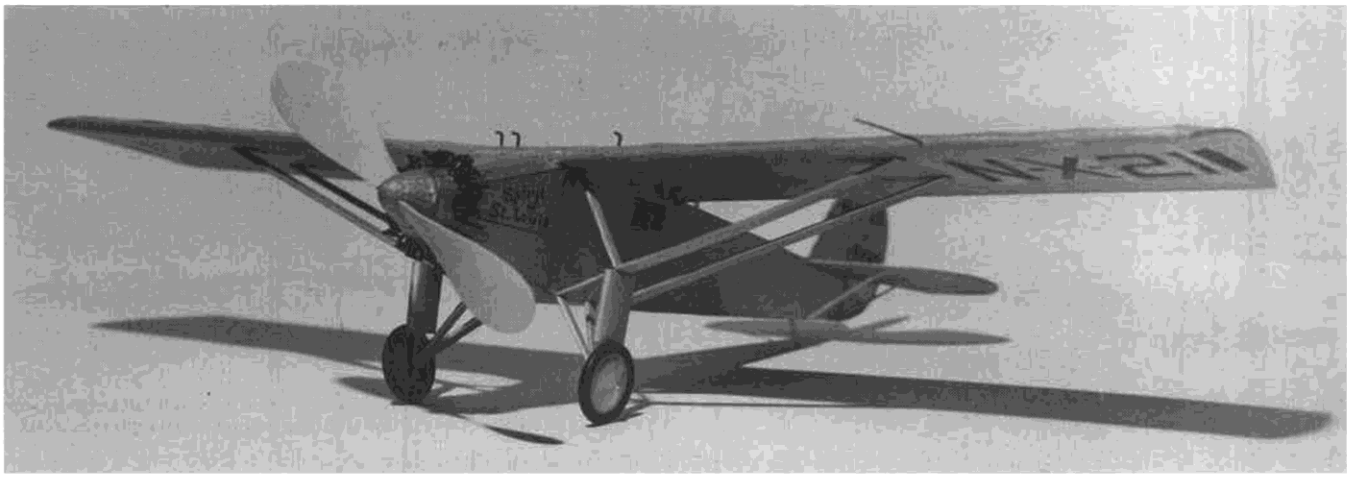


THE "Peanut" of ST. LOUIS"

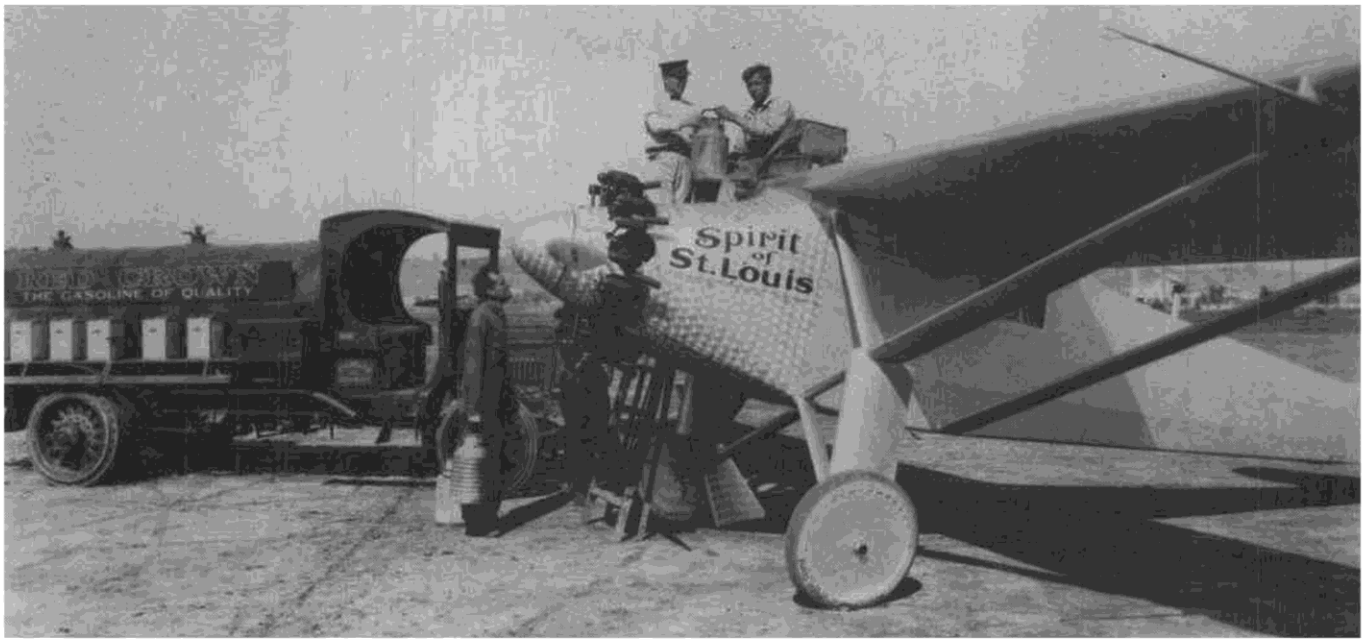
By DENNIS NORMAN . . . Just as the original "Spirit of St. Louis" was rushed to completion in a crash program against time, so was the "Peanut of St. Louis", in order that modelers would have plans and documentation necessary to enter MODEL BUILDER's special event in this year's Parcel Post Proxy Peanut contest!

• Even those only dimly aware of aviation history know the names Lindbergh and "Spirit of St. Louis." To air enthusiasts the names are inspirational and create visions of the best in human ingenuity, resourcefulness, and daring. May 20, 1977 will mark the 50th Anniversary of Lindbergh's famed New York to Paris flight, and the Golden Anniversary of the event will be celebrated in many ways. Since "Lucky Lindy" and "the Spirit" did so much to stimulate aviation awareness and since they no doubt contributed to the boom of model airplane building in the late 1920's and early 1930's, it is entirely appropriate that a tribute be paid by the model builders of today. Hence, **Model Builder's** Third Annual International Parcel Post Proxy Peanut Scale Contest will feature a special "Spirit of St. Louis" event in which peanut-sized "Spirits" will soar in tribute to their revered prototype and armchair Lindberghs will dream and plan their own conquest of time and space.

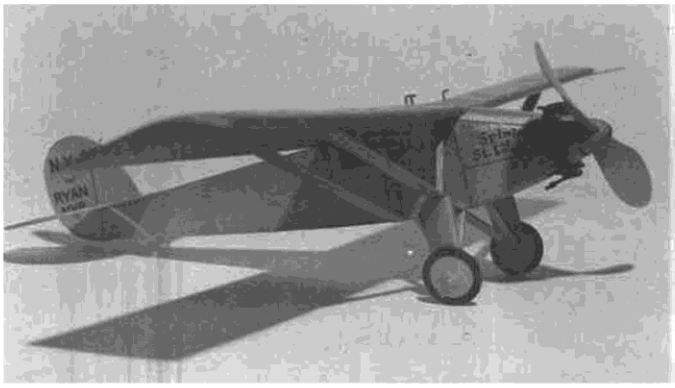
The "Spirit" is a high-wing monoplane and, without seeing scale views of it, you might think it is a "natural" free flight subject, but after examining scale views you will realize that the "Spirit" is a subject to be reckoned with . . . particularly if you intend to attempt creation of a reasonable facsimile. The wing has a Clark Y airfoil, but otherwise it is proportionally huge (being substantially greater than the Ryan M-1 and M-2 monoplanes after which the Spirit was patterned) and there is *no* dihedral (imparting a characteristic "droopy" look and almost guaranteeing side-slip problems).

By comparison with the wing, the fuselage is dainty and short, short, short! A reasonably long nose gives some encouragement to the would-be free flight trimmer, but the microscopic tail surfaces are a flying "scale buff's" nightmare. Then there is the landing gear. Built to scale, it means R.O.G.'s will be impossible for a rubber powered ship and also that every "landing" will be a replay of the "tumblin' tumble weed!" In short friends, the Spirit of St. Louis is a challenging, possibly tormenting, subject.

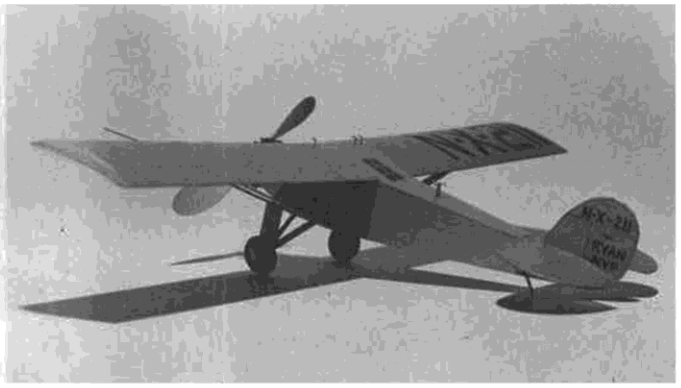
In the hopes of making your Yuletide



The "Spirit" getting refueled for one of its test flights at Rockwell Field, San Diego, California. Small sign under seat on side of truck says, "Standard Oil Company". Note solid truck tires with holes for "shock absorbing". Photo courtesy of Pete Westburg.



Only modifications to scale outline are enlarged tail surfaces and a slight amount (3 degrees) of dihedral.



Even full size ship was unstable as a result of small tail surfaces, designed for smaller wing. Poor stability helped Lindbergh stay awake!

a bit brighter, I have concocted a set of peanut plans for the "Spirit" showing both the "true" lines and suggested deviations for improving flight. A set of "proof of scale" three-views also accompanies the plan, so you will have all the documentation required when you mail your version of the Spirit to the Proxy Peanut Contest next Spring.

Construction is conventional, with an emphasis on weight saving. The model is built almost entirely of 1/20 x 1/32 medium straight grained, balsa.

FUSELAGE

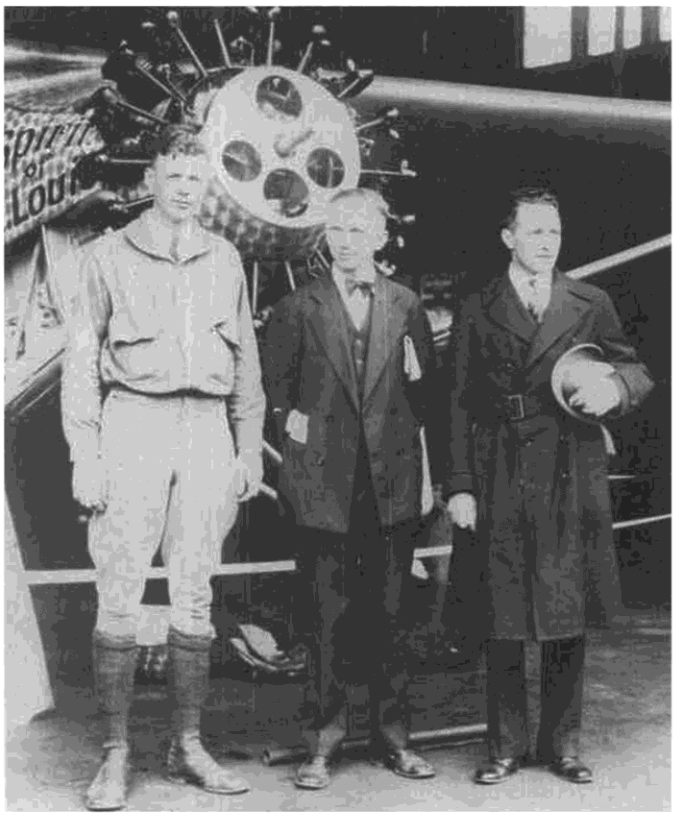
Fuselage construction begins with the building of the sides from 1/20 square strip. Once these are completed, they should be joined by cross pieces directly over the plan. Figuring that nose weight would be needed, and also taking into account the rather abrupt change from a rectangular section at the wing to a circular section at the nose, I elected to construct the nose of my model from block balsa which was hollowed to the approximate lines shown in the plan by the use of Dremel tool after the external surface had been carved and sanded to shape. Experience has taught me to avoid balsa for rear motor mount peg supports, and these, on my model, are made from 1/32 inch plywood cut wide enough to comfortably admit a short length of 1/16 inch diameter aluminum tubing which serves as my rear motor peg.

The prototype "Spirit" fuselage had three stringers on each side and three stringers on the top aft of the wings. Weight being of major concern, these were eliminated from my model, but you might want to add them for greater "scale effect."

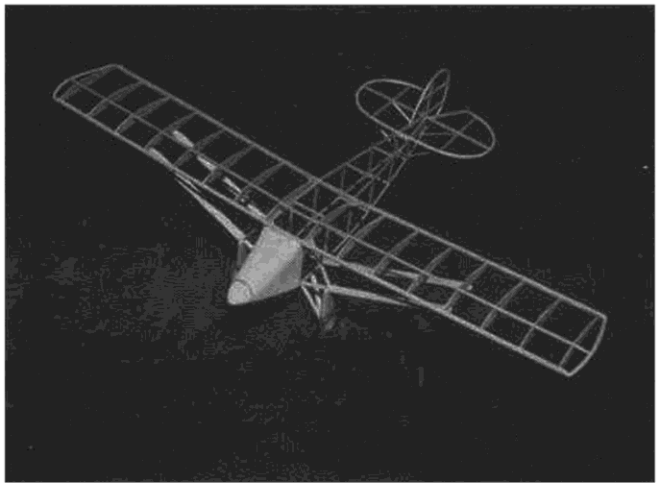
When the basic fuselage frame is completed, the entire fuselage may be covered with either white, or if you care to order it from me, I have new, good quality, silver tissue from Japan available at 60¢ per sheet, plus postage or $7.00 per dozen postage paid. Write me at 13885 Edgewater Drive, Lakewood, Ohio 44107. With the fuselage covered, the nose is then drilled for the nine cylinder heads of the Spirit's Wright Whirlwind engine. I really agonized about the engine detail and found that the Williams Brothers cylinders, even at 3/8 scale, are too large. I rummaged a bit through some plastic kits I had collected and I think I could have probably used cylinder heads from the 1/4 inch Lindberg plastic model of the Curtiss F11C-2 Goshawk, but I decided to simply grit my teeth and rap thread around short lengths of balsa dowel in the time honored tradition. It takes a lot of work to make the engine, but once done, you will not regret it.

The very characteristic engine tur-

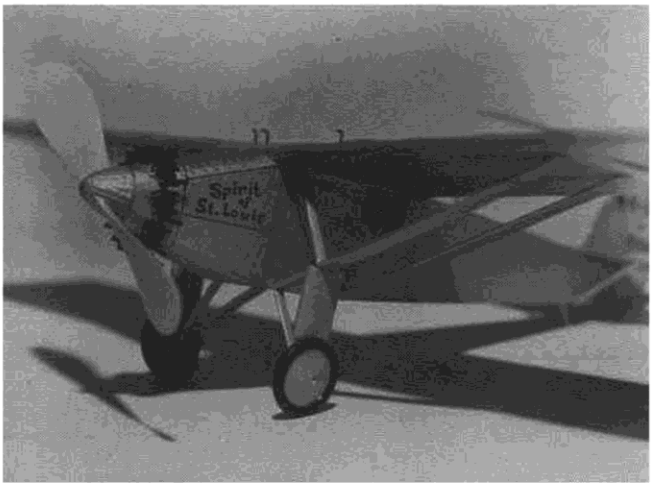
Lindbergh with "KEEP OUT . . of the water" sign. Note plane-finished spinner, as compared to photo on previous page. Westburg pic.



Lindbergh, Clarence Chamberlain (ctr), and Richard E. Byrd. Two weeks after Lindy's flight, Chamberlain flew from N.Y. to Berlin.



Bones of the "Peanut of St. Louis". Ribs are in scale locations, but some have been left out. Built up nose was hollowed with a Dremel.



Clever trick provides illusion of engine turnings on cowl. Head of pin was forced into wood. Close up, it looks like a peanut shell!

nings on the cowl of the original "Spirit" is a detail that simply cannot be overlooked. I experimented with several ideas, but finally decided to use the "optical illusion" method. First, the cowl area is wet-covered with tissue (you must be in a very relaxed mood when you begin this step!) and given one coat of dope. Then, using the head of an ordinary straight pin, and a straight edge guide, make row after row of pin-head depressions, staggering every other row. That's it! Hopefully, the photographs will indicate how well it turned out. Appropriately, on close examination, the surface looks somewhat like a peanut shell.

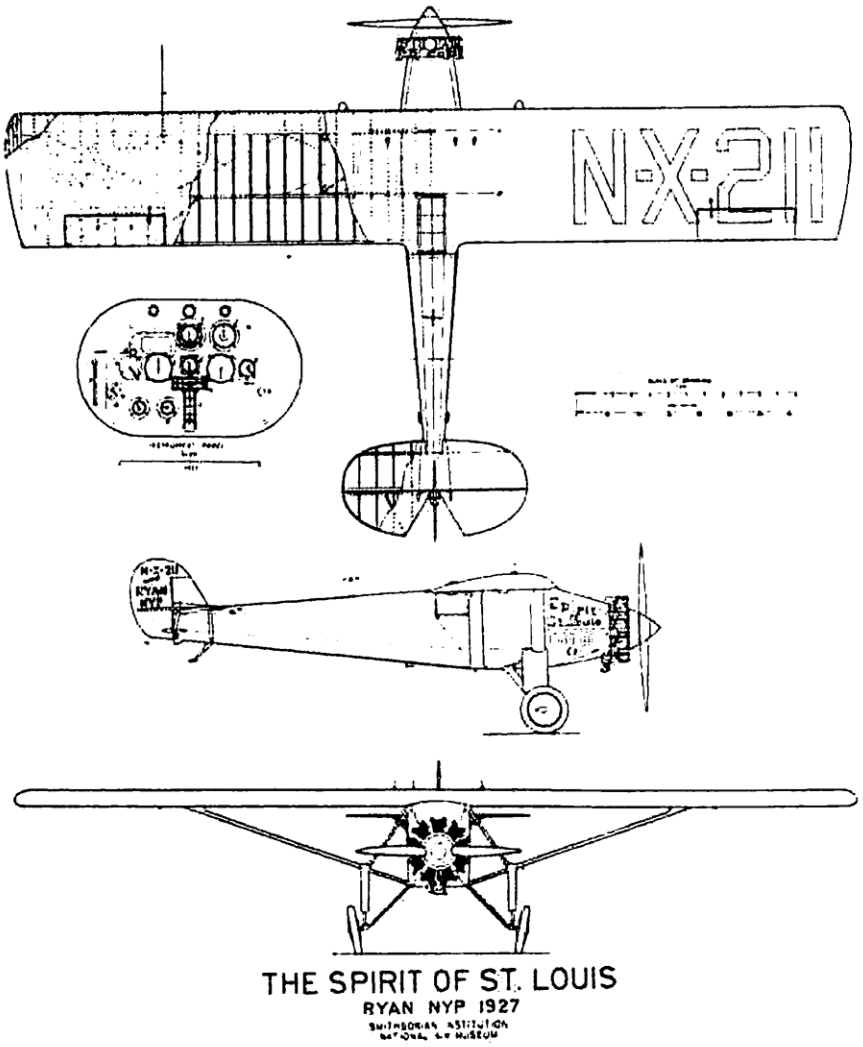
As a scale instrument panel and pilot, "Lindy", would obstruct passage of the rubber power, and since window area was negligible anyhow, we decided to simply use black tissue to indicate windows. **Model Builder** has agreed to bypass the pilot requirement for the special "Spirit" event in the 1977 Parcel Post Proxy Peanut contest.

The Spirit's spinner was turned out of medium hard balsa block using a 1/4 inch drill and sandpaper. Photos of the original show two spinner shapes being used: one pointed, the other blunt. I preferred the blunt, but the pointed is shown on the "proof of scale" drawing. Everyone has an approach to making things like spinners, but my favorite technique is to cut a thin (1/64 inch) plywood disk of the size needed for the spinner's base and to glue this cross-grain to a balsa block. Next bore a 1/16 inch diameter hole using a Dremel drill press to insure a 90 degree angle, and then insert and glue in place a short length of 1/16 inch diameter hard wood dowel. Shape the block around the plywood disk with an Uber Skiver knife, forming a cylindrical shape. Having done so, insert the dowel into the jaws of a 1/4 inch variable speed hand drill and use a combination of files and/or sanding paper to "turn" the spinner to the desired shape.

The propeller blades are laminated from two layers of 1/32 inch sheet balsa using thinned Titebond glue. Each blade is wrapped with strips of scrap cloth at an angle of 10 degrees off the longitudinal axis of a 2-1/4 inch tomato paste can. This assembly is then placed into an oven at 200 degrees and "cooked" for an hour or so to speed up the curing and drying process. When the blades are completed, they are sanded to the appropriate airfoil shape and inserted into the spinner.

In view of the extremely short fuselage, a rubber length of two times or more the motor peg-to-propeller hook length will be needed to give any reasonable power run. Long motors usually present the problem of "climbing" up the propeller shaft, but this may be avoided by the use of what is sometimes called an "S" hook on the propeller shaft. I have sketched the details for making such a hook on the

Continued on page 68



plan. It may seem formidable at first, but take your time and use a good pair of pin-nose pliers, and you should not have any problems.

Letter the words "Spirit of St. Louis" on either side of the model's nose and the fuselage is nearly complete.

WING

As with most aircraft of its era, the Spirit had a profusion of closely spaced ribs. In the interest of weight saving, scale rib spacing was not used, but the ribs shown on the plan fall at "scale" positions of the other ribs needed to build a "scale" wing as shown. Again, to save weight, the ribs might be individually built up (or "sliced"), but ribs from 1/32 inch soft sheet balsa were used with satisfactory result. The leading and trailing edges were made from 1/16 inch by 1/8 inch balsa strip and the wing tips were laminated from 1/16 x 1/20 strip bent around cardboard or sheet balsa forms in the usal manner.

The single spar of 1/20 square balsa strip was added after the ribs had dried and you will note that the wing tips have been constructed so that they bevel up to the spar. This is done to add as much as possible to the chances for recovery in a side-slip. When the wing is dry and removed from the plan, some dihedral should be added. I recommend at least three degrees per panel, as this much will not bring a penalty under the present AMA rules, and it will also help a bit with the otherwise "saggy" look which is a characteristic of aircraft lacking dihedral.

With the leading and trailing edges shaped, the wing should then be covered with white or silver tissue. The registration numbers may then be cut from black Japanese tissue which is stretched tight with tape on your work board, using a sharp pointed blade, and adhered using clear dope. Ailerons may then be drawn with India ink (if you have given the wing at least one coat of clear dope) or may be added using very thin strips of black tissue held in place with clear dope.

With the wing completed, it is joined to the fuselage and the details of the struts and landing gear are added through the use of 1/32 inch and 1/8 inch balsa sheet as shown. Generally, I prefer to make the airfoil shapes of the struts *before* they are cut to the appropriate lengths from the balsa strips. If the struts are to be covered with tissue, or painted, I find it easier to do this directly with the strip stock before cutting the individual struts from it.

With the struts and landing gear in place, the model is taking shape. At a 13 inch span, Spirit's wheels come to 3/4 of an inch. Either Williams Brothers wheels may be used, or you might want to cut an ultra light set from either balsa sheet or styrofoam. Even Hungerford wheels might be considered, but you would have to cover those beautiful spokes to get the right look for this particular subject.

TAIL SURFACES

Both the horizontal and vertical tail surfaces are extremely small and should be enlarged as shown on the plan. The surfaces are built entirely of 1/20 inch square balsa. The outline being made, like the wing tips, of three 1/64 x 1/20 laminated balsa strips around a waxed balsa or cardboard pattern. Build directly over the plan, adding 1/20 x 1/20 spars and ribs once the outlines are dry.

Because the tail surfaces are fragile, it is probably a good idea not to water shrink or dope the tissue applied to them. If you feel compelled to shrink and dope, build a stabilizing jig by sandwiching a piece of 1/20 strip of approximately 3/32 inch width between two strips approximately 1/8 inch wide so that you will have a channel approximately 1/20 inch wide to slip over the leading and trailing edges. Pins can then be driven through the jigs into your work board to hold the individual tail surfaces firmly while water or dope applied to them dries.

The characteristic markings on the rudder were painted free hand using a triple-o brush and Polly S "Night Black" (PF 10) paint. Struts of 1/64 x 1/20 plywood are added beneath the stabilizer, and a tail skid of similar dimension completes the empennage. If you feel really fussy, you might also want to make control horns for the rudder and the stabilizer, using bits of thin plastic card. The control "cables" can be readily fashioned from "stretch sprue" made by taking scrap plastic from the "trees" of the plastic models and holding it over a candle until it becomes soft. The "tree" is then pulled rapidly, creating a thin plastic "thread" which can then be cut to the desired lengths and held in place by a tiny drop of white glue at either end. As with the ailerons, the control separations for the rudder and stabilizer can be simulated by the use of India ink or thin, black, tissue strips.

FLYING

Because this model was built hurriedly to meet a publishing deadline, I did not have time to test fly it before submitting this article for publication. I suspect that 1/16 inch rubber strip will be adequate to power it, and I certainly do not anticipate anything more than a strip of 1/8 inch rubber. I will begin my testing by the use of a short loop just covering the distance between the rear motor peg and the propeller hook. Assuming successful flights can be obtained with a short motor, I will then lengthen the motor to at least twice that length and possibly even more.

I suspect that it may also be necessary to steam in some wash-out in both wing tips. In any event, this model should be stimulating to trim and fly and if you plan to build a version for the Proxy Peanut Contest, I urge you to start early as a delightful challenge awaits you! ●