

BY PAUL DEL GATTO

Lady Luck

► Like many an ardent control-line enthusiast we sometimes get bitten by the bug to do something just a little more than slapping a profile model together for some Sunday-flying-fun, and get the urge to go off on the deep end. The Lady Luck, shown here, is the long drawn-out result of two years of development in airfoils; structural design and proportional development.

Outwardly, the model's appearance is not unlike many other stunt models, except perhaps for the high-slung tail surfaces. The airfoil is an N.A.C.A. development which heretofore we have not seen used, though that in itself is not the whole measure of the model's success. The wing construction departs from the traditional top and bottom main spar with sheet and capstripping. . . . Instead, a stepped sheet spar is used.

Note, also, that the wing section and the trailing edge are not of constant thickness, for it is tapered out to the wingtip. This to our way of thinking, closely approximates an aerodynamically perfect wing; from the viewpoint of efficiency.

Many experienced stunt fliers are cognizant of the fact that the efficiency of tail surfaces are minimized when placed in the wake of the turbulent flow of air from the wing. However, to mount the stab in a more desirable position often introduces structural design problems, which if not properly done will result in tail flutter and vibration. We exercised a great deal of care in designing the model to provide a secure mount for the high slung tail surfaces. The fuselage is constructed similarly to many (Continued on next page)



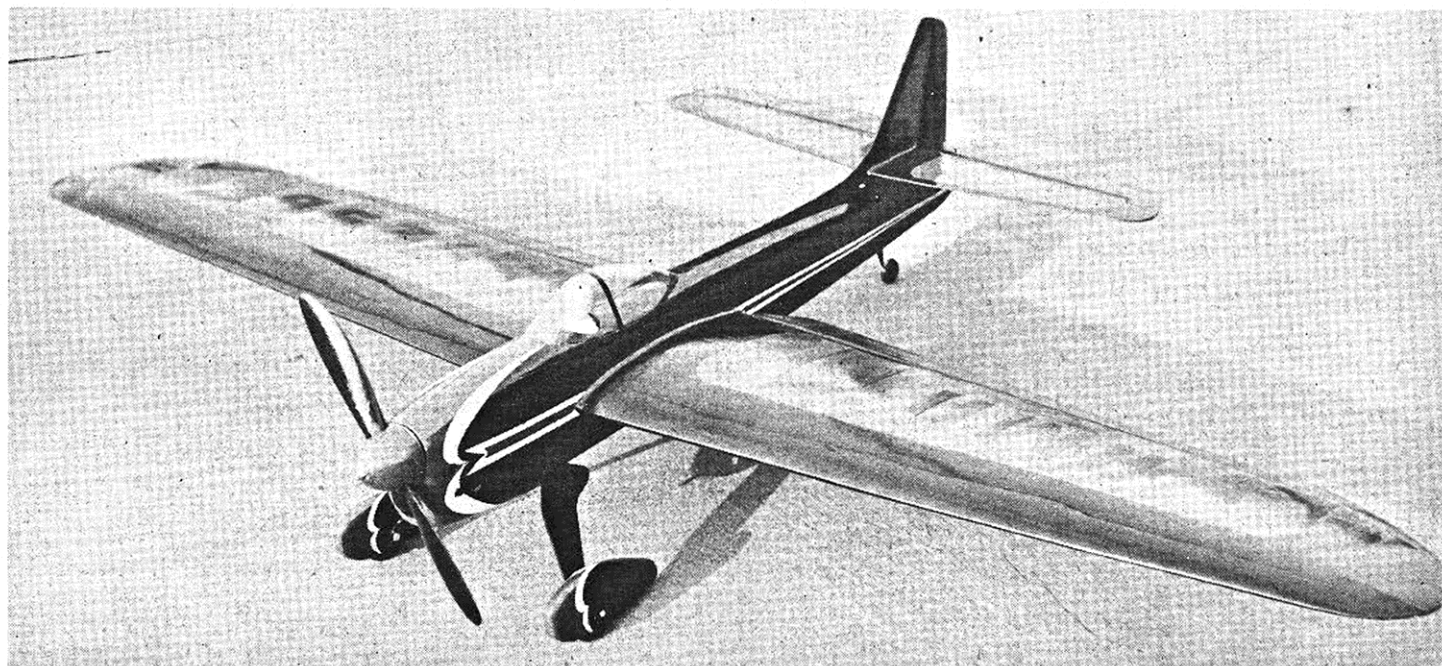
Stunt models do lend themselves to good lines both aerodynamically and looks. Tapered wing

is sound aerodynamically and does much to give that realistic look so important to our modelers.

LADY LUCK

DESIGNED FOR BEGINNER AND EXPERT ALIKE OUR STUNTER HAS THE BUILT IN STRENGTH REQUIRED FOR THE BEGINNER AND FINESSE FOR THE EXPERT.

Combination of good finish, well-trimmed, landing gear fairings, wheel pants and prop spinner does much for sleek appearance of the Lady Luck.



LADY LUCK Continued

other stunt models, except perhaps it's a little beefier than some.

To some extent these structural and design considerations were essential, for in the art of stunt flying we do not rank ourselves as a better than an average stunt flier. The skilled stunt flier can take most any model, even a poorly designed one, and with little effort do the complete pattern as if it were "duck soup". Not so with us. What we needed was an airplane as close to perfection both structurally and aerodynamically so as to make up for our lack of top flying skill.

Needless to say, many an aspiring stunt flier often blames himself, rather than the shortcomings of the model he is flying, as the reason for not doing a flawless stunt pattern.

Despite the quantity of lumber absorbed in building the Lady Luck, the weight was kept to a respectable limit, by using a great deal of medium to soft wood; using hard balsa only where absolutely necessary. Properly controlled, this method of construction has the decided advantage of obtaining a model that will better absorb the stresses and strains of maneuvering as well as, engine vibration, not to mention those rough take-offs and landings which can happen to the best of us.

CONSTRUCTION: Begin construction with the wing, since this is the key surface about which the rest of the model is assembled.

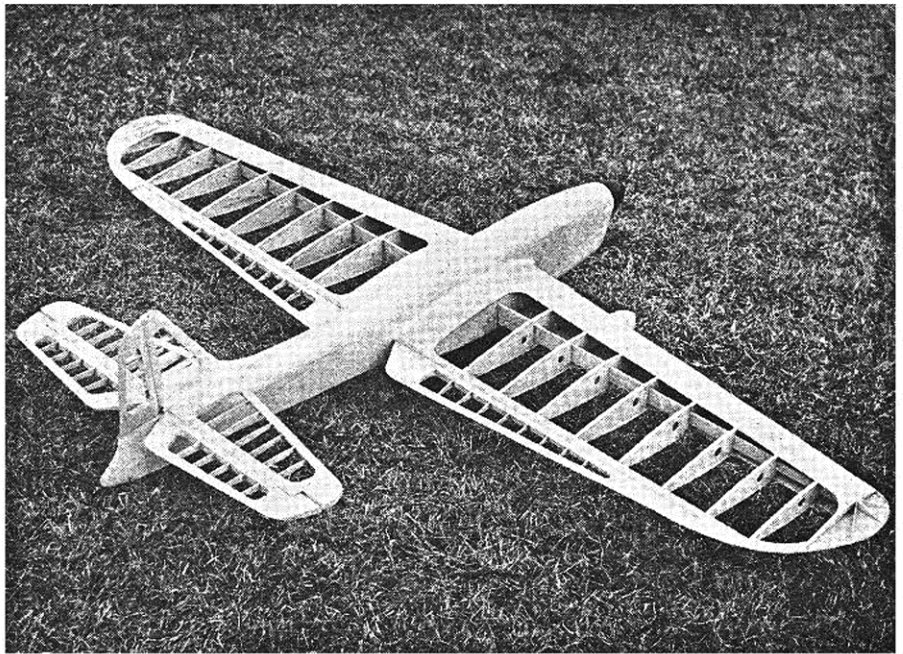
The $\frac{1}{8}$ " hard sheet spar is cut to the pattern shown on the plan, remember that the outboard half of the wing spar is shorter. The $\frac{1}{16}$ " plywood stiffeners are cut to size, to which the two wing spar halves are sandwiched in between.

The wing ribs are all cut from $\frac{1}{16}$ " hard sheet balsa and for accuracy all the ribs have been laid out, and there is no guestimating with any of them. Cut the wing trailing edge and flap leading edge as indicated, and pre-shape them before assembly.

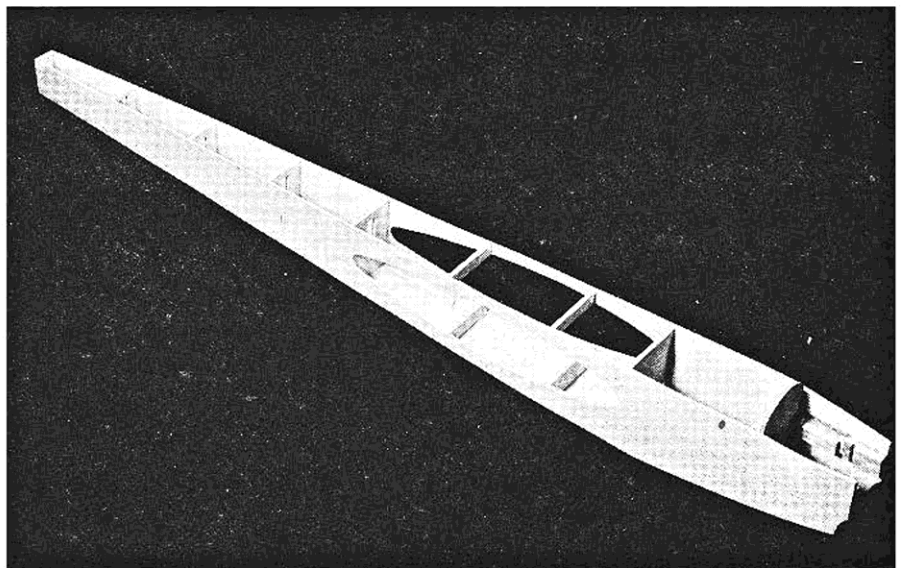
Begin assembly by locating the wing ribs on the main spar. Cement the ribs to the spar and the wing trailing edge simultaneously to insure accurate alignment. Then add the wing leading edge, leading edge brace, and bellcrank mount.

Cut the $\frac{1}{8}$ " hard sheet tips to shape and cement them in place, then add the required bracing to each wingtip. Install the complete control system at this time, but do not finalize the pushrods to the flap and elevator control horn. Plank the top and bottom of the wing leading edge, and also the complete center section. The wing ribs are then capstripped on top and bottom.

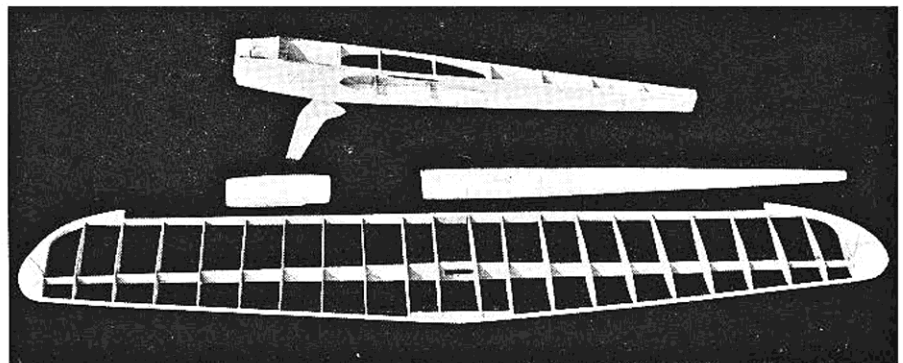
Having completed the wing frame, proceed with



In its uncovered state we can see the many refinements of the designer—note the ribbed flaps and the balanced elevators, built and adjustable vertical fin and the streamlined tail fairing.



Use of the slab-sided-fuselage greatly speeds up the building time and adds considerable strength. Slide through wing backed up by formers of good thickness also add to strength.



All components prior to final assembly and covering. Wing has not been sheeted to show cutout for bellcrank. Upper fuselage blocks are hollowed and streamlined for good appearance.

the fuselage assembly by first cutting out the basic fuselage sides and the 1/16" plywood doublers, and then cement the dicated.

Cut out all the fuselage formers and the engine mount components. Start assembling the fuselage sides with F-1 and F-2 and then add F-11. When this much has been permitted to dry, add the remaining formers and the 3/32" square bottom stringers.

Install the engine mount assembly, remember this may be tailored somewhat to suit the engine being used. The next step is to install the plywood landing gear mount and sheet bracing.

The landing gear strut itself is formed from a piece of 1/16" dural. The wheel pants assembly is an optional feature which does take a little effort. However, the added good looks, we feel more than make up for it. Complete the main landing gear assembly, and also the tail wheel strut installation before proceeding further.

Slide the wing assembly in place in the fuselage cut-out, and cement it securely in place. The built-up wing flaps are then assembled and hinged to the main wing surface. Add the 3/32" sheet balsa fuselage bottom after the wing has been installed.

Select a light weight soft block for the fuselage top and blank it out to the desired shape. Then hollow it out to the dotted line. If the block does not happen to be light in weight, then hollow it out to a thinner wall thickness.

Cut out the stab mount center pieces, and slot the top block to receive the main mount. The blocks have been angled to permit proper clearance for the elevator control horn.

While the tail assembly is relatively easy to construct, nevertheless, considerable care should be exercised to make the surfaces sturdy and uniformly symmetrical. The measure of any model's performance, or lack of it, can often be traced to the tail surfaces. The tail surfaces are best constructed without any preliminary shaping or cutting of ribs to the desired outline. The surfaces are shaped after assembly using a large sanding block and rough to smooth sandpaper.

Hinge the elevator assembly to the stabilizer with cloth tape hinges, and trial fit the completed unit in order to finalize the elevator pushrod. Once satisfied, cement the stab-elevator unit in place.

The fin is then cemented securely on top of the stabilizer. The rudder is locked in a 3/8" minimum offset position until the model has been test flown: After which the offset can be increased or decreased.

The engine can be installed upright or inverted, as you prefer. Use lock washers in mounting to prevent the engine loosening as a result of vibration. Locate the fuel tank as close to the engine as possible. Cover the cylinder head and air intake to prevent balsa dust and shavings from getting inside while the top front block and bottom front block are shaped to outline. Upon completion of the bottom block, hinge it to one sider, in order that the engine can be examined occasionally.

With all the surfaces cemented in place, the next important thing to do is reinforce all the joints with silk or nylon. Then brush on two coats of clear dope over the entire structure, smooth-sanding between each coat.

COVERING AND FINISH: Only the wing and tail surfaces require covering. For the tail surfaces and wing flaps, we would recommend light weight Silkspan or two layers of light weight tissue applied cross-grain. For the main wing surfaces, light weight silk or nylon is best. If anything else must be used, our own preference is for the double tissue covering rather than a heavy grade of Silkspan. It is a little more work, but considerably more durable.

After completing the covering, apply three to four coats of clear fuel-proof dope over the entire model, smooth-sanding between each coat. The two primary colors used on our model were black and red with some white added to the pin striping.

Allow ample time for the completed color trim to dry to a hard finish. Then using a fine grit rubbing compound such as "Duco No. 7" or "Aero Gloss", rub down the surfaces to a high lustre. The canopy used is now pre-trimmed and lightly cemented in place so as not to mar the finish. Canopy available from most hobby shops.

FLYING: As is the usual procedure, select a relatively calm day for your first flights. Regardless of your experience, any new model presents some difficulties. There may have to be some adjustment made as to side thrust or rudder offset; or perhaps even the control system may need some adjustment. These things may seem trivial until such time that something goes wrong.

Do not attempt to fly the model on low power, but rather from moderate to high power. The more intricate the maneuvers the more power should be available. Pull test your lines between each flight for added safety, and stay away from high tension lines.

Sounds gloomy, sure. But follow these tips and they will pay off with a top notch performer and your friends will envy you.