THE LAIRD "SOLUTION" RACER

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A FINE REPLICA OF AN OLD-TIMER, ONE OF THE MOST ADVANCED DESIGNS OF ITS DAY

INDEED it must have been a great moment way back in 1930 when "Speed" Holman won the Thompson Trophy Race with the terrific average of 201.96 miles per hour. There is no doubt, however, that Holman was flying one of the best designed racers of the times.

The Laird "Solution" was one of the first small span racers and was destined to start the design trend that ultimately ended with the extremely dangerous "Gee-Bee." The Laird never did show the treacherous instability of the later hybrid designs.

But to avoid arguments on the relative merits of the original Thompson Trophy Racers, let us dwell on the Laird as the subject of a control-line gas model. The design has everything to offer the model builder except the extremely high speeds. Yes, and if you have a strong whipping arm perhaps you can bring its speed beyond the 100-mile-per-hour bracket! The design has the word "strength" all over it. Need we say much about the stunting ability of a biplane such as this? And the top wing mounted flush with the fuselage has its advantages too; on one flight the engine cut out while the model was upside-down, and having only about 20 feet of altitude there was no choice but to bring her in in that position. The only damage suffered by the model was a scratched wing and the tip of the rudder worn off. Damage to the author's nervous system was much more extensive.

Construction was kept as simple as possible, as is evidenced in the drawings. With a little care and patience you can have a model that will give you endless hours of flying fun. The original model had a Bantam for power, but the model can take engines up to .35 displacement with no structural alterations.

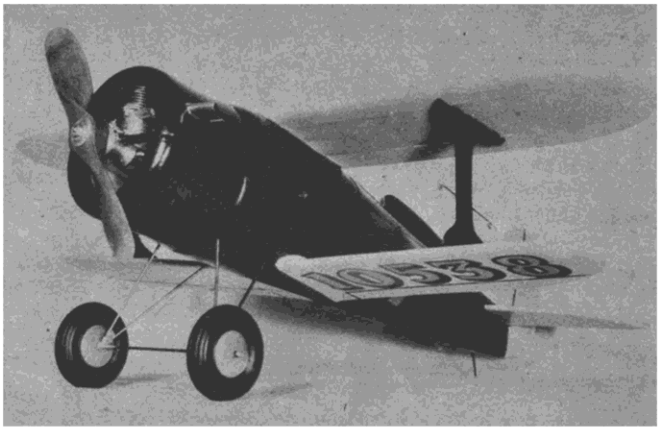
The fuselage is built around a crutch foundation. The upper and lower sections of the fuselage may be carved from solid balsa blocks, hollowed to about 3/16" thickness and attached to the crutch. If you don't want to go to the expense and trouble of securing blocks of the right size you may build the planked method shown in the plans.

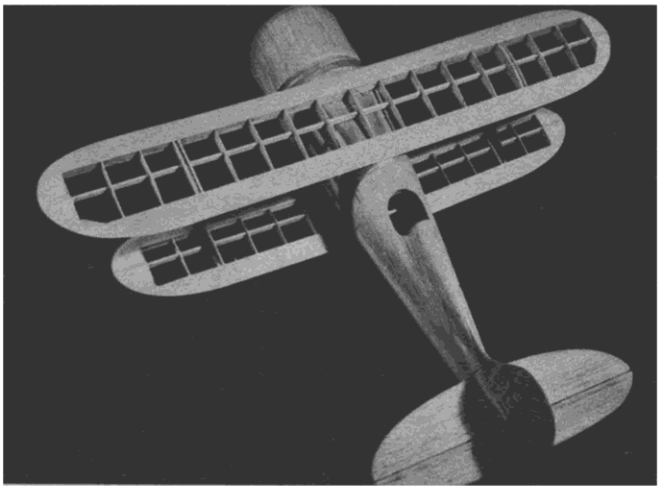
First cut all the fuselage bulkheads to shape from the indicated size sheet. Note that the plans are one-third actual size, so the plans must be enlarged three times. Build the crutch from 1/4" sq. balsa with 1/8" by 1/4" crosspieces. Space the hardwood motor mounts to fit your individual engine then fill-in around the motor mounts with 1/4" sheet. Build the bottom half of the fuselage directly on the crutch and plank with soft 1/8" sheet before removing from the plans. This insures perfect alignment. Now remove the framework and add the bulkheads beneath the top wing and the wing platform. Plank this section as before. The removable cockpit section is carved from a solid balsa block and hollowed as sketched in the plans. It is held to the crutch by large dress snaps or wire hooks. The lower half of the engine cowl is fixed, but the upper section is removable to gain access to the engine. Of course, a spun aluminum cowl is best, but a built-up balsa is very satisfactory as you can see in the photos.

The landing gear is bent to the design shown from 3/32" wire. The top crosspieces are mounted in drilled hardwood blocks and heavily cemented to bulkheads F and G. You must mount the landing gear before completing the planking of the lower fuselage section. Tail skid is bent from 1/16" wire and imbedded in the solid balsa tail block as shown Carve the head rest from solid balsa and secure in place. Note that the windshield extends slightly over bulkhead H. Be sure not to cement it to the bulkhead or you won't be able to remove the cockpit section. Do not mount the coil or battery box until the model is complete, then they may be used for balancing.

The tail surfaces are cut from hard 3/16" sheet balsa to the design shown. The elevator has a 3/16" sq. bass spar to act as a connection between the two halves and for a sound foundation for the control horn. The author has found the silk thread hinges to be far superior to cloth hinges. They are stronger and do not have the "play" that cloth does. Cement the stabilizer to the top of the crutch very carefully and don't spare the glue; there is a terrific load on the stabilizer in flight. The rudder may be offset slightly for your mode of flying.

The wings are of very simple construction. The only thing unusual is the over-size leading edges. True, this type of leading edge is heavier than a built-up one, but the strength and time saved are more than worth it. Both wings are built directly over full-size drawings and in one piece. The lower wing is then cracked at the center for the necessary dihedral. You may use plywood gussets to brace this joint and plenty of cement. Solid balsa wing tips enable you to achieve the required compound curves and thus look much better. Cover the wings with bamboo paper or double layers of tissue. Do not cut the slit between the two 1/8" ribs for the wing





● Rugged, yet reasonably fast, the "Solution" is excellent for sport flying.

struts until you have doped the covering and are ready for assembly. Two wing struts are required. They are cut from 1/16" plywood. Note the notches for slipping and locking with the wing spar and leading edges.

You may now install the flight controller. Use brass tubing bent to a large radius. Bind and cement these tubes to the crutch. Add some grafite for smooth operation. Solder all connections between control lines and control horn. If you intend to use an engine of over .30 displacement it might be wise to use the bell-crank system for control as it will handle greater speeds and weights then the system shown.

The finest made model can be ruined by a poor finish, so heed these words of advice: The entire model is given two coats of rather heavy clear dope and lightly sanded with 6/0 sandpaper. Mix some wood filler from a good grade of talcum powder and clear dope to the consistency of heavy cream. Brush enough coats of this filler on the model (including the wing covering), with sandings of 10/0 sandpaper between coats, until all the wood grain is filled and you have a solid smooth surface. You may now apply the colored dope. The wing and tail surfaces are gold (or yellow) and the fuselage and other details are gloss black. Either spray the colored dope or use a red sable brush. Cut the dope fifty percent with thinner and apply at least six coats of color. Rub the final coat down with 400 wet/dry finish paper and water. The water keeps the paper from filling up and prevents scratches. After the finish is completely rubbed apply a coat of automobile Simonize. This should net you a finish that will do you proud in any beauty event.

All that is left is final assembly. Very carefully cement the top wing in position. Note that all flying surfaces are set at zero degrees incidence. Cut the slit between the two 1/8" ribs on the bottom surface of the upper wing only and cement the wing struts in place. Observe that the strut slips up between these two ribs till it touches the upper camber. Now slit the strut space on the top of the lower wing and drop the lower wing in position. It should fall snugly between bulkheads G and I. Apply cement heavily at all intersections. Now add the solid balsa block fairing below the lower wing. A control guide device may now be added to the left wing strut.

Decals may now be added. The number 77 is under the cockpit and the license number is NR 10538.

The model should be balanced by locating the coil and battery in the fuselage to have the C. G. about one inch behind the front control line. If you are a control-line flyer with lots of experience, we needn't tell you what to do about test-flying your Laird. If you are new to this type of flying, our best advice is to ask one of your more experienced friends to teach you the tricks of control flying. Although this design is seventeen years old, she has plenty of kick in her yet. When powered with a Bantam and an eight-inch propeller, the original model did well over 60 miles per hour. Good luck to you.