Here it is!— a really different-looking subject!

SIMON POLLOCK'S $\frac{1}{5}^{th}$ scale replica for .35 or .40

AJEP-WITTMAN TA

DESIGNED by Steve Wittman, for home constructors, the W-8 *Tailwind* is a light two-seater sport aircraft, which is very popular in the U.S.A. Andrew Perkins' British *Tailwind* is a substantially modified version of the original, the main differences being the swept fin and extra cabin windows—including a fully glazed roof.

I first spotted the AJEP *Tailwind* while browsing through some old model magazines, and was immediately taken by its unusual and attractive lines—and by the possibility of using it as the subject for a scale radio model. The fuselage is of slab-sided rectangular section, with a generous nose moment, and the cowling should be big enough to hide completely the average .35 or .40 engine and silencer.

My first thought, when I had completed the 1/5 scale drawings, was that the wing area, at 500sq.in., might be on the low side, so lightweight construction was going to be essential. To this end, I have used the Warren bracing type structure for the rear fuselage and, in fact, have kept the amount of sheeting, overall, to a minimum. My only departure from true scale, initially, was to use a one-piece wing, with full span ailerons, for simplicity, not incorporating the fully glazed roof. I endeavoured to keep the line—and, hence, airflow—as smooth as possible from the bottom of the windscreen over the centre-section to the roof, assuming—rightly or wrongly—that this would act as an aerofoil, increasing the total lift.

The model's first flight nearly ended in disaster when I discovered too late that the c.g. was much too far forward, and the single circuit was completed with heart in mouth and stick full back! Subsequent flights revealed the model to be rather unstable in pitch, however. Though I had hoped to be able to use a tailplane of scale size, I was thus proved wrong, and the problem was overcome by fitting the somewhat enlarged version shown on the plan.

CONSTRUCTION

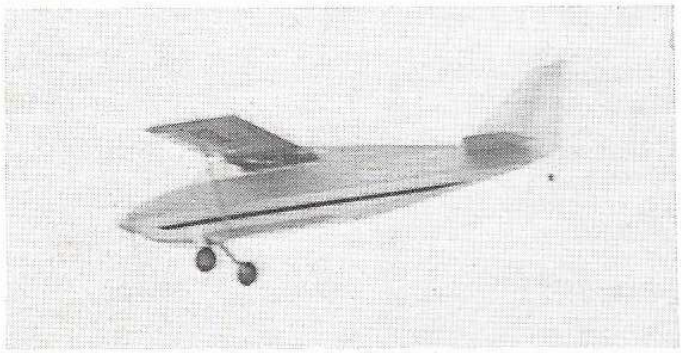
Building this model is a relatively painless operation (there—I avoided the use of the phrase "quite straightforward"!), and in the following notes I have attempted to outline the order of assembly, and to highlight points that might be pitfalls for the unwary . . .

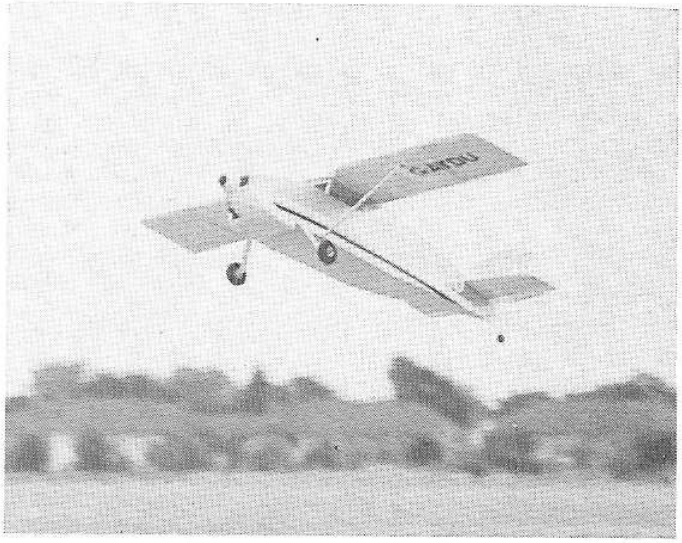
Fuselage

The first job, cutting all frames and ply parts to shape, can be the most tedious if you have to do it by hand. I was fortunate in having access to a Dremel jigsaw, which made this job a real pleasure! It is essential to mark out and cut the formers as accurately as possible since any errors, at this stage, become very apparent when the fuselage is being assembled.

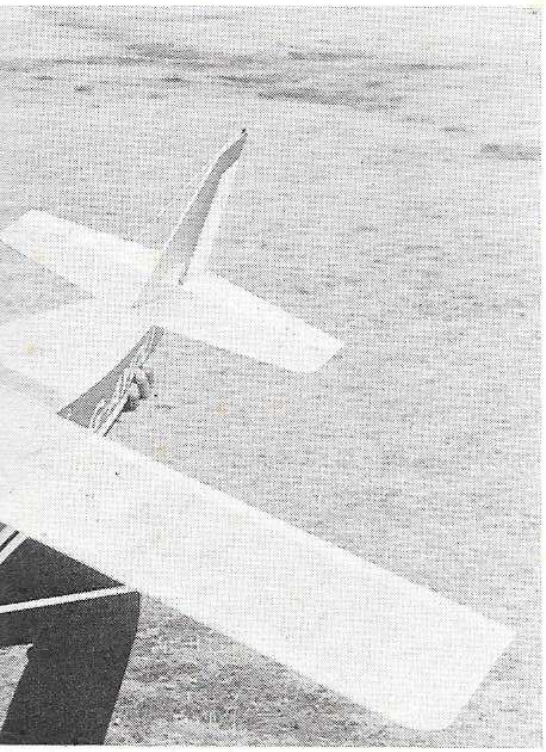
Now prepare the balsa/ply lamination for the upper part of the cabin sides. I used this method mainly to facilitate fitting the windows, but it also increases the strength in this area. Splice and epoxy the bottom longerons, and produce the fuselage sides—not forgetting that there should be a righthand and a lefthand side! Join these sides, using formers F2 and F3, checking very carefully

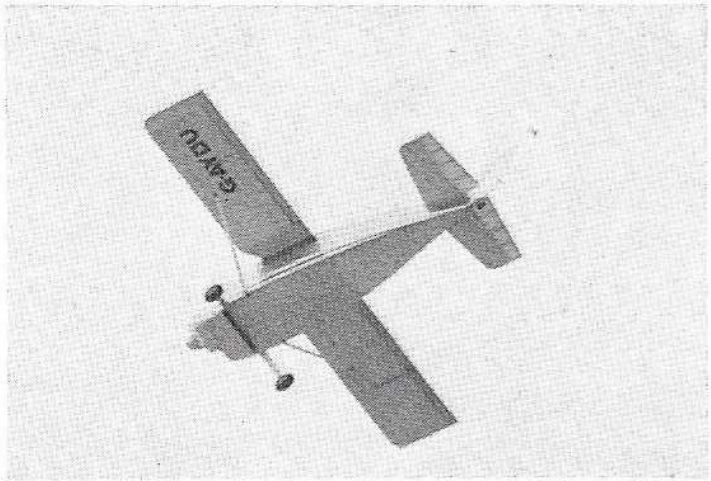
AILWIND

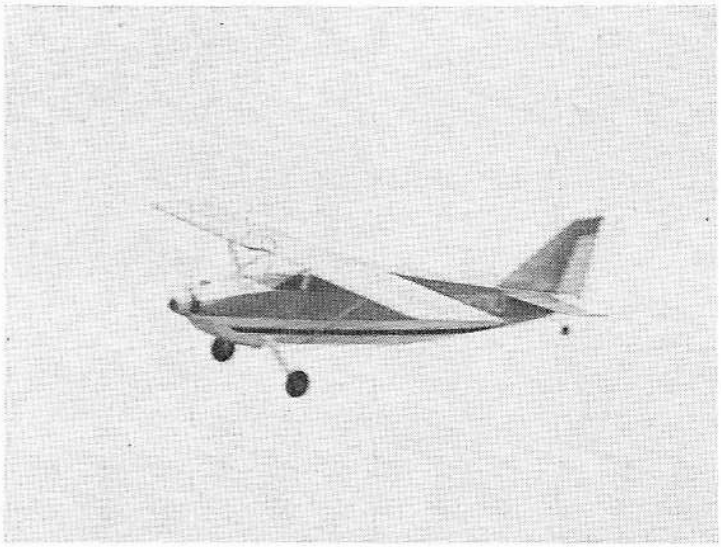




We took these photos last summer when Simon came to give us some demonstration flights. We were "sold" on the spot!







There's no doubt, people will be able to tell who is flying, well before they get to the field, when you have your *Tailwind* airborne! *Very* distinctive, and a responsive flyer.

that the assembly does not "lozenge" (go out of square) at this stage. When dry, bring the nose sides together at F1. Next fit F4 in position over the plan to ensure there is equal curvature in the sides.

Bend the undercarriage legs to shape; it is very important that the legs are identical (though opposite 'handed') and that the stub axles are aligned correctly. Bolt the legs to former F1 with saddle clamps, making sure that the fuselage sits squarely with no 'lean' to either side.

An engine plate should be cut out and drilled to suit your motor; with my Merco .35 I did not use any downthrust or offset, but it is a good idea to make allowance at this stage for any adjustment that may prove necessary. Epoxy the plate into position and, when set, bolt the engine in, with its silencer. Mount the tank in position; my 6oz. tank is in line immediately behind the engine, but there are several alternatives, including one inside the cabin—space is no problem with this model!

Cut the $\frac{1}{2}$in. cowling top and bottom pieces to size, checking their fit in relation to the engine, and glue them in position together with the nose former. After sanding the cowl to shape, cut out the engine access hatch, using a razor-saw, and reinforce with gussets for extra strength.

Wings

As there is no dihedral, I built the entire wing in one piece, but no doubt it could be built in two sections, with a little thought—if your building board is not 54in. long.

Splice two lengths of $\frac{3}{16}$x$\frac{3}{8}$in. together for the rear spar and pin them down over the plan, packed up with scrap $\frac{1}{16}$in. Also pin down $\frac{1}{16}$x$\frac{1}{2}$in. trailing edge strips and centre section $\frac{1}{16}$in. sheet from t.e. to rear spar. Pin a length of $\frac{1}{4}$in.sq. strip so as to support the ribs, and glue all W1 ribs in position, followed by top $\frac{3}{16}$in.sq. spars and leading edge spar.

Now jiggle the $\frac{3}{16}$x$\frac{3}{8}$in. spruce centre brace into position and slide the $\frac{3}{16}$in. sq.bottom spars along the slots underneath. Pack up the spars with scrap and glue together with the centre bracing, and fill-in pieces between the spars, as shown in the sectional view. Glue the ribs W2 in position and, when set, install the aileron linkage, which is best done at this stage. Beware of using the torque-tube type linkage—F3 gets in the way!

The centre-section leading edge is fabricated as shown, and epoxied in place, at the same time as the $\frac{3}{8}$in.sq. hardwood strip on the rear spar. Now complete the leading edge and trailing edge sheeting and cap-strips. When the assembly is dry, remove the wing from the board and complete it. (*N.B.* the underside of the l.e. is *not* sheeted).

Now for the fiddly bit—lining up the wing bolt hole positions with the fixings on the fuselage. Place the finished wing accurately on the fuselage and, by some means, mark the positions for the three holes on the wing undersurface. Drill the holes the clearance size for the wing bolts, making sure that the l.e. holes are at the correct angle.

Tail surfaces and struts

The leading and trailing edges of the tailplane are first pinned down on the plan, packing up from it with $\frac{1}{4}$in. strip. The ribs are then glued into position and, when dry, it is covered, top and bottom, with 1/32in. sheet. I find that this gives a light and very rigid structure.

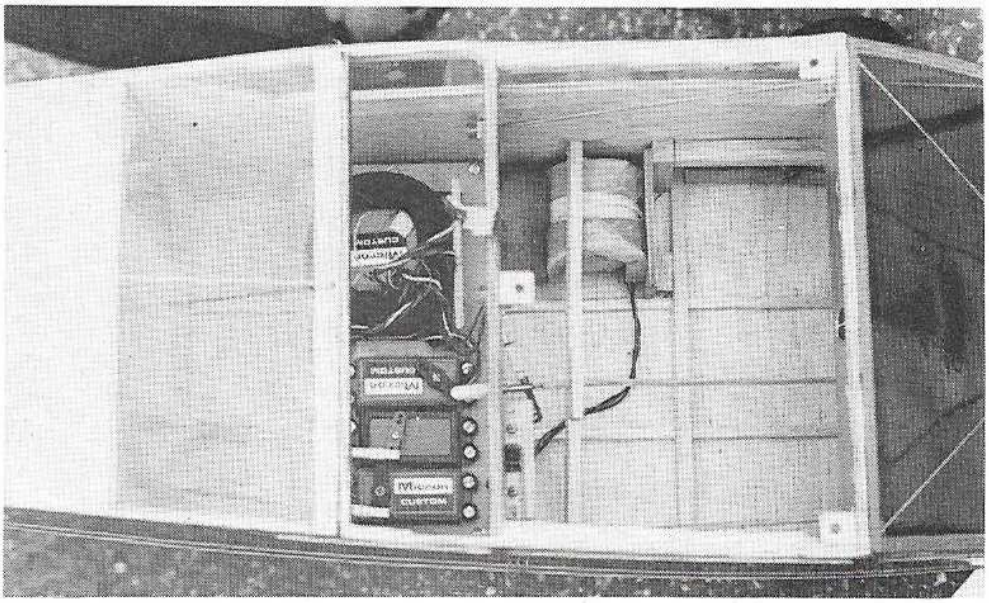
The fin's outer framework, of $\frac{1}{4}$in. balsa should be glued together over the plan, but the rest of the fin assembly is best completed off the board.

The struts are definitely functional and need to be fitted carefully. Epoxy 6BA nuts to pieces of drilled hardwood and fix them inside the fuselage, making the attachment points on the wing as shown. Make up the two struts without the balsa fairings, with one brass end of each not soldered. Now attach the struts to the fuselage and, with the wing bolted in position, solder the upper ends of the struts to suit the wing attachments.

Covering and finishing

For maximum lightness, I used a film covering, but the model can certainly stand a few extra ounces if a less instant finish is preferred. My

There's just no way you can say you couldn't get the gear in this one!



In fact, you could probably get three or four sets of gear in . . . but at least it makes for easy flooring and detail.

Tailwind finished up, after modifications, at 4lb. 14oz. ready to go. If you do use an iron-on covering, you will have to inset strips of $\frac{1}{16}$x$\frac{1}{2}$in. into the rear fuselage bracings where the two colours meet. Incidentally, there is at least one other AJEP *Tailwind*, with a different scheme, if you can find the details—but that, I'm afraid, is up to you!

The plan shows the wheel spats fitted to Taylor's *Tailwind* which, I think, could certainly enhance the overall appearance; unfortunately my flying field doesn't permit the use of such refinements.

As I mentioned earlier, the model initially was very nose-heavy and I had to fit nearly all the radio equipment between F3 and F4 to achieve the correct balance. Cabin detail is up to the individual; I just fitted the dashboard and coaming but, with with the amount of space available the sky's the limit.

Flying . . .

The ground handling of the *Tailwind* is very good, and take-offs are easy. For the first few yards hold in about half up-elevator to keep the tail down, then let it build up flying speed, steering very gently, if necessary, with rudder—and ease her into the air. Keep the speed up until you are confident of the model's low-speed handling. I use $\frac{1}{2}$in. movement on the "up-going" aileron (slightly less on the down) and find the response very sharp. I would suggest that, if you want to be on the safe side, you at first use about $\frac{2}{3}$ of this throw. Elevator throw is $\frac{1}{2}$in. each way, and rudder $\frac{5}{8}$in.

Surprisingly, I found that the model responds well to rudder in the air, despite its lack of dihedral. (This could have been a useful standby, in earlier times, when the loss of aileron (or other) control was not exactly a rare occurrance!).

Though this is obviously (!) not a purpose-built aerobatic model, it does perform the usual basic manoeuvres with ease, particularly the roll . . . but I have not yet tried a spin . . .

Personally, I derive the most pleasure from simply seeing this unusual but stylish model in the sky. I hope you will, too.