PIPER PAWNEE

Our author, an Oklahoma high school teacher, and his scale bird. Seems Don wanted a scale winner and went for the aircraft that had all the extra point details for winning contests.

by DON MOWRER

► The farmers of the Southwest have for many years been accustomed to the sight of the two-winged aircraft that zoom below tree-top level distributing their load of dust to the unsuspecting insects. Occasionally, while out hoeing corn, a fellow almost has to duck to keep from being hit with a wheel. But one day recently, a certain farmer looked up at a passing duster and cried out, "Look, that fella' lost one of his wings!"

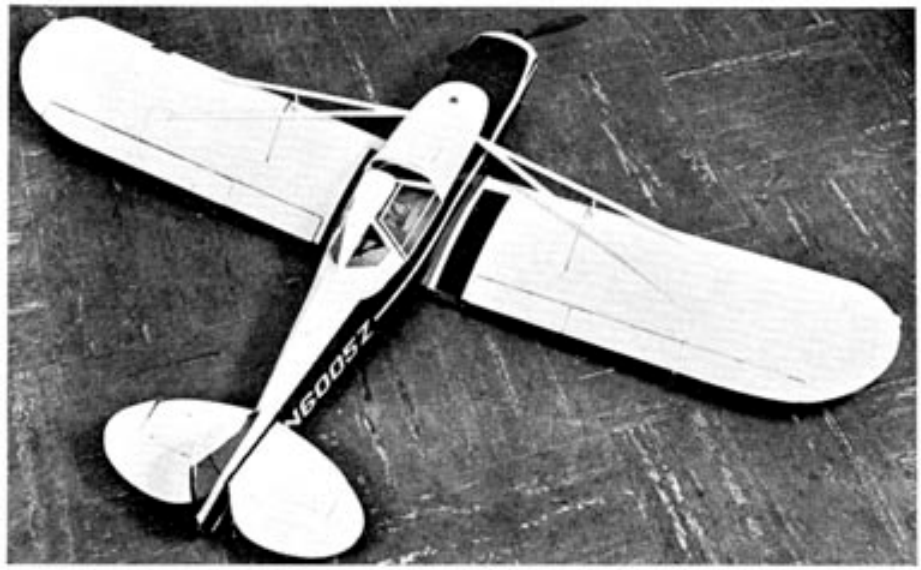
What the farmer really saw was the sleek, new Piper Pawnee cropduster whose characteristics could turn the eye of a contest judge as readily as the farmer's.

This model builder in particular has been on the lookout for a different (non-military for a change) ship that could rack up extra points necessary to compete with the retractable gear ships. The Pawnee featuring an operating dusting unit, lights, workable wing flaps, throttle control and operating cockpit controls seemed to be a winning answer.

A quick glance at the plans may rapidly discourage the average model builder from approaching the project but don't become disheartened. Attacking each part progressively, this model will be found to be no more difficult than any other scale ship. Construction time will just be a little longer.

The advanced modeler will wish to include all the "goodies." The novice may wish to eliminate such time consuming features as the dusting unit, cockpit controls, lights, ect. Either way, a beautiful ship can be produced.

Start construction by cutting out fuselage formers 3 to 7 from ¼" balsa (note center section to be cut from each one) and formers 1 and 2 from ⅛" plywood.

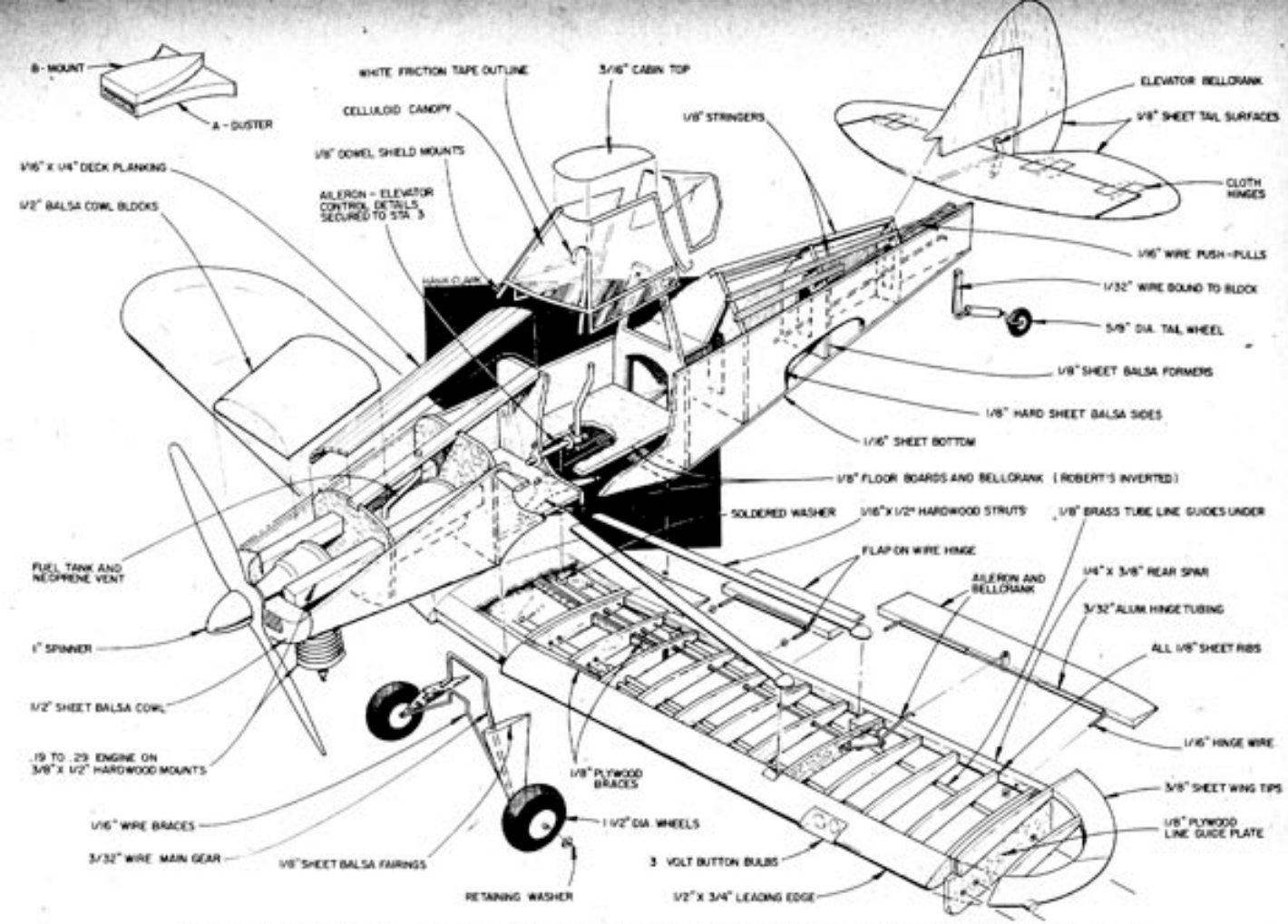


Fidelity to scale also means extra points and notice how the extra points were piled up on the Pawnee. Note the wing strut attach fairings, extra cabin details and wing walk treads.

Cut out the two fuselage sides from ¼" sheet balsa being sure to mark former locations. Join the rear of the two fuselage sides together, insert and glue formers 7 to 3 respectively. Bind the main landing gear to former 2 with soft wire. Position and glue formers 2, 1 and plywood bellcrank mount. Insert motor mounts and glue well.

The trap door could be built in now. Cut the door from tin stock and solder a piece of 1/16" brass tubing on one side to act as a hinge. Also solder one end of 1/32" piano wire spring to the door. Insert 1/32" piano wire hinge support through the tubing hinge and punch wire through formers 2 and 3.

Cut the tail surfaces from ⅛" sheet balsa. Note the unusual dual control horns for both rudder and elevator.



SCALE CONTROL LINE—SCALE THAT FLIES AND PERFORMS ALL THE FLIGHT FUNCTIONS AND ADDED TO THIS WE HAVE THE SCALE DETAILS OF CROP DUSTING, RUNNING LIGHTS, ETC.

Hinge tail surfaces and glue on to fuselage.

Install 1"x1¾"x2½" gas tank by binding to motor mounts with insulated copper wire. Note altered pick-up tube.

Cut off the outer ends of the inverted Robert's bellcrank and drill out the inner pre-tapped holes. Bend the right arm down slightly. This unit may now be installed. The trap door trip wire may now be added. Tie down 1/16" tubing trip wire housing to plywood mount with soft wire. Insert 1/32" diameter trip wire and connect to throttle control lever. Now test unit to make sure when third line is pulled, the door snaps open.

Connect elevator and throttle-control pushrods plus flexible lead-out wires. Rudder and elevator cockpit controls may be assembled at this time. Study blow-up view carefully. Note ¾" diameter tubing is allowed to rotate within the 5/32" (*Continued on page* 36)

PLANS FOR PIPER PAWNEE ON NEXT PAGE

Most of the hatches are open in this photo—the dust bin hatch in front of the windshield and engine compartment hatches are open.

More scale points are shown in this photo—ailerons, flaps (workable), as well as landing and running lights and complete scale trim.

Piper Pawnee

(*Continued from page 18*)

diameter housing but cannot move back and forth because of the keeper washers soldered at either end. This rotating movement permits the action necessary to activate ailerons. Be sure to file out a section of the housing to permit aileron activator pin to rotate. The 1/8" diameter "stick" is flattened out at end to fit into slotted shaft. Use a pin to make the bearing so the stick is free to move forward and rearward.

Rudder pedals are rather simple as shown in blow-up view. Assemble pedals and tie down 3/32" diameter tubing to plywood floorboard with soft wire. Glue in floorboard and connect rudder controls to pedals with 1/32" diameter piano wire. Connect elevator control to stick using 1/16" diameter piano wire. Imbed white wheat light and wire leads in the rudder. Install the Perfect number 81 battery holder on floorboard and insert batteries to check rudder light.

Wing ribs are cut from 3/32" balsa sheet. Note ribs E are cut from 1/8" plywood. Be sure to drill holes in the first five ribs on the inboard wing to receive lead-out wires.

Pin down 1/2" x 3/4" leading edge and 1/4" x 7/16" rear spar over plans. Position and glue ribs and 1/4" wing tips. Also add the 1" x 1/4" trailing edge to the center section plus corner braces. Cut leading and trailing edges at spots shown for dihedral break. Insert plywood WB 1 and WB 2 wing braces. Block up each wing tip two inches adding plenty of cement to the C ribs.

The ailerons and flaps are made from the 1/ x 1/4" trailing edge. Recess and glue the 3/32" diameter aluminum hinge bearings to both ailerons, flaps and center trailing edge as shown on plans. Attach control horns to ailerons. Now insert the 1/16" diameter piano wire through tubing, bend ends at right angles and push through rear spars. Solder small washers on each tip to permanently hold ailerons and flaps in place. Also insert the flap control 1/32" diameter wire through hinges. Be sure to attach small control horn. The flaps should work easily in spite of the dihedral angle. Cut the bellcranks from tin stock and carefully drill holes. It is important here that there is no "slop" in the workings. Screw the number 0 x 3/8" wood screws (pre-drill holes) in ribs E to hold bellcranks in place. Connect 1/32" diameter piano wire to ailerons and solder together in the center so that both ailerons are level when control is neutral. Position wing on fuselage and position washer to receive cockpit control aileron activator. When position is correct, solder washer in place.

With wing temporarily in place on the fuselage, make a push rod from 1/16" diameter piano wire to activate the flaps. Hook up flexible lead-out wire and install 1/8" diameter tubing through lower half of wing for line guides. The flap push rod will require some time in constructing and is about the most difficult adjustment you will be required to make. Be sure it operates smoothly before continuing. Disconnect the wing from the fuselage and cover the top and bottom sections with 1/16" sheet balsa. Cut out top section to allow operation of aileron connection and flap push rod. Do not cover the center bottom section from inner ribs C to C because the removable plywood panel will fill this space. Sand entire wing at this time and prepare for covering. Add the 3/4 oz. lead weight on the outboard wing. Cut out section for landing lights and install two clear, three volt button bulbs. Also install wheat lights on wing tips. Connect one wire of each bulb to a common positive wire and the other wires to a common negative wire. Thread these two wires through wing ribs to center section where they will later be taken up through the fuselage. At this point the wing is ready for covering and can be positioned on the fuselage. Again, make sure all lights operate and controls operate smoothly (including the trap door). If all is satisfactory, securely glue wing to fuselage.

Add the rear deck 1/4" square hardwood stringers to fuselage and tail balsa blocks. D-1 and D-2 can be added too. Front windshield braces are made from 1/8" hardwood dowels and fastened to the 3/16" balsa cabin top. The front deck is built around a 1/2" x 1/8" plywood guide piece which runs from the nose block to just rear of former 2 (see top view). Plank deck with 1/4" x 1/16" balsa strips being sure to hook up gas tank intake with plastic tubing.

The nose block is added to the plywood deck guide and imbedded in the motor mounts. Glue securely. Make up a mock cowl balsa block and use this as a pattern on which to form the aluminum cowling. Using metal cement (I used muffler patching cement) attach 1/32" diameter brass tubing to cowling. Drill small holes through the plywood deck guide and push through 1/64" soft wire. This will allow the cowls to hing freely. Use a wire spring about two inches long attached to small holes drilled in the cowling to hold them in place. Make up the bottom engine cover and attach with rubber band to hold in place.

The duster door is made from 1/16" plywood. A 1/16" diameter tubing hinge is glued in the plywood deck guide. Insert 1/32" wire, bend ends at right angles and imbed in the duster door. Be sure to glue a stop under the door so door closes level with the deck. You may attach a spring to the underside of the door to hold it closed.

The 1/16" diameter landing gear brace can now be installed as well as the tail wheel which is bound to plywood. If desired, you can build up tail wheel assembly from flat spring wire to give a real leaf spring effect. Build up remaining tail carriage with plastic aluminum. Add 3/32" balsa strut wheel fairings to the main landing gear.

The bottom of the fuselage can now be covered with 1/16" sheet balsa. Make up the 1/16" plywood removable panel outside trap door which is closed during judging of the model and opened when dusting. With this panel screwed in place, the fuselage is sanded and doped with sanding sealer until a smooth finish is obtained. Cover rear deck and wings with silk. For an excellent finish you may wish to silk the fuselage and tail sections also.

You should now be ready to spray the entire model with Aero Gloss Swift White. Cut the wing struts from 1/2" x 1/16" pine and paint separately. When you are satisfied with your finish (using fine wet sand paper between every two coats) mask out fuselage areas marked on plans as white. Try to secure some authentic red paint from a Piper airplane dealer. If not available, use Aero Gloss Stearman Red. Cut out numerals from a white decal sheet and apply. Spray with clear dope to fuel proof. Wing struts can now be glued in place and aluminum covers added.

Door frames are bent from 1/16" diameter piano wire and soldered at the joints. Attach to fuselage by using two buckle type hinges made from tin stock and glued to the inside of the fuselage. Hold doors shut with small rubber band connected to the top of each door. Glue plastic windshield material to door frame with white glue. Also attach other windshield areas. Make rear frame from white electrical friction tape.

The duster unit is made from 1/16" sheet balsa. First cut bottom marking divider sections. Cut these sections from stiff paper and glue in place. Add top section and 1/32" balsa sides (A). Assemble sides B from 1/16" balsa and glue in place. Cover duster unit with adhesive aluminum and glue on 1/16" plywood panel. Due to the limited space, this duster unit serves only as a dummy unit.

Connect tail wires in place using thin wire and 1/32" diameter tubing inserted in tail surfaces. Also attach cockpit-tail wire with pins.

Instrument panel is constructed from holes drilled in 1/16" plywood. I found scale type instruments in some airplane literature and installed them behind some plastic attached to the instrument panel. A seat is easily made from balsa blocks. Cover with red imitation leather. Attach spring clamps which can fit over batteries and install seat.

Attach a 6-3 wooden propeller, a 1" white plastic spinner, 1 1/2" Banner wheels, 5/8" diameter tail wheel and the model is ready to be judged.

In order to fly, use an 8-6 propeller and 2" Banner wheels. Offset the rudder about 10 to 15 degrees and tape ailerons in neutral position. I use a Torp. .23 and had plenty of power to spare. Nothing less than a .15 should be attempted. Use 50 foot lines. Set the trap door and fill hopper with baby powder. Model should dust when throttled down.

Let some wise guy install a RC unit in this job and we'll really have that farmer guessing!