structure for added strength, but the weight factor should still be kept in mind as the model is being built. Try to keep the weight under 10 oz.

Full size bulkheads, formers and ribs are shown on the plans and the rest of the drawing is one-half model size. The fuselage is constructed entirely of sheet balsa to insure its simplicity, strength and waterproof qualities. First the two fuselage sides are cut from 1/16" sheet hard balsa and sanded smooth on both sides to about 1/20" thickness. The hardwood engine mounts are cemented to these sides and allowed to dry, during which time the fuselage bulkheads and formers are cut to shape. These are cemented in their proper location using plenty of cement. Cut the stabilizer and elevator from 1/8" soft balsa and the fin from 3/16" soft balsa. After the control rod has been attached to the elevator, the horizontal tail as-

sembly can be mounted on the fin and securely cemented. The turtledeck is now attached to the fuselage and the rudder added. Attach the bellcrank assembly as shown in sketch. It is advisable to construct and attach the lower wing at this time. The construction is very simple; remember to leave the leading and trailing edge stubs as shown on the plan. Cut away the fuselage sides to admit the wing stubs and, when the proper dihedral is set, plenty of cement can be applied through the open fuselage bottom gluing the forward stubs to the plywood bulkhead.

The author's model had a retractable landing gear in spite of the fact that takeoffs as well as landings can be made without the gear, when flying over grass. Many amphibian models feature landing gears that are flimsy in the "down" position and tear off or collapse on the first rough landing. If a portion of the radiator grill is made as a hatch, by using a magnetic screw driver the retaining bolt (steel) can be removed and the coil spring will hold the gear in the "up" position. This assembly should be mounted on the plywood float bulkhead and the bulkhead attached to the fuselage to be followed by the float keel and remaining balsa bulkheads. The entire float is planked with 1/20" sheet balsa after the tail skid has been cemented in place. Covering the cowl from former K to J with 1/20" sheet and carving the float nose and the cowl from a soft balsa block completes the fuselage. The cowl block is hollowed and held in place with dress snaps.

The wing struts are cut from 3/16" x 1/8" pine strips sandpapered to a streamline section. When cementing the struts to the wing be sure they are cemented to the framework and not just the Silkspan. The upper wing is now constructed and covered with Silkspan. The wings received three coats of clear (Turn to page 41)

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(Continued from page 9)

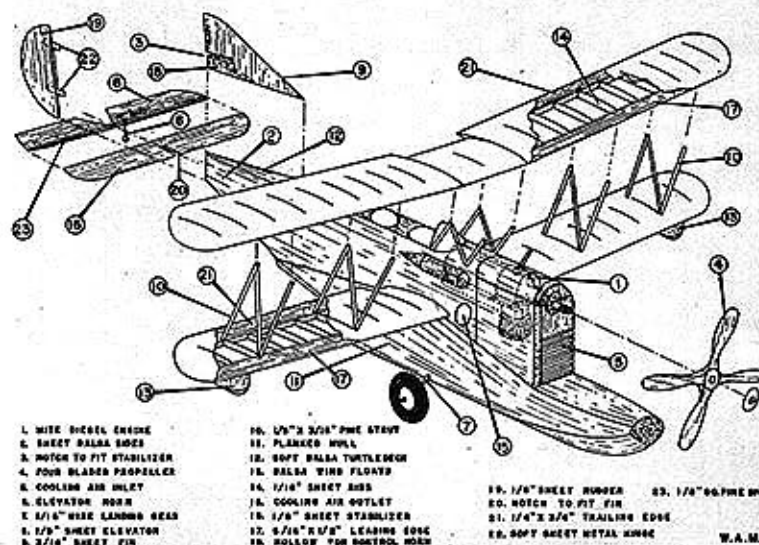
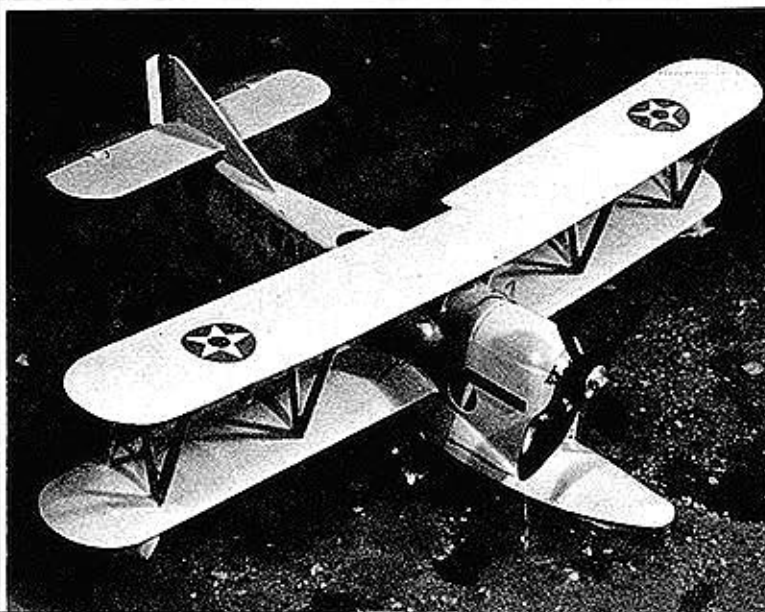
dope and one colored, while the balsa portions were filled in with clear dope until smooth and then received one coat of colored dope. The wingtip floats are carved from soft balsa, hollowed and attached before the model is painted. Before the upper wing is attached the model should be painted as follows: Grey—fuselage, float, lower wing, bottom of upper wing, empennage and struts. Yellow—top of upper wing. Dark green—bottom of float. Black—lettering. U. S. military star insignia appears at each wingtip, and rudder stripes are red, white and blue.

Fortunately the full scale plane used a four bladed propeller because the maximum diameter the model permits is 5 inches, and this would be too small for two blades to develop sufficient thrust. It pays to take pains in making this propeller in view of the fact that it will not be broken because of its location. The original was cut down from two 8" dia. 10" pitch propellers, and the blades should be thinned out in thickness only. The hubs are cut as the sketch indicates, one prop at the forward end and the other prop at the after end. They should be cemented under pressure.

The inside of the cowl should receive 2 coats of shellac and the entire model one thin coat of shellac if *Liquid Dynamite* fuel, is used. It is good practice on a seaplane model to dope as much of its interior as is possible. Dope a small portion at a time as construction progresses.

Flying the Loening from land is no different from general practice. Stainless steel lines of .003" dia. were used 35 ft. long, and the model should balance on the forward control wire. The brass sleeves on the float bulkhead should be packed with vaseline or grease to prevent water from entering the float. Do not fly the model from a boat, unless you want to go swimming and crack up the model. A shallow pond 2 ft. deep or less is ideal for water flying. No trouble was encountered in water takeoffs except that the acceleration is less than on land. The advantage of compression or *hothead* ignition will become apparent if the model receives a ducking because there will be no points to clean or wiring to check.

Needless to say, the builder will receive enjoyment from his model in proportion to the care he takes in building and flying.



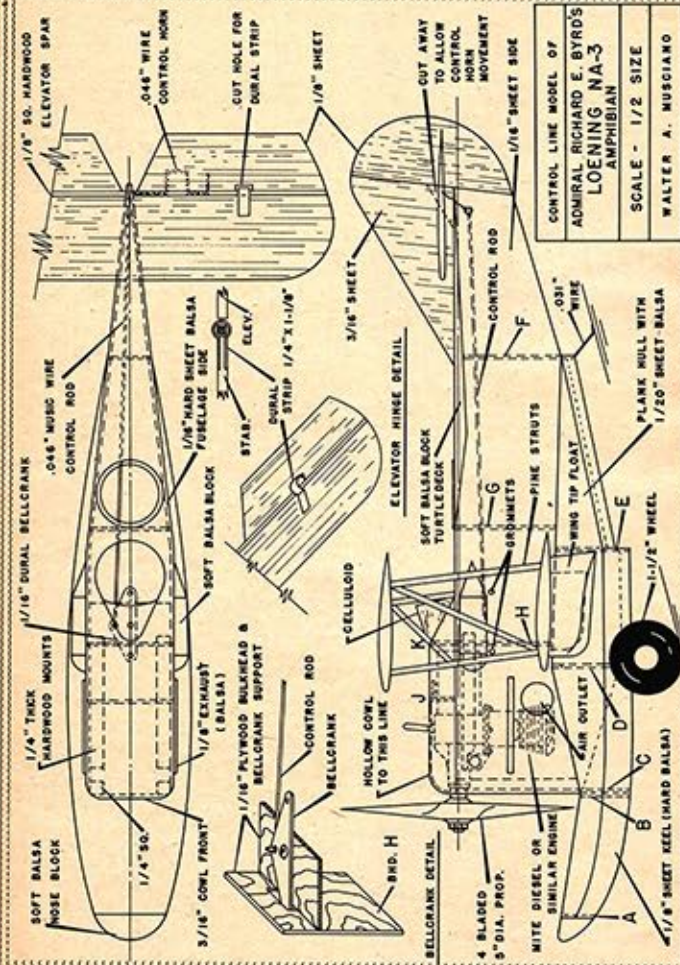
1. WIRE SHELL ENGINE
2. SHEET Balsa BOSS
3. MOTOR TO FIT STABILIZER
4. FOUR BLADED PROPELLER
5. COOLING AIR INLET
6. ELEVATOR ROD
7. 1/8" WIRE LANDING GEAR
8. 1/8" SHEET ELEVATOR
9. 3/16" SHEET FIN

10. 1/8" x 3/16" PINE STRUT
11. PLANKED HULL
12. SOFT Balsa TURTLEDECK
13. Balsa WING FLOATS
14. 1/16" SHEET BOSS
15. COOLING AIR OUTLET
16. 1/8" SHEET STABILIZER
17. 5/16" x 1/8" LEADING EDGE
18. HOLLOWS FOR CONTROL RODS

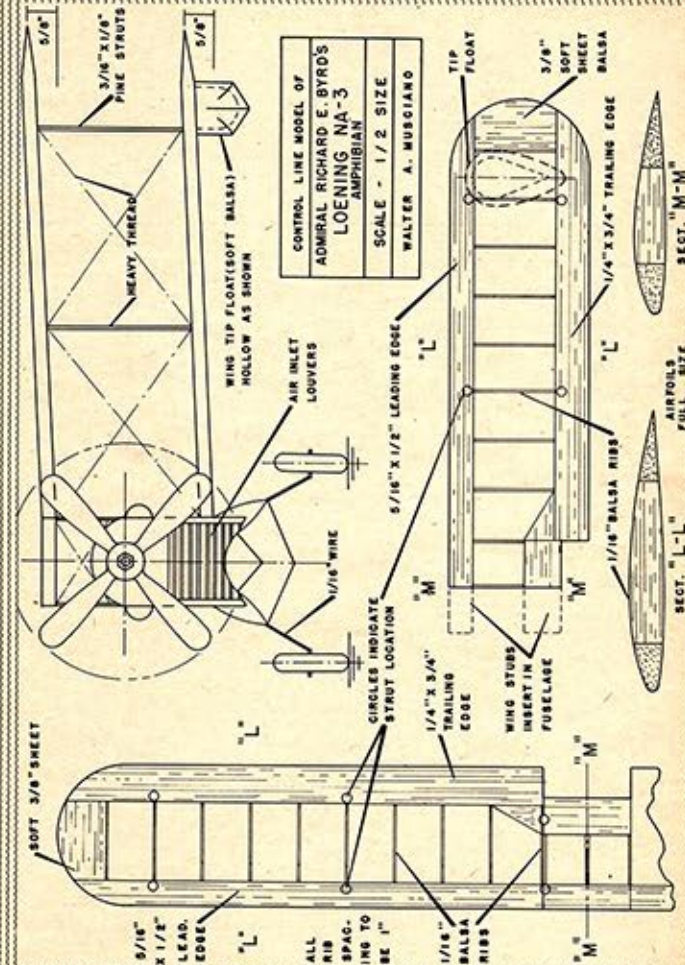
19. 1/8" SHEET RUDDER
20. MOTOR TO FIT FIN
21. 1/4" x 3/16" TRAILING EDGE
22. SOFT SHEET METAL WING
23. 1/8" x 3/16" PINE STRUT

W.A.M.

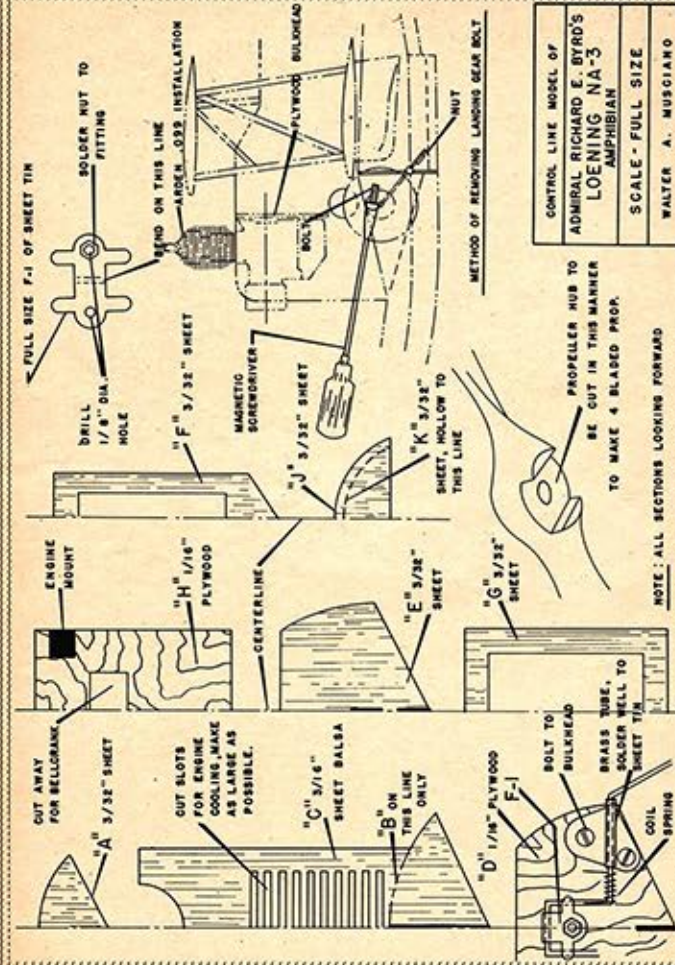




CONTROL LINE MODEL OF  
ADMIRAL RICHARD E. BYRD'S  
LOENING NA-3  
AMPHIBIAN  
SCALE - 1/2 SIZE  
WALTER A. MUSCIANO



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ADMIRAL RICHARD E. BYRD'S  
LOENING NA-3  
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CONTROL LINE MODEL OF  
ADMIRAL RICHARD E. BYRD'S  
LOENING NA-3  
AMPHIBIAN  
SCALE - FULL SIZE  
WALTER A. MUSCIANO

NOTE: ALL SECTIONS LOOKING FORWARD