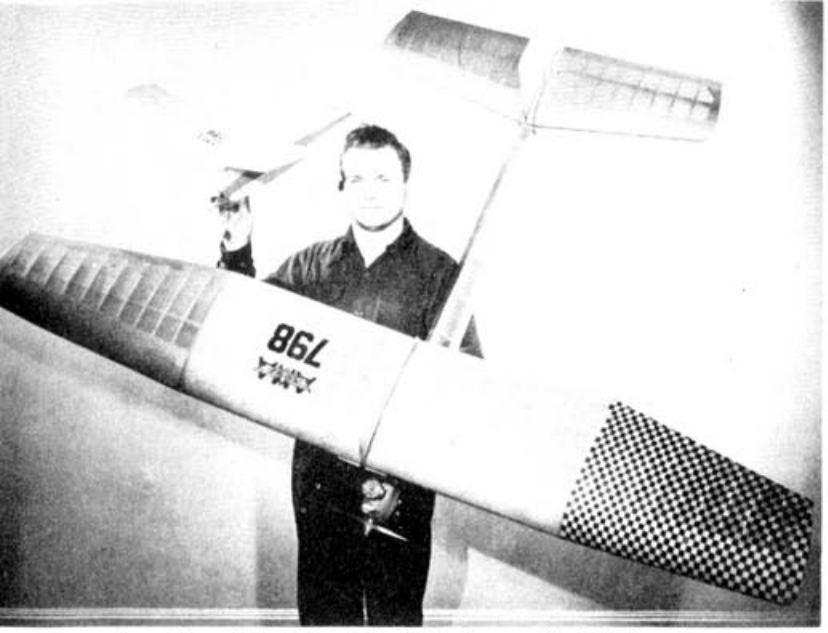
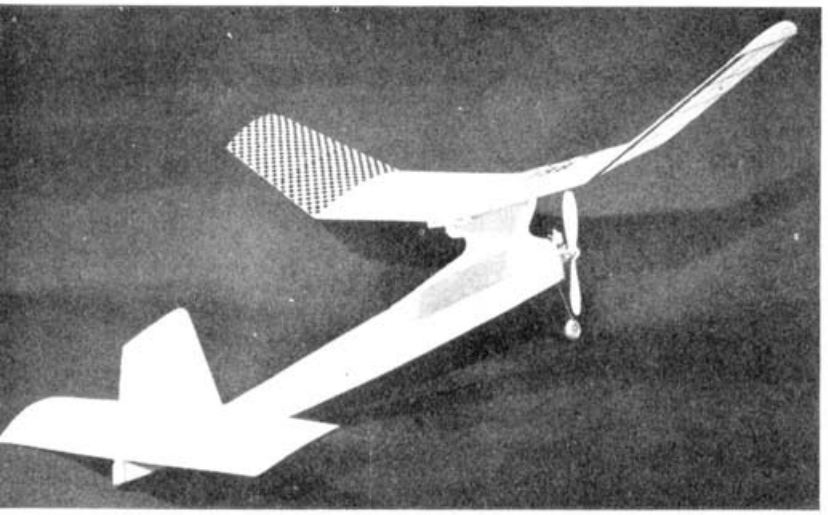


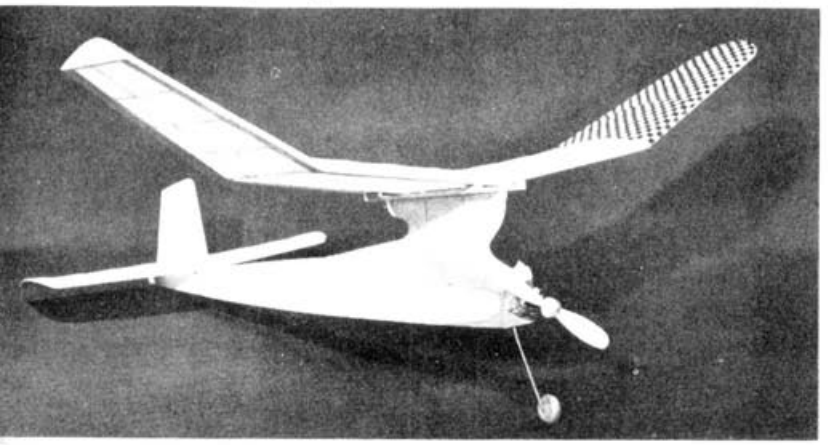
Proportions of the AA and its big brother are identical; however, construction is simpler in the smaller model. Any hot .60 engine is suitable for the C ship.

The high performance of this free flight has been proved in contests. Detailed plans for the AA version, construction data for C job.

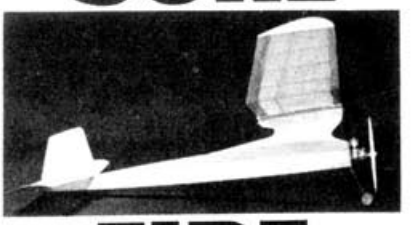


The *Sure Fire* strikes a happy medium; moment arms are neither long nor short, and the same applies to aspect ratio. Anderson .065 moves it up to Class A.

Sheet sides and bottom make sturdy modeling for handling, minimizing paper tears on fuselage. Wing is flat-bottomed on the AA, undercambered wing in C.



SURE FIRE



by FRANK EHLING

The original D version of the *Sure Fire* won its share of contests so the basic design seemed a good bet for 1951, both as an AA ship and as a Class C job, the D class having been killed before the 1950 season started. A lot has been said about the bad points of scaling a design up or down to adapt it to other classes but the *Sure Fire* performs well in any size. Our tests bear that out.

Full detailed plans are presented for the AA version, but the more skilled builder will have no trouble in working up the C giant from the semi-detailed three-view which gives wing and tail construction. You will note data on the three-view for both AA and C. For the C model, a big Dooling, McCoy, Spitfire, and so on, will give top results. Ours was fitted with a 12" *Aero Prop.* It will hold its own with any contest free flight.

The original D model was covered with *Silkspan.* However, after it was flown for one season, it was recovered with nylon. Nylon covering is the best possible protection to stand up in contest flying. Be sure that the model is well doped and fuel proofed. You should fly it in both calm and windy weather to learn all its peculiarities. If you can fly in calm or in the wind, you will be sure to take home prizes—there are many model builders who think that they cannot fly in wind, and therefore, hesitate to do so in a contest. Try "wind" flying. It's easy.

Directions for the AA model. The wing is not high aspect ratio, nor is it low. The fuselage is not short coupled nor does it have long moment arm. The model seems to strike a happy medium, turning in one good flight after another. The fuselage cross section, while a little large, does not seem to alter the performance of the model whatsoever. The AA version uses a thin flat section, both in the wing and in the stabilizer. The fuselage has sheet balsa sides and bottom, and sheet covered front section. This means good handling qualities.

Start the AA by drawing the plan to proper size, making sure that you have all the material on hand. A little patience will pay off a model you will be proud to fly, and you will be up there with the rest of the winners throughout the season, if you don't forget the dethermalizer fuse when you launch your model.

Making the fuselage. Cut the two sides out of 1/16" balsa sheet. If you can obtain quarter-grained balsa (speckled appearance), by all means use it. It produces the best possible fuselage for a given weight. Now cut the required bulkheads. Start assembling by cementing the sides at the rear, then cement the bulkheads in place, working from rear to front. As you go along, check the fuselage to make sure that it is not out of line.

After the bulkheads have (*Continued on page* 48)

Sure Fire

(*Continued from page 18*)

set, add the bottom sheet. Cement it in sheet form, and trim it to the sides, rather than cutting a pattern and then trying to fit the pattern to the fuselage. By using a sheet, any discrepancies on the fuselage or plan will be eliminated as you trim to the actual outline.

The front bulkhead has the usual 1/16" plywood and balsa sandwich construction, with wire landing gear sandwiched between the two 1/16" plywood bulkheads. Be sure to be generous with cement on the front bulkhead junction, as it has to take punishment caused by an unbalanced prop or rough engine running at high speed.

Cut pylon from 1/8" sheet balsa and cement it in position. Check to make sure that it is straight. An offset pylon can be just as bad as an offset rudder. Two pieces of trailing edge stock are cemented to the top portion of the plyon to strengthen the structure. Top platform for the wing is cut from 1/8" balsa and cemented in place. To this platform add two 1/8" squares, one on each side, to provide a spaced support for the wing.

The stabilizer platform is cut from 1/16" balsa and cemented in place. Add the top keel from stabilizer to pylon. Secure the keel in place with a few triangular bulkheads as shown on the plan. Sand the entire fuselage smoother with a good grade of fine sandpaper. Go over all edges to produce a smooth finish. Re-cement any joints that may have been weakened in the process.

The wing can now be started. Carve the leading edge to an approximate shape as shown. Pin it over the wing outline. Cut the wing ribs from 1/16" sheet balsa. Position the trailing edge with pins, and start cementing ribs in place. After the individual panels are assembled, cement them together so that the proper dihedral angles will be obtained. Sand leading and trailing edge to bevel to obtain correct dihedral. While the dihedral joint is drying, and wing is still held in position with blocks, add 1/16" sq. spars. These spars are used only to form rib stiffeners. The tips are now added. These are carved from soft balsa as shown on the plans. All dihedral joints should be covered top and bottom with bandage. Spread ample cement over the bandage before covering. The leading edge now can be sanded to conform more exactly to the rib shape. Do not sand ribs as you are liable to produce a flat portion between the 1/16" sq. strip and the leading edge.

The stabilizer is made in a manner similar to the wing. However, it has no dihedral nor 1/16" sq. stiffener strips. You will notice that there are two ribs at the center. The reason for this is to provide a sandwich-like construction for the 1/16" rudder attachment. Be sure that these center two ribs are cemented perfectly straight as they determine the rudder setting on the model. An offset rudder may make it hard to fly properly. Carve the tips in the manner described for the wing. The stabilizer airfoil is similar to wing, and the ribs are obtained as the tapered ribs on the wing tip. To finish the stabilizer, sand it smooth and make sure that the ribs line up well for smooth covering.

The rudder is cut from 1/16" balsa, quartergrain preferred, sanded smooth, but not to a streamlined section. Just round the edge. A 1/16" balsa rudder when streamlined, produces very thin and ragged edges after a few weeks of flying. Be sure, when cementing the rudder between the two center ribs on the stabilizer, that its position is as straight as possible.

Covering. The entire model is covered with Jap tissue or any similar tissue of light weight. Starting with the fuselage, cover the entire model, including the balsa sheet portion. This will seal all pores in the balsa and require less dope, keeping the total weight to the required minimum of 5 oz. Wing and stabilizer also are covered with tissue. Here, be sure to add a little bit of castor oil to dope if dope has a tendency to excessive warping. Dope the model thoroughly so that it will not be able to absorb water. If a model is doped well, warping may vary. That is, in the morning, while test flying, as we do on a contest day, the grass may be wet, and the model will pick up moisture. Adjustments made at this time are false. When the sun comes out, the model will never be the same as in the morning. Therefore, any flight you may make in the morning, may or may not be repeated in the bright sunshine.

Trim (decorate) the model to your own taste. Many people may be too busy and rush or forego this part. However, a bit of *Trim Film* will make the model more appealing later on.

Flying. We could sit down here and tell you many ways in which this model should be adjusted. Or we could say that no adjustments are needed. That is not true. Glide the model in a straight forward launch. If there is a slight stall present, all is well and good. However, if the model is slightly diving or even has a fast glide, add a little clay or similar weight at the tail end of the model to produce a slight stalling condition. Here, with this stalling condition, any turn that may be present during the first few test flights, due to offset motor or wing or bent rudder, will not give the usual spiral dive but a spiral climb, ending in a stalling glide. This is a lot safer in the long run. This stall in a glide can be slowly taken out by tilting the stabilizer.

Tilting the stabilizer is not new. Viewing the model from the rear, the lowest tip of the stabilizer in relation to the wing will be on the outside of the natural glide turn. To produce this tilt, a small sliver of balsa or similar material can be slipped under the opposite side, a little at a time, flying the model between the adjustments until the desired turn is obtained under power and in the glide. A safe tight turn is very necessary for thermal catching.

Before launching the model into a breeze, if there is any, let the engine run for 4 or 5 sec. Do not fly the model once or twice, but keep on flying and flying. If the weather is calm, wait a while before going home until the wind comes up, and then fly and fly again. Be sure the model is flying the way you want it to fly, not the way it wants to. The model is supposed to climb in a right circle and glide to the left. But, if your model flies to the left and glides to the right, and it does it well and continues to do so flight after flight, leave it to fly that way.

After flying this model many times, and having test-flown it to your satisfaction, take it to a contest, and don't worry who is there. At the end of the day, they'll be watching you when you takes the prizes home.