

America's Top F. A. I. Free Flight **"SATURN"** by Howard Timlin

■ First, I would like to thank Craig Cusick of Los Angeles, California, for his help in the design of "Saturn." We were after a free flight which would be able to compete with the better F.A.I. airplanes not only in turbulent Texas but also in the ideal California weather. We wanted the maximum engine displacement with the minimum weight requirements. We felt this combination would give a faster climbing glide due to its cleanness of design. The glide ratio was increased for this size airplane by using a higher aspect ratio wing with a Goldberg G-10 air-foil section and a clean streamlined fuselage. This was demonstrated at the '59 Nats where in calm weather the model won the F.A.I. event. Also, Saturn was tested earlier at the semi-

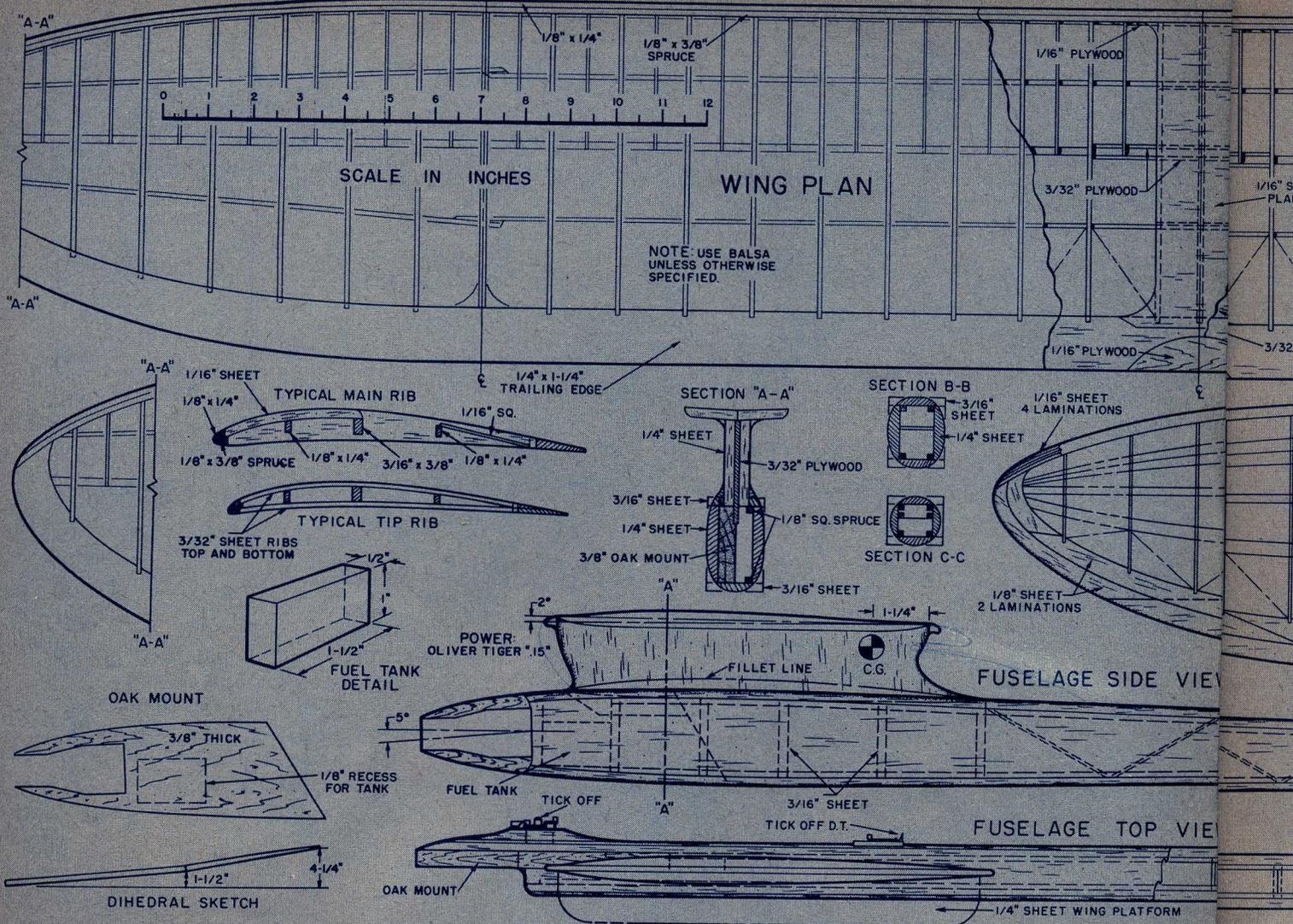
finals for the world championship team where it flew well in a 35 mile an hour wind.

Study the plans and carefully select your wood for the various parts of the airplane, keeping in mind that the stabilizer and wing wood should be light.

FUSELAGE—Start by cutting fuselage out of 1/4" sheet balsa. Then cut your motor mount out of 3/8" thick oak. You will have to cut about 1/8" out of the mount so the tank will fit. Drill holes in the oak motor mount for your motor and use blind mounting nuts. When this is done glue the motor mount to the left side looking from front of the fuselage. Next glue the 1/8" square spruce longeron to the fuselage sides as shown on the plans. When this is done, pin the side with the motor mount down flat. Then cut

your formers out of 3/16" sheet to receive the pylon. Cut the 1/16" sheet webbing that runs from the pylon to the tail section and notch for the 1/8" square spruce longerons and glue in place. Allow to dry. Next glue the tank in place and now you can glue the right side in place. Note the right side is shorter because the motor is side mounted. While the fuselage is drying, cut your pylon out of 3/32" plywood and laminate the 1/4" sheet balsa on each side, sand to a streamline shape and mount to the fuselage.

When the pylon is dry you can sheet the top and bottom with soft 3/16" and install the sub-rudder. Before adding the stab platform, carve the body to shape as shown on the plan trying to keep the tail section as light as possible. When this is completed, glue your stab platform in



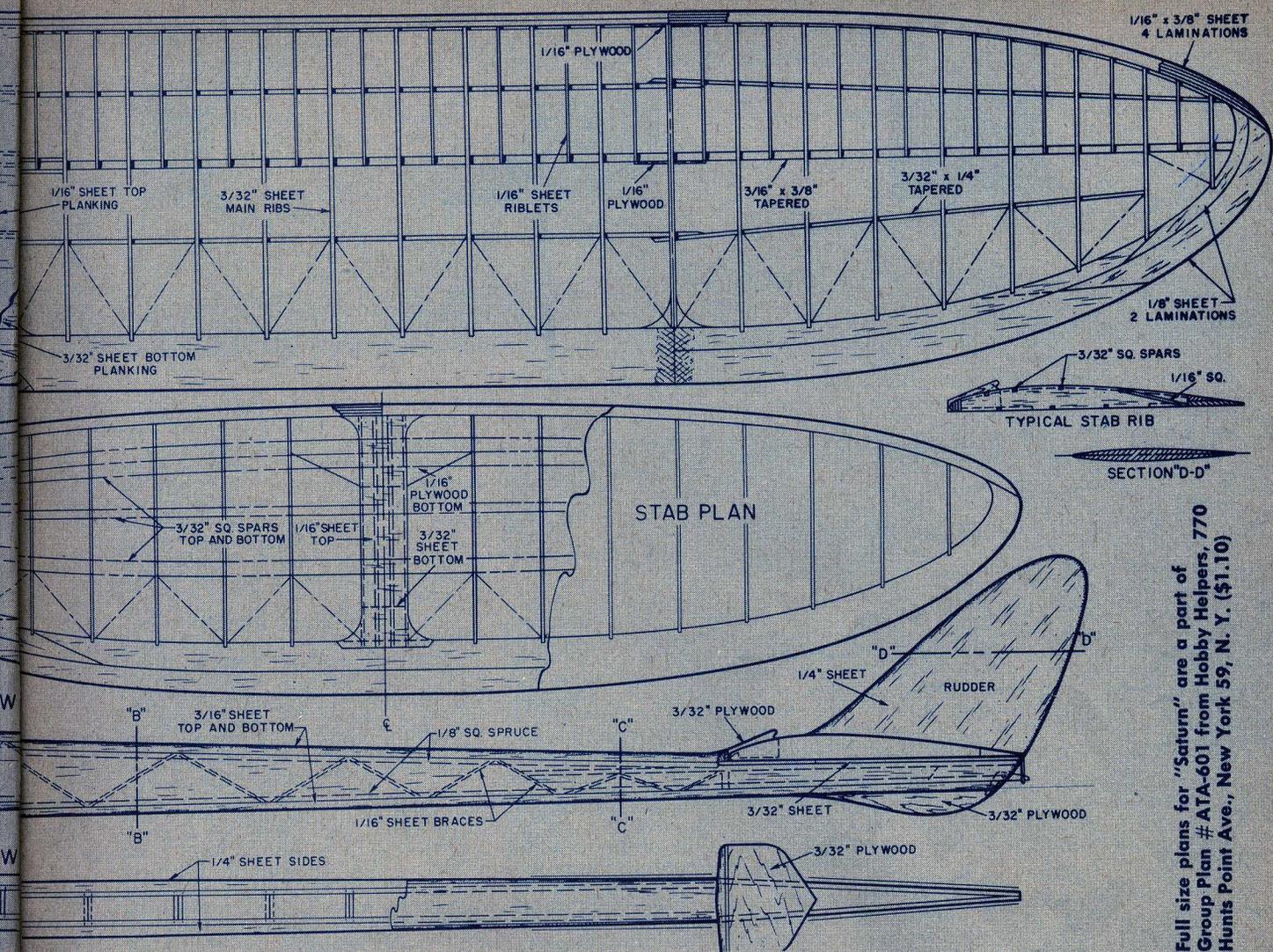
place and at the same time glue the wing platform in place, sand and give the body two coats of dope and cover with silk. I finished the body with primer and colored lacquer.

WING—Carefully select your wood using harder stock for the center panel, spars, leading edge and trailing edge than for the tip panels. Fairly soft stock should be used for the latter. This will give strength where it is needed most.

Be sure to block up trailing edge with 1/32" scrap balsa where the ribs are notched into it. All ribs are cut from 3/32" sheet. The tip trailing edge is laminated of 1/8" sheet as shown; the leading edge is four laminations of 1/16" sheet. Keep the tips as light as possible. On all the spars sand all the corners round so you can slip them through the ribs easily.

STABILIZER—Laminate the trailing edge out of light, 1/8" sheet and allow to dry, then taper and notch as on plans. Laminate leading edge like tips on the wing.

Author Timlin with Don Foote (far left) who is well known for his "Westerner" design and air-modeling theory books. Howard's from San Antonio.



Full size plans for "Saturn" are a part of Group Plan # ATA-601 from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (\$1.10)

The 1/4" sheet rudder is sanded to a streamline shape and should be covered with silk and finished before mounting.

COVERING—Before covering, the model should receive two coats of dope then be carefully sanded to a smooth finished surface. Then cover the model with silk and give it about seven coats of 50/50 dope.

TRIM—Make sure your model is balanced properly as shown on plans. Start by hand gliding over high grass until your model is gliding right on the verge of a stall. Saturn may require about 1/16" under the trailing edge of the stab and 1/16" tilt for right glide. The model should climb out about 45° and slightly to the right, making about two turns in 15 seconds.

The original was very stable in the power pattern and could be flown to the right or left. Key your stabilizer so you have about 1/16" left rudder before you try any power flights.

FLYING—Begin flying with about one-half power with seven second motor runs. Increase the power as the model becomes trimmed. It will take about three flights to get power pattern and glide turn and with a few more flights and slight changes in trim you will be able to achieve perfection in performance.

