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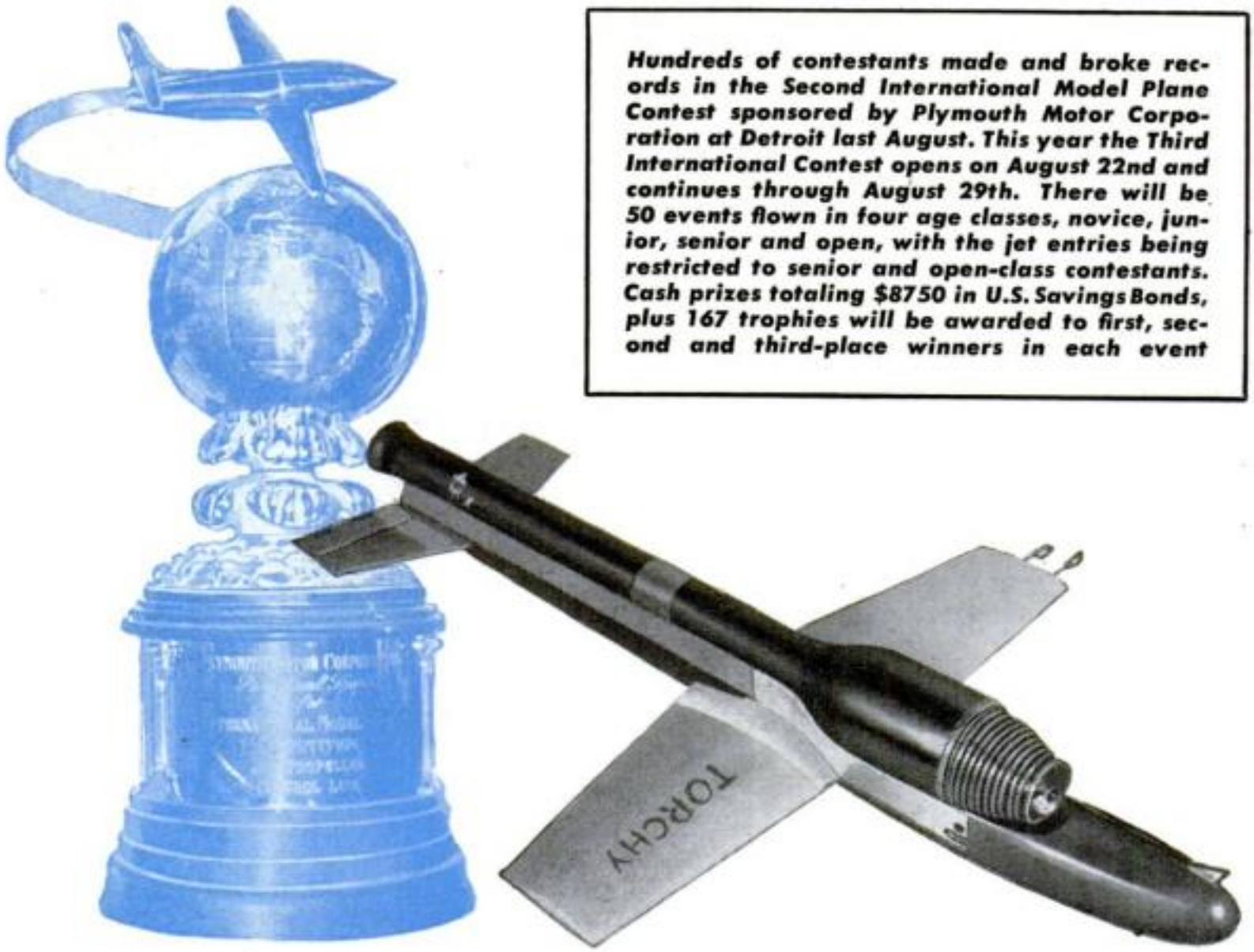


Hundreds of contestants made and broke records in the Second International Model Plane Contest sponsored by Plymouth Motor Corporation at Detroit last August. This year the Third International Contest opens on August 22nd and continues through August 29th. There will be 50 events flown in four age classes, novice, junior, senior and open, with the jet entries being restricted to senior and open-class contestants. Cash prizes totaling $8750 in U.S. Savings Bonds, plus 167 trophies will be awarded to first, second and third-place winners in each event

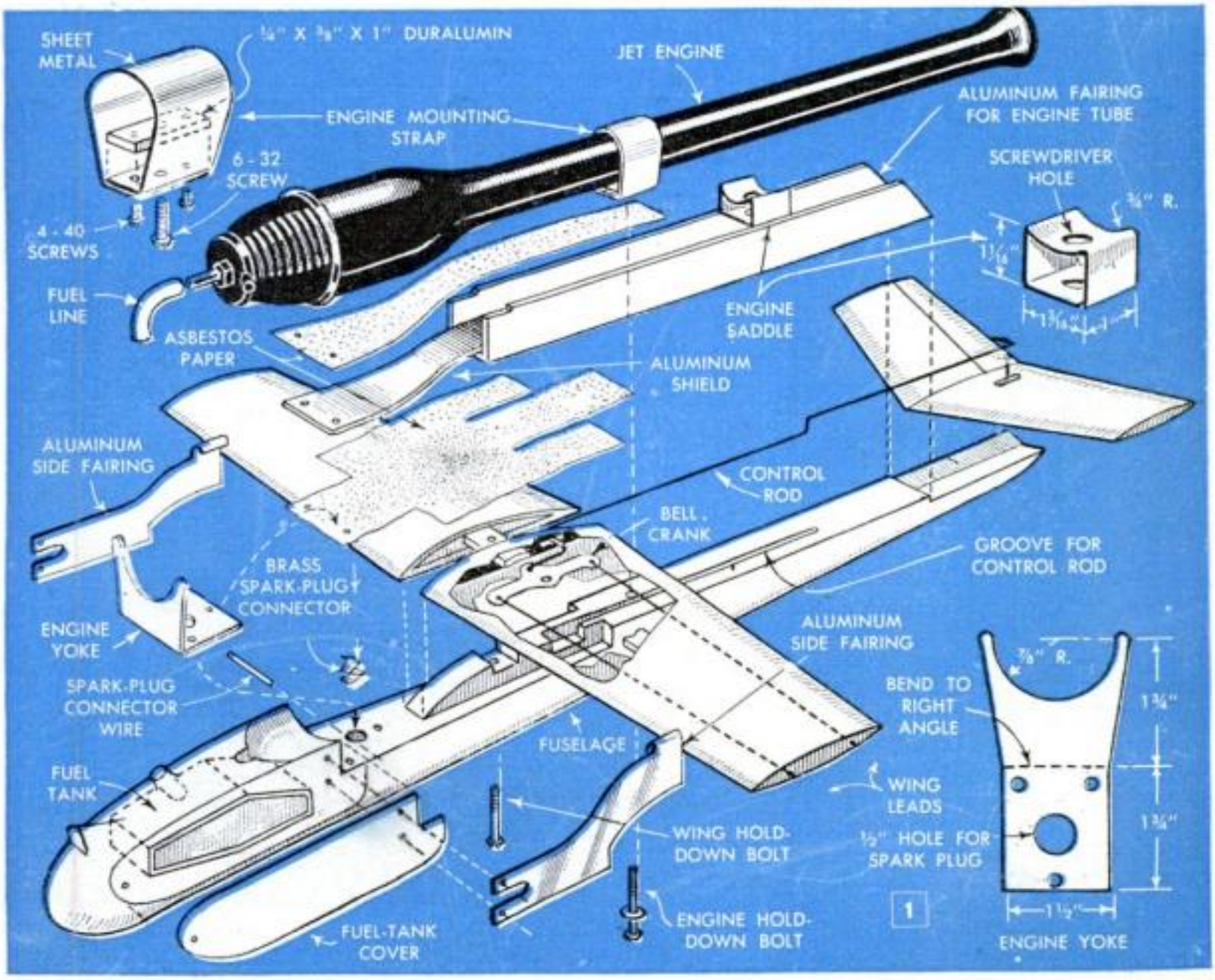
"TORCHY" Prize-Winning Jet Speedster

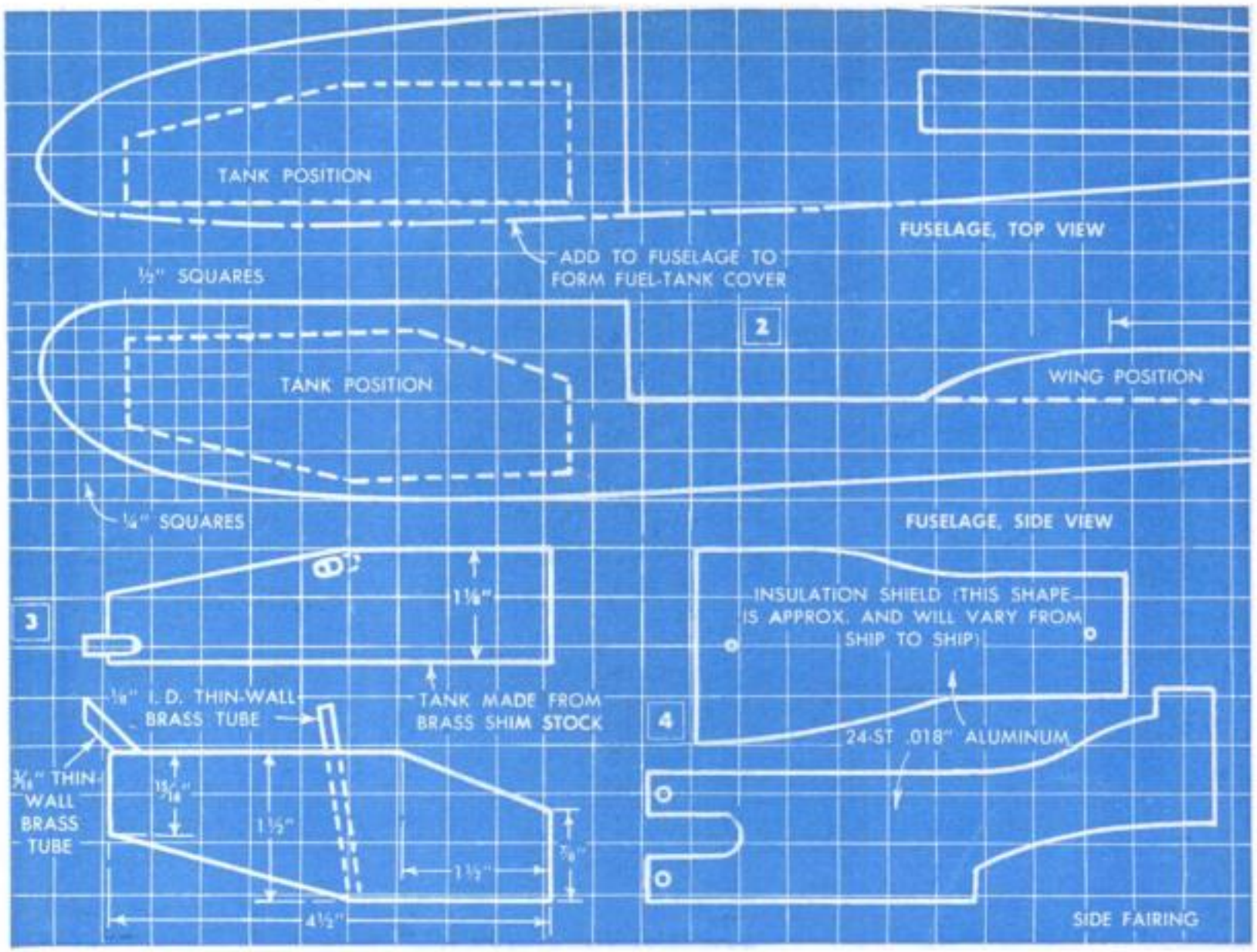
By Bob Thor and H. H. Lundquist

AT ALL the recent model-plane contests, jet-powered speedsters put on the most spectacular show of all, and to win at the Third International Model Plane Contest at Detroit this summer your jet job must be capable of scorching speeds. "Torchy," a pulse-jet-powered model speedster, last year tacked up a record of 141.34 m.p.h. to win in the open class for jets. Topping that record in the coming contest is going to take something really super in both plane and pilot. Yet, the record will be equaled and quite likely broken, for all model-plane technicians will make full use of contest experience to design and build still faster planes. In entering any contest, the first thing is to know the rules and make sure your entry blank is properly filled out and presented to the contest sponsor. If, for example, you are entering the Third International Model Plane Contest this summer, get the official entry blank from your local Plymouth dealer. Then put everything you've got into the construction of your own jet plane. Here are the construction details on Torchy, a careful study of which will give you valuable pointers on building and flying your jet-contest winner.

Fuselage: The pulled-apart view in Fig. 1 gives you a complete picture of the construction of Torchy at a glance. The first part to make is the fuselage and the first step is to trace the bottom profile, Fig. 2, onto a 2-in.-square piece of balsa, bandsaw to the line, then glue the waste piece back in place with a sheet of paper in the joint so that it can be removed later. Then trace the top profile on the block and bandsaw as before. This step shapes the fuselage ready for installation of the fuel tank, Fig. 3. Note particularly the unusual position of the tank and the V-shaped bottom. The latter feature has been found an advantage as it tends to trap fuel and prevents the engine from cutting out when the plane is dived or climbed steeply. As light weight is essential, the tank is made from brass shim

Bob Thor, of Minneapolis, Minn., accepts Plymouth Motor Corporation's Perpetual Trophy in behalf of himself and his partner, H. H. Lundquist, also of Minneapolis. Thor and Lundquist worked as a team





stock, .005-in. thickness, and all joints are sweat-soldered. Test the tank for leaks before installation. In Fig. 2, the top view, the nose of the fuselage is shaped for counterclockwise flight as most model-plane pilots prefer to fly their planes in this direction. The opening in the fuselage for the fuel tank is carefully cut with a chisel. First trace the outline of the tank on the wood. Then, when the opening is nearly to required size, fit the tank by trial so that you do not risk removing too much wood. The tank is anchored in place with glue and the opening is fitted with a cover of ¼-in. sheet balsa, which is screwed into place and then faired into the curve of the fuselage. Next, cut and fit the engine mounting yoke, Fig. 1. This is made from sheet aluminum, .040 in. thick. Drill a hole ½ in. in dia. and ⅝ in. deep in the fuselage and a ½-in. hole through the yoke for the spark plug. Bend a ⅜ x 1⅛-in. strip of spring brass to a Z-shape and place this in the bottom of the hole in the fuselage. A piece of 1/16-in. wire driven through the body from the outside locks this spark-plug connector in place, Fig. 1. The wire should project ¼ in. to serve as a terminal for the high-tension lead from the coil. Note that when the engine is mounted, the forward section of the fuselage just above the fuel tank is relieved to the exact curve of the engine tube at this point. Be careful to get a snug, true fit here. When the final installation is made, the engine tail pipe is supported in a saddle at the rear and the engine is held firmly in place by means of a mounting strap, Fig. 1.

Wing construction: Fig. 6 details the wing ribs full size and shows a cutaway view of the wing assembly. After sawing the ribs, each of which is duplicated, glue them to the bottom sheet of balsa. When assembling the wing sections on the spar, allow a ⅝-in. gap at the center between the two sections. Glue on the 1/16-in. plywood reinforcing strip for the bell crank, Fig. 6, and install the crank, wing leads and control wires before gluing on the top wing covering. Then sand the wing to the finish contour and fit it on the fuselage as in Fig. 1, making the groove for the control rod at the time of installation. When installing, be sure the wing has a zero incidence with reference to the flat portion on top of the fuselage body, Fig. 2.

Tail surface: Plywood is recommended for construction of the tail surface, although balsa also is specified in Fig. 7. The single control flap pivots on a steel wire which passes through an aluminum tube. The control rod, Fig. 1, is attached to an

MAKE FROM 2"-SQUARE BLOCK OF MEDIUM BALSA 24¾" LONG

1¼"

STRAIGHT LINE

1⅛" 24-ST .024" ALUMINUM

FRONT 1¼"

MOUNTING HOLES

CONTROL-ROD OUTLETS

BEND AT RIGHT ANGLES

1⅛"

⅜"

1/16"

13⅞"

5 TAIL-FAIRING CHANNEL

RIB 1

SLOT FOR CONTROL ROD

FUSELAGE CENTER LINE

RIB 2

SPAR, ⅛" OAK

RIB 3

RIB 4

RIB 5

WING RIBS (FULL SIZE)

ALUMINUM TUBES FOR WING LEADS

RIB 1

RIB 2

RIB 3

RIB 4

RIB 5

⅛" PLYWOOD

WING

6

¼" SQUARES

BELL CRANK

SPAR

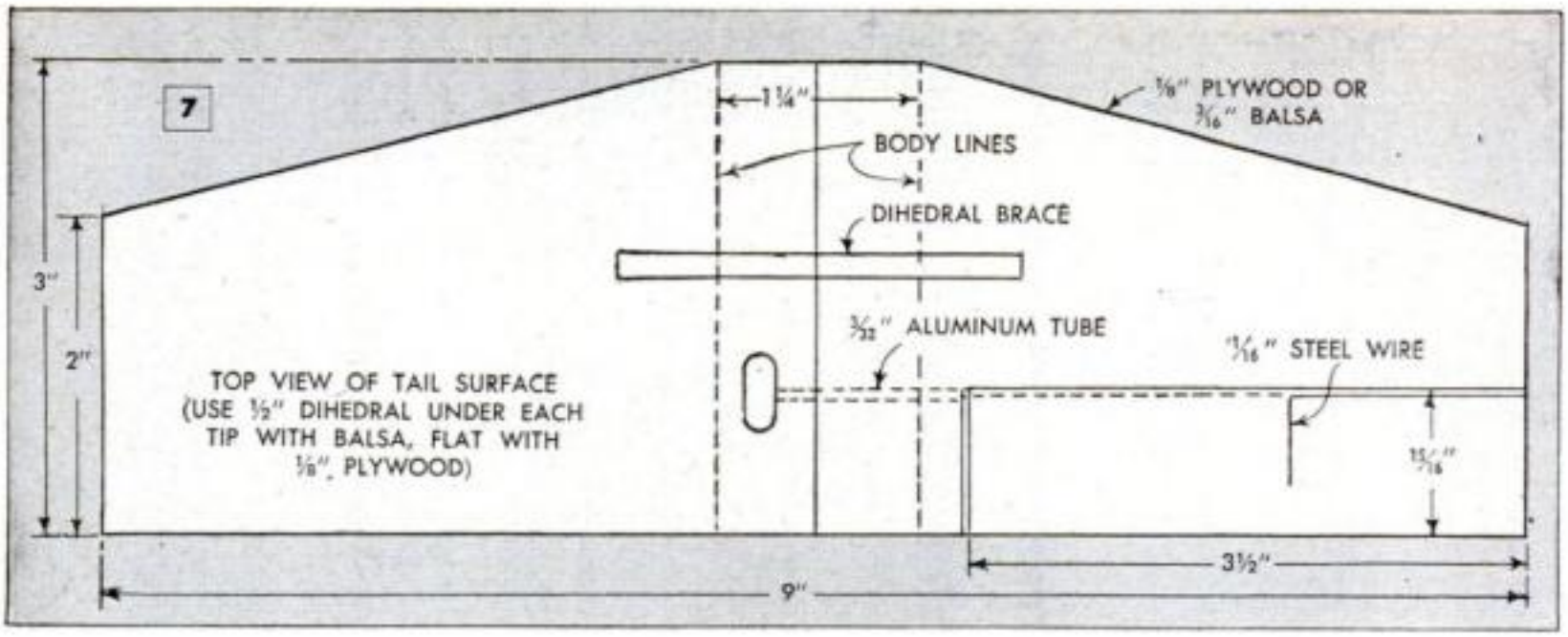
1/16" BALSA

SEC. A-A

1/16" PLYWOOD

⅛" BALSA

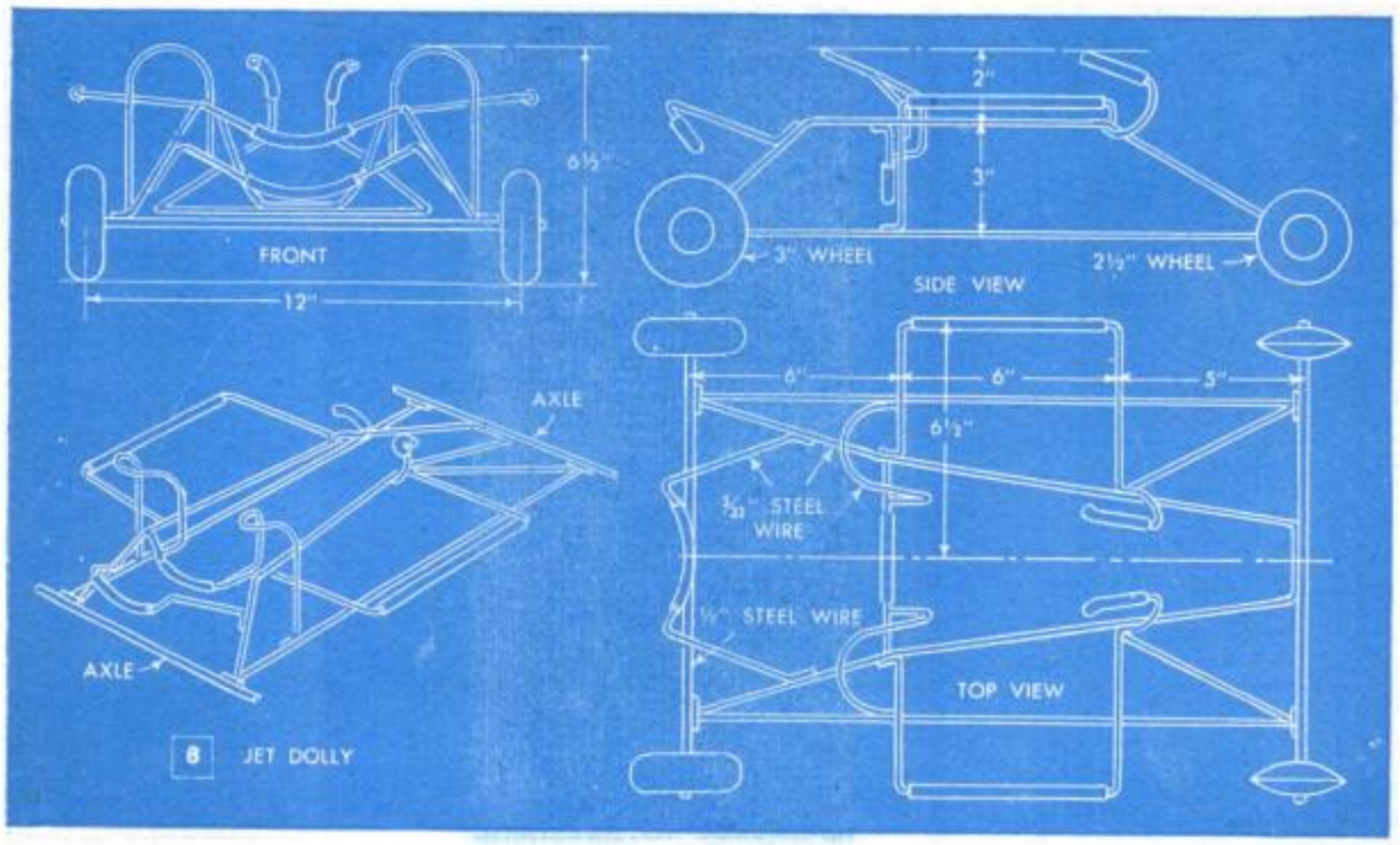
AFTER ASSEMBLING WING, SAND TO THIS CONTOUR



arm soldered to the pivot wire. The tail surface is slotted, Fig. 7, to allow movement of the arm. Strips of crinoline glued over the opening between the tail surface and the flap serve as a "hinge" and also as a fairing to give a smooth, unbroken surface. When installing the tail surface, notch the body of the fuselage so that the tail surface is at zero incidence with its upper surface flush with the top surface of the fuselage.

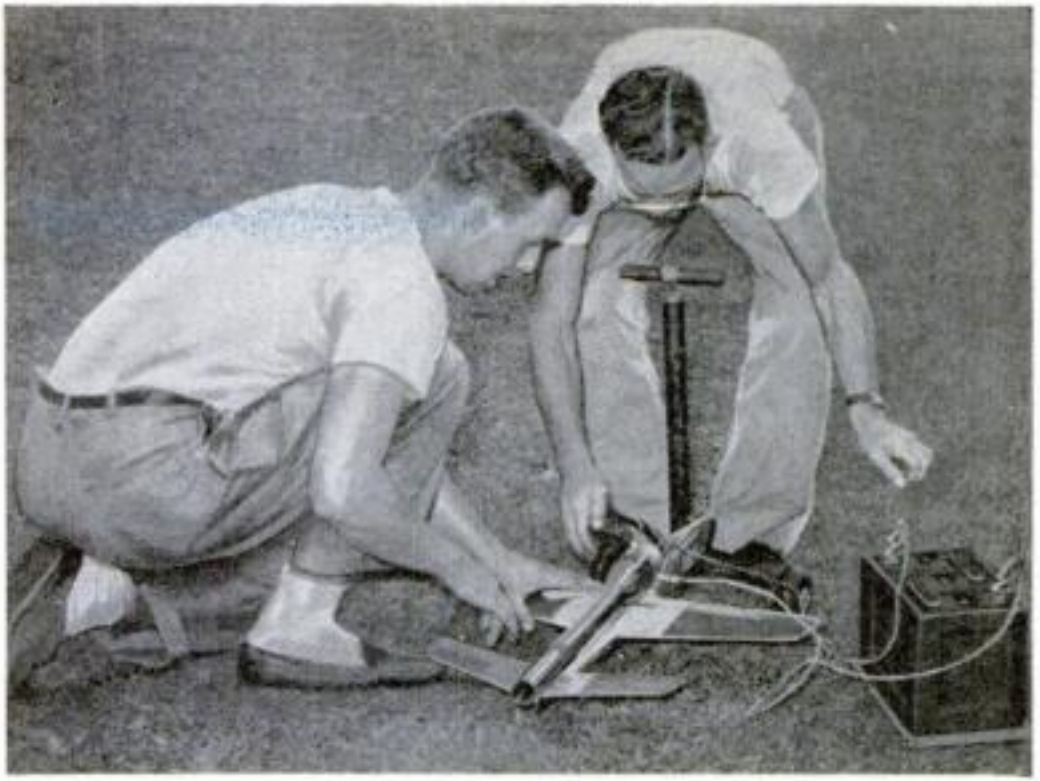
Metal fairing: This is designed to fair in the space under the jet engine and is shown in Fig. 1 and detailed in Fig. 5. It is notched, drilled and slotted and then bent to the form of a channel before installation. The fairing member and the aluminum shield, shown in Fig. 1 and detailed in Fig. 4, protect the wooden fuselage from the intense heat of the engine. Slip the channel over the control rod, bend the latter if necessary to clear, and screw the channel in place. Then install the engine by following the details in Fig. 1. Note the location of the asbestos-paper insulation strips placed under and on top of the aluminum shield. These are held in place with a coating of water glass (sodium silicate). The aluminum side fairings, Fig. 1, follow the contour of the engine tube. It is important that these be fitted to perfect contact with the tube.

Launching dolly: The important feature of the dolly is its ability to run straight during the ground run. If it veers even slightly, it is nearly impossible to get the ship away smoothly. Fig. 8 details a dolly which has proved satisfactory for launching model jets from all runways except



those covered with grass. The frame is made from pieces of heavy wire bent and soldered together to give the frame shape detailed in the front, top and side views. After assembling, slight bends can be made in the wire cradles so that the dolly will hold the ship in the correct position for take-off.

Finish: Many builders of this type of plane prefer to fit all metal parts and then remove them when doing the final sanding and finishing of the wooden parts. In this case, the asbestos insulation strips are installed with the metal parts after all of the sanding and finishing have been completed. In finishing the fuselage, apply a layer of gauze to the bottom and fill with glue until the surface is perfectly smooth. Fill the wing with any preferred filler, leaving an area 1 in. wide on each side of the fuselage center line. Water glass is applied to this area when cementing the asbestos strips in place. Although a portion of the lower asbestos strip has been omitted in Fig. 1 for purposes of clarity, this strip extends from the engine yoke to the forward edge of the tail surface underneath the engine-fairing channel. After finishing, reassemble all metal parts on the fuselage. Be especially careful in fitting the engine hold-down clamp. Avoid drawing the 6-32 hold-down bolt too tightly. As this bolt is infrequently removed, it's a good idea to fit it with a lock washer. After finishing and reinstallation of metal parts and the starting ignition system, the plane is ready for test flights.



A jet-propelled model is readied for take-off in recent model-plane contest