Charles A. Lindbergh's

SPIRIT OF ST. LOUIS

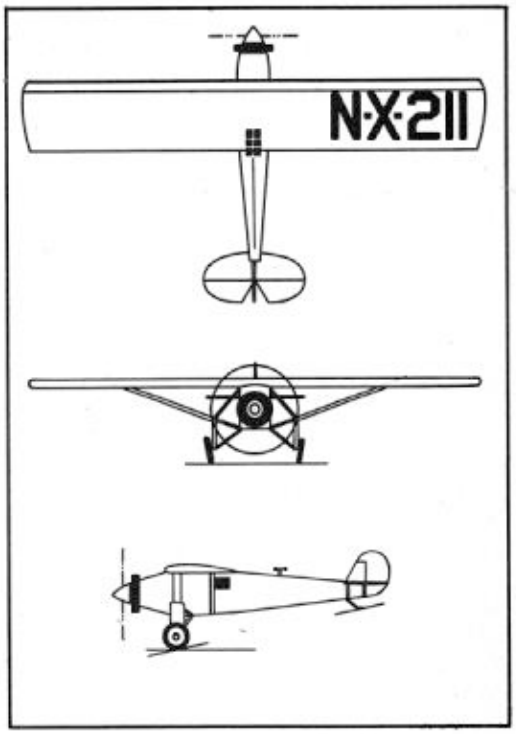
Ryan Aeronautical Corp.'s entry into the trans-Atlantic race brought them fame and fortune. 1927 was the year, Charles Augustus Lindbergh, the pilot . . .

by Paul Palanek

Thirty-eight years ago, on a warm June day in 1927, an airman rode on the tonneau of a touring car; Capt. Charles Augustus Lindbergh—the Lone Eagle, first man to fly non-stop from New York to Paris. Columbus of the air they called him. There is little opportunity in this day and age to duplicate so fantastic a feat, therefore, it will forever stand alone, by itself in the annals of man's greatest achievements.

During the planning and execution of this epic flight, Lucky Lindy as he was also called had little experience to go on. How could he, it had never been done before. There were no electronic brains or computers to amass the information and data needed. There was no two-way radio communication for periodic checks, no data fed to him to correct errors in navigation. All he had was youth, courage and confidence in himself and his aircraft. If nothing else his courage alone is well deserving of all the awards bestowed upon him for this historic non-stop flight.

The "Spirit of St. Louis" was designed and built by the Ryan Aeronautical Corp., an obscure young firm at the time. A knowledgeable engineer, Donald Hall designed the aircraft. It was an extremely clean design with much attention paid to streamlining to reduce the ever present drag to a minimum. The Ryan N-Y-P was designed for this flight, and this flight alone,

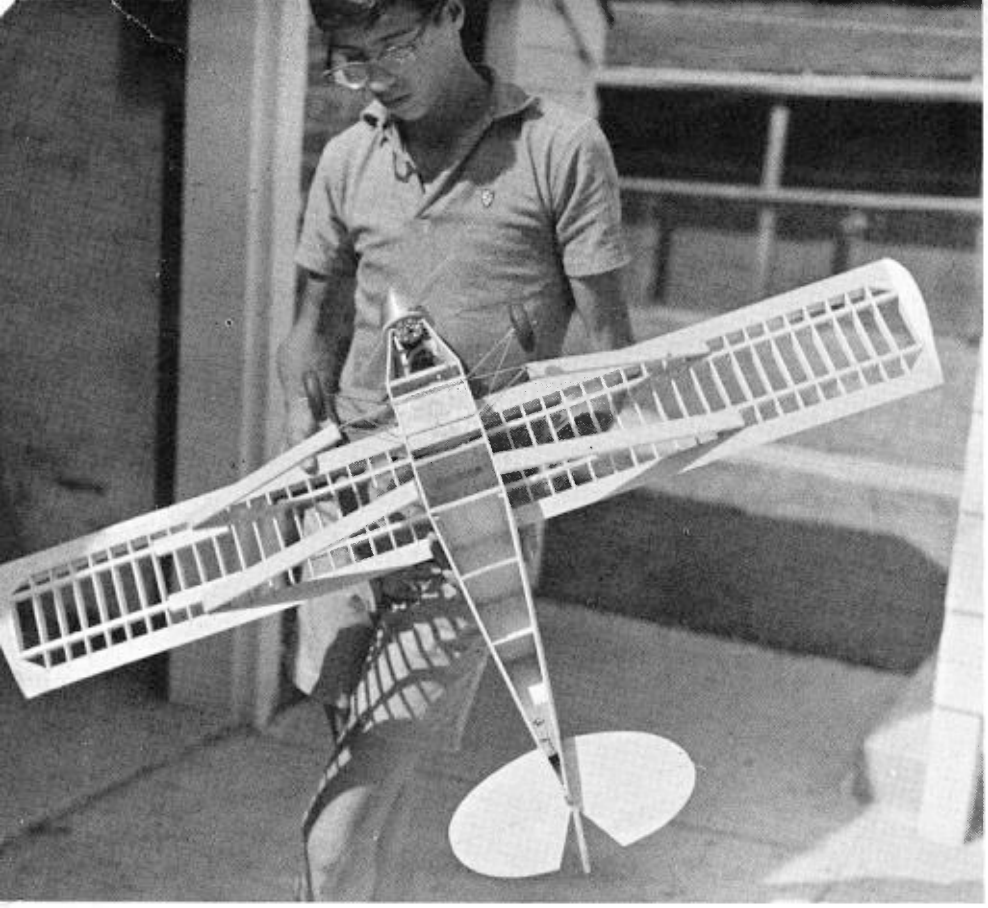


2½" dia. modified Froom spinner. An extension shaft is not required. The exhaust stack is a must to duct off hot gases. An easy scale type.

Color scheme is all silver, with black trim, a simple attractive effect. Use black trim film for lettering and detailing the cabin windows.

Poised for take-off. 9/6 prop teams up well.

Lead-out line guides are required at wing tip.



Main structure is as simple as it can get. The thick wing struts add a little to overall lift.

The landing gear wire is soldered and secured to the fuselage. Note configuration, mounting.

The two-ounce fuel tank is mounted just aft of firewall. Rib spacing is scale in rugged wing.

K&B .19 inverted. Cowl fairing blocks are now added, siding broken, recemented in bend area.

An easy-to-build Controline Scale replica:

46" wingspan, a nostalgic craft.

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with everything hinging on fuel capacity and engine durability.

The frail craft spanned a total of 46 feet, using a Clark "Y" airfoil with a 7'0" chord. The engine was the best available in its day, a most reliable radial, the Wright J-5C, packing a walloping 223 horsepower. All up gross weight was 5,135 lbs., empty weight, 2,145 lbs. It carried a whale of a lot of fuel to say the least.

Lindbergh's flight was a total of 3,600 miles from lift off to touch down, requiring 33½ hours of stick time. The average speed was 107½ m.p.h. No network of radar stations tracked this flight. The masses couldn't listen to reports from the "Lone Eagle" as he sat in his air cushion wicker seat. He carried no radio equipment for any sort of communications. The completion of the world's first transatlantic flight was indeed a tribute to a remarkable machine and a remarkable man.

Our model replica is built to a full 1" scale resulting in a sizeable C/L scale flyer. A few liberties were taken here and there to simplify construction and ease the final assembly. For power we employed a hot K&B .19 inverted, coupled to a 9-6 Tornado prop. The entire model is silked for added strength and the normal wear and tear most controliners are in for. Construction has been kept as simple as possible, beefing up where necessary.

Fuselage structure is of the box type, using ⅛" sheet balsa sides, top and bottom. Formers A, D, F, G, and H are of ⅛" sheet balsa. Formers B, C, and F are of ¼" hard sheet balsa. Former A-1 is ⅛" plywood. Prior to installing the formers to shape the fuselage, make all needed cut-outs in formers that support the motor bearer. Assemble these formers in place, and when they have dried, add the ½" hardwood motor bearer. Be certain to apply ample cement to the areas that are broken in shaping the fore and aft ends of the fuselage. A two ounce capacity fuel tank is secured behind former B and under the mounts. The filler and vent run up into and out of the leading edge of the wing center-section. Bolt a 3" Veco bellcrank in place on the mount as indicated in the drawings. The top and bottom of the fuselage are left open until all components are added to the interior.

Carefully study the landing gear set-up. At first glance, it may appear hairy, but it will all fall into place. The gear wire is 1/16" dia. and is symmetrical about the fuselage centerline. Bind with fine wire and solder. The portion under the fuselage is bound to the formers with thread and cemented securely to each. After the gear is completed, check the alignment care-

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fully for symmetry. This is most important, since there is quite a bit of wire in the formation of this gear.

All tail surfaces are cut and shaped from ⅛" sheet balsa. Try to keep the tail moment light for the desired nose heavy trim on this design. This will eliminate the need for added nose weight to move the C.G. forward. There is little to be said about the tail other than being careful inserting the Veco horn into the ⅛" sheet balsa elevator. Cloth is used for the hinge. Secure the 1/16" dia. pushrod to the bellcrank and horn. After checking for movement, cement the elevator and stabilizer assembly in place. When it has dried, install the fin and rudder, with some 3 to 5 degrees right offset. Before we forget and close up the fuselage, attach a pair of .020 lead-outs to the Veco bellcrank. Keep their length to that indicated in the drawings.

Having completed all work on the insides of the fuselage, proceed to the final covering. Use ⅛" sheet for the top and bottom. In the nose section use some heavy stock to fair in the four square sides of the nose to a circular cross-section at the spinner end. Completely sand the fuselage and blend all surfaces, and don't forget the tail-skid. Allow ample room in the nose for engine installation and room for the escape of the exhaust gases. There is the ever present danger of fire, if your cowl is not ventilated properly.

With this model we terminate construction with the rugged wing. There are 43 ribs cut from ⅛" sheet balsa. The leading edge is ¾" x 1" with a splice in it. The spars are ¼" x ⅜" with a ¼" x 1" notched trailing edge. As there is no dihedral, the wing is built flat, and therefore in one piece. The tips are shaped from scrap block balsa, cemented to the end ribs. The center-section is of 1/16" sheet balsa, covered top and bottom. Filler blocks of ¼" sheet balsa fit between the ribs indicated at which points the wing struts are fastened. When it has completely dried, remove all excess balsa, shape the wing and fair in the tip blocks.

Having completed the entire structure, you are now ready to silk cover the wing. Pre-dope the wing frame prior to covering. Apply several coats of clear dope to the covered wing. When dry, cement in place on the fuselage adding the fuselage to wing balsa fairing. Allow this assembly to dry and check for alignment. It should be at zero degrees incidence in relation to the tail surface.

Apply a few coats of clear dope to all wood surfaces and add filler where needed. Apply a layer of silk to all surfaces and sand smooth. Use a few coats of balsa sanding sealer, filling in the imperfections. When completely dry, apply three coats of silver dope with a light sanding after each application.

At this point secure the balsa struts to the gear wire. All cross-sections are streamlined in shape. Check the drawing for stock sizes. The wing struts are ¼" x ⅞" forward, ¼" x ¾" aft. Cement these in place to the gear wire and wing. The struts are fastened last, to ease the silking and final finish to the fuselage.

The trim on the "Spirit" is all in black, using black decals for all lettering and simulating the cabin windows. The finer lines are inked in place. The dummy radial on which only the cylinders protrude are fashioned from scrap balsa, with several diameters of copper wire to simulate the piping and wiring. Color the cylinders black, and the piping and wiring gray. Spray on two coats of fuel proofer on all surfaces.

Secure the K&B .19 in place, bolt on the prop and secure the 2½" Froom modified spinner. Check for side and downthrust. As was mentioned earlier in the text, we have a built in nose heavy condition which is excellent for C/L flying. A pair of 50' lines did us nicely. With the massive area and engine used we have a slow, reliable flyer with little chance of damage. Hope you enjoy your replica of this famous ocean flyer. Good luck! ●