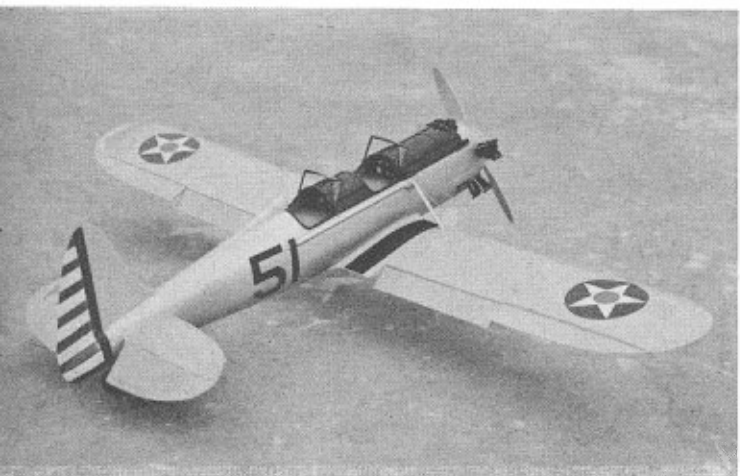


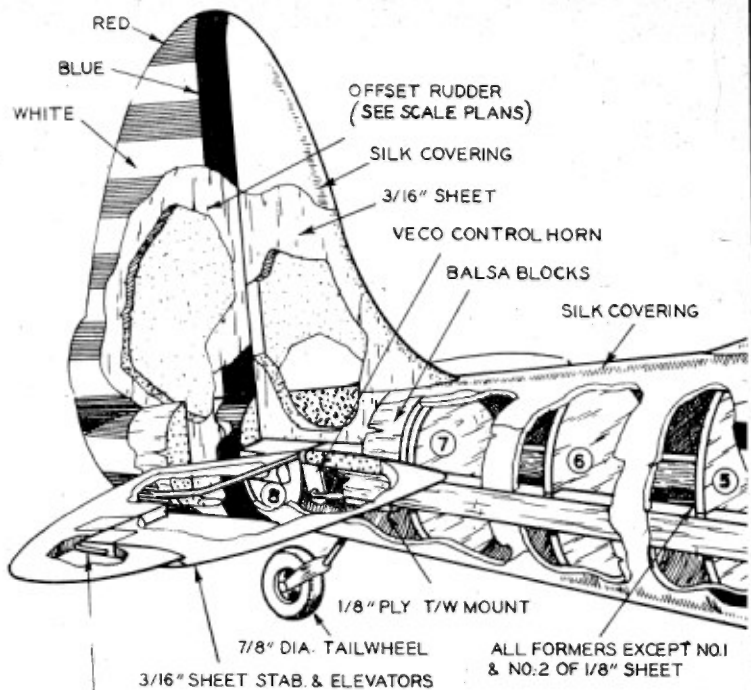
A "happy" airplane, PT-22 combines racy lines, cylinder heads, wires, struts and gay Army markings for truly refreshing project.



Working wing flaps and a positive engine control are good for an additional 30 points at any contest. Rudder stripes, stars, boy!

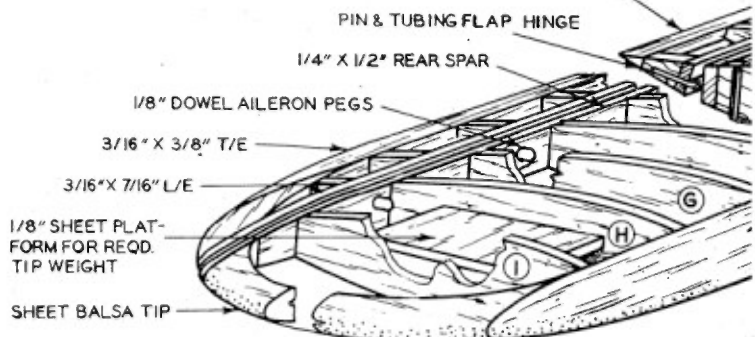


First cousin to the familiar in-line Ryan, the PT-22 has an air-cooled engine, of course, as well as graceful looking sweepback.



PIN & TUBING HINGES

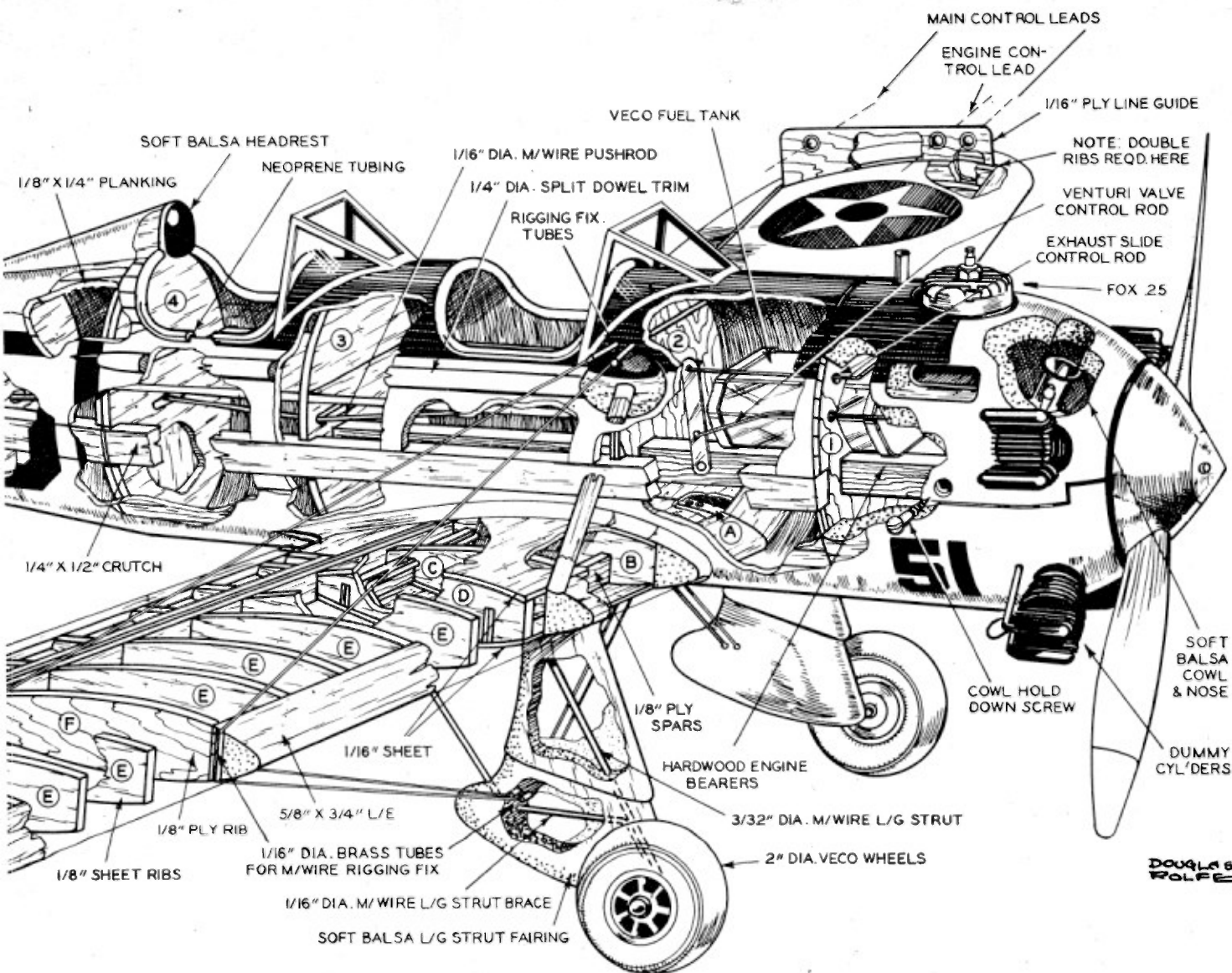
NOTE: FLAP SHOWN THUS FOR PURPOSES OF CLARITY ONLY



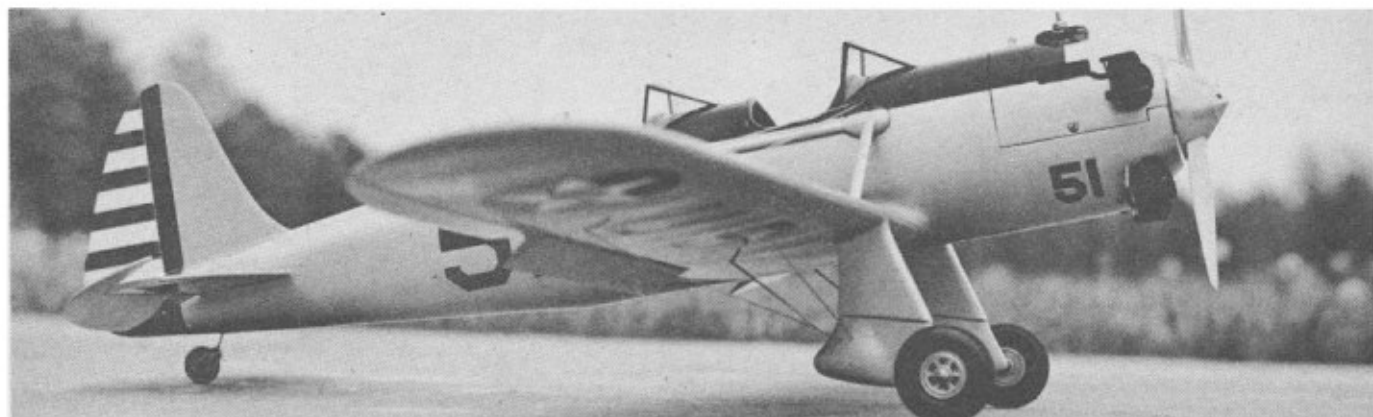
Ryan PT-22

by FRANK W. BEATTY

Famed trainer makes delightful control-liner for .23 to .25 engines. Reliable throttle and flaps enable you to fly it just like real ship. "Drag" it in, land, pour on the coal, climb on out. Living!



DOUGLAS ROLFE



Real? Why, if a model railroader built this one, he'd wear helmet and goggles and yell contact every time he flipped that propeller.

► The fuel and batteries were tossed in the tool box, the tool box was in turn tossed in the Chevy and I started home from the last scheduled contest of the 1957 season. My scale model had done well that season, but her original lustre was fading. Without new equipment, 1958 would be a slaughter.

Looking ahead to the 1958 season, it was felt that in control-line flying scale competition the extra flight points would be the key points, the difference between victory or defeat. Accordingly, it was planned that the Ryan PT-22,

chosen as my 1958 contest model, would have a throttle-control arrangement and working landing flaps. Successfully demonstrating the throttle and flaps, and taxiing a lap, promised a possible 30 points, a maximum point potential with a minimum of complicated linkages and fittings. In the past, the complicated and often unreliable electrically or spring-loaded third line methods of controlling these operations had discouraged this writer from trying these things. But the simplicity and complete reliability of the J. Roberts flight control (Continued on page 58)

PLANS ON NEXT PAGE

Ryan PT-22

(Continued from page 13)

equipment as witnessed at the carrier event circles had me reaching for my triangles and T-square.

The Fox .25-powered Ryan has been built to a scale of 1¼ inches equals 1 foot, having a 36¾ inch wingspan and a weight of 31 ounces. The ship balances at about ¾ inch aft of bulkhead No. 2 without the use of ballast and flies smoothly so trimmed. There were, however, some difficulties experienced at first during the low-speed taxi attempts. First was that of the engine quitting if one attempted to taxi during the latter part of a flight. Eventually, a theory was brought forth, that if the gas tank were less than half full during a slow rolling taxi attempt, the absence of centrifugal force allowed the fuel to settle in the tank and the pick up tube would no longer pick it up. Solution was to relocate the pick up tube (see drawings) deeper in the tank. (No inverted flying under this setup, please.) This solved that problem, but now on prolonged taxiing the engine seemed to bog down and quit. For this one, the near scale diameter 9 x 6 Power Prop was trimmed to an eight inch diameter. We could now taxi anytime and for as long as required. In addition, it was noted that when the model is flying at idle speed or making a landing approach, the ship is actually on the verge of a stall. You've had it if you run out of fuel and your engine poops out at this time. It's good business to schedule your operations according to your known tank run.

A typical contest flight goes something like this. From an unassisted standing start, the model is taxied a quarter lap and stopped. With a roar she takes the air in a long, smooth climb and flies five laps. The ship then flies one lap at half speed and then completes the remainder of the ten qualifying laps at normal speed. The ten laps in, she settles in a long glide and touches down gently. The model taxis a full lap and stops within inches of the desired goal. With a roar she climbs again, flies a lap, touches down, climbs again, flies another lap and touches down again. Sound like fun? It's great fun for the flier and spectators alike.

CONSTRUCTION

The wings have both sweepback and dihedral and it can be a bit tricky to assemble the panels accurately. Try this simple jig. Take two 8 x 20 inch boards and block up the ends until the correct dihedral angle is achieved. Tack the plans on the jig and the wings can then be built

as a one piece unit with correct sweepback and dihedral angles assured. Block up the ¾ x ¾ in. leading edges with 3/32 in. shims and pin them and the ¼ x ½ in. spars over the plans. Block up ribs A, B, C, and D with 1/16 inch shims and then cement all the ribs and tip parts into place. Remember the 1/16 in. diameter brass tubing rigging wire guides should be bound to Ribs "F" before those ribs are cemented in place. While this assembly is drying, the ailerons and landing flaps can be built and the ¾ inch plywood front and rear spars cut out. Make up the wire landing gear struts and bind them to the spars with thread and cement liberally. Pick up the wing assembly and cement these spars in place. After the free ends of the landing gear struts are bound and soldered together, we can sheet cover both sides of the center section and add the short rib and sheet assembly aft of the spar. The entire wing assembly, including the flaps and ailerons can then be sanded to shape.

We can now install the rigging wire hardware. Start by soldering the brass brackets and 1/16 in. dia. brass tubing rigging wire guide assemblies to the rear landing gear struts. Then pass four lengths of 1/16 in. dia. brass tubing through rib "A" and solder them into the brass plate mounted flush with the sheet covering. Cementing lengths of 1/16 in. dia. brass tubing into holes drilled in the leading edges near rib "F" completes the rigging hardware in the wings. Continue by cementing the 3/32 in. dia. aluminum tubing hinge bearings and balsa filler strips to the wing and flap spars. Next build a sheet balsa sandwich around the landing gear struts and shape those fairings. Give the wing, flaps and ailerons a final sanding, add the lead outboard wing weight and

then cover each part with silk. Then run the hinge pins through the wing and landing flap bearings and solder the brass flap control horns in place. Slit the covering and cement the line guide in place and set the wing assembly aside.

The tail parts should go quickly. Shape the fin, rudder, stabilizer, and elevators out of 3/16 in. sheet balsa. Install the control horn and 3/32 in. dia. aluminum hinge bearings on the stabilizer and elevators. Push the hinge pins through these bearings and then add the elevator balance tabs with reinforcing pins. Cement the fin to the stabilizer, dope silk over each part and set them aside.

Start the fuselage by cutting out all the bulkheads and making up the motor mounts and crutch members. Bind the lengths of 1/16 in. dia. brass tubing to both sides of bulkhead No. 2 and then slip the motor mounts through bulkheads 1, 2 and 3. Build up the intermediate throttle and flap control bellcrank using the motor mounts as a bearing for the axle. The motor mounts crutch members and all the bulkheads can then be cemented together. The heavy grooved crutch members and notched bulkheads assure that the basic fuselage frame will go together swiftly and accurately, and also enable this structure to survive the handling it will take while the various control linkages are being installed. The Fox 25 should have the exhaust slide and venturi butterfly valve modifications installed and then be bolted into place. The extension prop shaft is used to shift the engine deeper in the cowling to insure that the throttle apparatus can be completely cowled in. Install the Roberts bellcrank, the stabilizer assembly and the fuel tank and then make up all the various control linkages. Add the tail wheel assembly and then plank the lower half of the fuselage. Cut

the planking and temporary planking aids away and cement the wing into place. Solder up all the linkages, check them for free and correct operation and then plank the remainder of the fuselage. Remove the engine, build up the cowlings, add the rudder, tail fairing blocks, and wing fillets. Sand the entire fuselage smooth and dope silk over it. After adding the strut fairings, $\frac{1}{8} \times \frac{1}{4}$ inch pine struts and $\frac{1}{4}$ inch dowel halves, we can cut out the cockpit openings and install the headrest.

We should now be ready to finish the model. At this time the entire model should have been sanded smooth and should have silk or tissue doped over each part. Then brush on six coats of Aerogloss clear dope, followed by six coats of Aerogloss balsa fillercoat. Spray the wings (fillets included) and tail surfaces eight coats of Aerogloss yellow. With the yellow masked off, the fuselage, struts and landing gear fairings were sprayed eight coats of Aerogloss silver. Keep in mind that these coats of fillercoat and dope were wet-or-dry sanded at every second coat. The red, white and blue insignia and the black anti-glare panels and lettering should be sprayed four coats which needn't be sanded. Peel off the masking tape and hand rub the entire model. A careful job should have netted a sparkling finish.

A few more details and we'll be out flying. Use various thicknesses and diameters of celluloid rings alternately spaced to simulate the cylinder cooling fins and spacers. The dowels serve both as a guide and a reinforcing rod. Dope the cylinders black, install on the fuselage and finish off with the assorted tubing details. Follow this with the windshields, wingwalks, ailerons and wheels. The rigging wires may be installed thus. Bend a sharp angle in a length of music wire and pass it, from the top, through the rigging wire guide at rib "F". Sweat solder one end into the tubing rigging wire fix near the windshield. Bend the other end and pass it through the landing gear fairing rigging guide and bend it toward the fix at the wing center line. Sweat solder the wire into this fix and then repeat the entire procedure for the three remaining sets of rigging wires.

Use a .012 stranded cables 52½ feet long for flying. A few flights to familiarize yourself with the plane and the Roberts handle and you'll be armed to the teeth for the contests to come.

The '58 contest season is over. My scale model Ryan had done well that season, but her original lustre is fading. Without new equipment 1959 will be a—unh—er—ah—whoa boy!!!