



SIMPLETON by Dick Stouffer

**Die-hard purists
will shake their
heads at this one!**

**Power modelling
reduced to the
most simple state
for small engines**

WHAT WOULD HAPPEN if one were to power a simple, all balsa, hand launched glider? In three hours flat at the work bench *you* can find out—so let's not waste time.

Starting with the wing, select medium soft balsa sheet $\frac{1}{4} \times 3 \times 36$. Cut off 30 inches and draw a line across the midpoint at 15 inches from one end. Use a square to aid in truing and cutting straight lines.

Use a razor plane, knife, and coarse sandpaper to shape the airfoil indicated on the plans. After shaping, sand with fine sandpaper, and coat with clear dope. Next, cut the wing in two at the midpoint. Using a firm sanding block, sand $\frac{1}{2}$ the dihedral angle in each wing butt. (See front view). Pin one half of the wing down firmly to the bench, stand the 6 inch left-over piece of wing sheet on end to block up the outboard tip of the wing, butt the two halves together, and glue firmly. Lay a piece of nylon, cotton, or linen over this centre joint, and work glue into the fabric and joint.

Grab a $\frac{1}{4} \times 3 \times 36$ in. sheet of soft balsa and cut off 10 inches for the tailplane and $3\frac{1}{2}$ inches for the fin. Sand a lifting section on the elevator, as shown on plan and round the edges of the fin, then sand and coat with clear dope. Draw a line across the tailplane at the midpoint. Draw the line of the airfoil of the tailplane on the bottom side of the rudder, cut away and sand smooth. Cement the fin to the tailplane at the mid line. Set the fin and tailplane assembly aside to dry.

The fuselage is made from medium hard balsa, $\frac{3}{8} \times 3 \times 15$ inches. Be careful of the area where the wing seats. This is the angle of incidence, so make it accurate then draw in the remaining outlines, on the sheet.

Now that the fuselage is properly marked on the sheet of balsa, cut it out and true up all straight lines. Use a straight edge to aid in cutting the wing incidence line. Cut the four small pieces of wing mount and engine block material from the $\frac{1}{4} \times 6$ inch wing sheet. Cement the 5 inch wing blocks, one to each side of the fuselage. Cement the 2 inch motor blocks, one to each side of the fuselage and on top of the wing blocks. Be sure these last four pieces are parallel to the front and top lines. Cut a piece of $\frac{1}{8}$ inch ply, $1\frac{1}{2} \times 1\frac{1}{2}$ inches square. Be sure the front is still true and glue this ply piece to the front. Cut an over-size piece of the same material you used on the wing centre section. Cement and lap it over the four edges of the motor block and plywood. Rub cement well into the fibres to seal the patch on the motor block.

So far so good. Relax for a while. Let everything set while reading your favourite magazine—AEROMODELLER. You have been working about two hours to this point.

All set? Back to the salt mine. Pick up the fuselage and cut a vee in the wing mount to accept the wing. Block up the fuselage, perpendicular to the work bench. Put plenty of cement in the wing vee and on the bottom of the wing centre joint. Lay the wing in the vee and block up the tips 6 inches. Be sure that the wing is perpendicular to the fuselage along the leading edge, as seen from above. While the fuselage is blocked up for the wing, cement the fin and tail assembly to the top of

the fuselage. Be sure the rudder lines up parallel with the fuselage and the tail plane perpendicular to the fuselage, as seen from above. Check that there is one inch clearance under each tailplane tip. Now leave everything alone until the glue dries. Do not pull blocks and pins away until everything is thoroughly dry for at least half an hour.

After everything is dry, dope the fuselage, motor block and glue joints. Print your name and address on the fuselage. Mount a *Pee Wee* or similar radial mount motor to the plate with small wood screws. No down thrust or side thrust is needed. Just straight thrust with a high position thrust line on *Simpleton*.

Before flying, check that the model balances at a point between $\frac{1}{3}$ and $\frac{1}{4}$ the distance back from the leading edge. Try a test glide over tall grass. The model should glide straight ahead—fast and flat. Do not adjust the model by warping surfaces at this time. All surfaces should be in neutral positions. Adjust the glide by adding small weights to the tail to correct a steep glide, or weight the nose for slight stalling or ballooning. When the model is gliding straight ahead as though it were sliding down a slanted board, you're all set to try to get a curve in the glide. Twist the upper rear corner of the rudder to the right. Test glide for a 60 or 80 foot diameter circle. Should the model seem to glide steeper as a result of the turn, adjust the weight to bring the rate of descent

back to what it was in the straight ahead glide. Hook an index finger over the trailing edge and give the model a good heave-ho. She'll take off like a regular hand launched glider.

Engine timing system

Since there is no fuel shut off timer on this model, the length of the power flight must be regulated by the amount of fuel in the tank. This is done in three ways with a *Pee Wee*. The least amount of fuel is put in the tank by pointing the engine straight up so that the filler tubes are both horizontal. In other words the back plate of the tank is in a horizontal position. Fuel is added to the tank until fuel runs out the other filler tube. Set the engine upright and cease fuelling at the same time. With prime in the engine for a quick start, this will give you about 15 seconds engine run. Time this yourself to see how much you can get. For a 30 second run, lay the engine on its side and fill the tank from the upper vent tube until fuel runs out of the lower vent tube. For longer flights, again turn the engine on its side and fuel from the lower vent until fuel runs out of the upper vent. This will give you about 40 to 50 seconds engine run. A little practice in starting and adjusting will soon tell you which of these three methods of fuel regulation is for you. Now start up the engine and let the model go. She'll climb smoothly and glide flat. On calm evenings you should expect to get about $1\frac{1}{2}$ minutes on about a 20 second motor run.

Have fun—I'm heading for the pasture!