

# PIPER FAMILY CRUISER

Designed and Drawn by Albert E. Hatfull

Rub the plan with candle wax to prevent constructed parts adhering to it.

## FUSELAGE

Build the flat side frames first, (shown shaded on the plan), in the following way. Pin item '6' and the  $1/16" \times 1/16"$  longerons to the plan, (place pins on either side of the wood—not through it) cut the uprights to length and cement them in place between the top and bottom longerons, cement the piece  $1/4" \times 1/16"$ , with slot cut for the end of the wing strut, in position. Mark with a pencil the positions of the two side stringers which later are cemented on the outside of the frame. When the first side is dry, build a second side directly over it using the same procedure, this ensures greater accuracy. Remove both sides from the plan when set and separate them carefully with a razor blade. Slightly chamfer inside the rear ends as shown in Plan View, then with former '3' temporarily clipped in position at the front, cement the rear ends together. Referring to the Plan View, cement the cross braces in place at the widest part of the fuselage (wing position) first, then the others working towards the tail, check for squareness as you proceed. Former '3' may now be cemented in place, pull the nose sides in still further and add former '2'. Cement pieces '4' where shown on side further and add former '1'. Cement former '5' and pieces '8' in place and add the side stringers where previously marked. Add the stringers which fit into notches in 1, 2, 3, 4 and 5 (notice their arrangement in Side View). Cement item '7' in place on top of fuselage. Bend undercarriage wire to pattern, mount wheels as shown, and bind into fuselage, cement liberally. Add tailwheel assembly, and gusset inside stern post. Cement paper cowls 'A' and 'B' in place, cover top of cabin with paper where indicated in Plan View, then add pieces 'M' flush with stringers. Cut the windscreen from celluloid using pattern shown; also the side windows (the size of which are shown in the Side View) and cement these in place. Roughly carve the nose block to shape, cement pieces '1A' and '2A' to the rear face and use these to 'plug' the nose block into the holes in '1' and '2'. Shape the block to a smooth finish while mounted on the fuselage. Bore a hole in the nose block and cement the nose plug in place (file flat as shown). Bend a hook on the wire supplied, push the other end through the nose plug from the rear, place two cup washers then the plastic propeller on the wire. Cut the wire to a convenient length and bend over  $1/8"$  at the end to fit into the slot in the propeller spinner, smear cement in the slot to retain wire. Tissue cover fuselage, water shrink and dope before assembly with wings and tail unit. Add airscoop exhausts (one each side) aerial, undercarriage fairings, etc., as noted on plan.

## WINGS.

Retain the  $1/16" \times 1/16"$  lower front spar and rear spar in position on the plan by placing pins on either side. Pin the  $1/4" \times 1/16"$  trailing edge and the  $3/16" \times 1/16"$  leading edge in place then cement the wing ribs to these previously laid members directly over the positions shown on plan. Notice the template to be cut from card and used to obtain the necessary "tilt" in the end ribs which gives  $1/2"$  dihedral to each wing tip when the wing halves are joined to the fuselage. Cement the tip pieces and pieces of  $1/4" \times 1/16"$  with holes cut to receive the ends of the wing struts in place. Check the tilt in end ribs then add the top spar of  $1/16" \times 1/16"$  in notches provided, crack this spar down towards tip and cement in place on tip pieces as shown. When dry, smooth whole wing construction with fine sandpaper. Tissue cover, water shrink and dope before fitting to fuselage. Aileron and flap lines may be added using black ink or strips of black paper.

## TAILPLANE AND FIN.

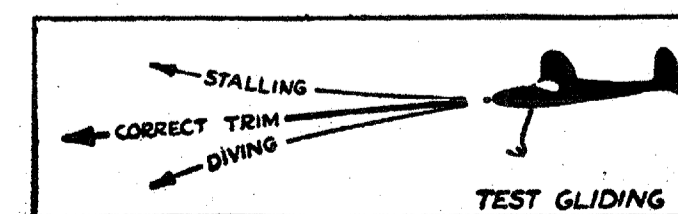
These are constructed by pinning the outlines of printed parts and stripwood in position cementing the joints then adding the  $1/16" \times 1/16"$  cross pieces. Cover both fin and tailplane, water shrink and dope before assembly to fuselage.

## ASSEMBLY.

Cement the tailplane in place in slot at rear of fuselage where arrowed, cement the fin directly over the centre line of the tailplane and to the stern post of the fuselage. "Line up" both these members by "sighting" from back or front of fuselage. Apply cement to the end ribs of the wings and plug the protruding ends of the spars into the slots provided in items '6' on each side of fuselage, support the extreme tips with suitable size blocks (e.g., dope tins or books) and leave thus to dry. Construct two wing struts to pattern shown, apply cement to the ends and insert them into the appropriate slots in wings and fuselage.

## FLYING.

Tie the ends of the strip of rubber together, lubricate with ordinary castor oil, double over to form four strands and drop the knotted end down through the nose. Use the small peg pushed through holes in pieces "M" to retain the rubber motor. Place a few turns on each loop then place both loops on to the motor hook. With the model now fully assembled it should be held on the finger tips at the front lower spar position of the wing and made to balance level by adding small pieces of plasticine to either the nose or tail, whichever is required. When balance is obtained, test glides may be carried out, preferably over long grass to avoid undue damage. Hand launch the model from shoulder height on a slightly downward path directly into the wind. If the model dives add a small piece of plasticine to the tail, if the model "stalls" add a small piece to the nose (weight similar effect). Once a long flat glide has been obtained, hand turns may be applied to the rubber motor, starting with about 75 turns and gradually increasing to 200 or more. When using full power insert a piece of  $1/16"$  balsa in the top of the nose block, this will apply downthrust to the propeller and avoid power stalling.



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