

This little biplane sports model is the product of combining several themes for sports power models. Ian Peacock's articles on the lost art of casual flying stirred up memories of diesel powered free-flight models with only a can of fuel as the essential field of equipment.

For modellers whose main interests are not with power models, but who do not want to lose touch entirely with this aspect of the hobby, the convenience of a small, easy-to-operate power model is obviously very attractive. For relaxed flying, vintage models have a great deal to offer, being robust and relatively easy to fly. However, they are generally quite large and not so convenient for "quick-outings". As a compulsive own-designer, the idea of building from kits or plans had little appeal. Finally, and a terrible confession to have to make, I had never in many years of aeromodelling, ever built a radio-controlled biplane.

Construction of the prototype followed quickly, and 'Bandito' has performed very satisfactorily in its intended role. 'Bandito' is essentially a small free-flight sports model having a vintage appearance, with radio fitted. It is perfectly stable, very easy to fly and operate, ideal for small fields and that "quick half-hour" flying session.

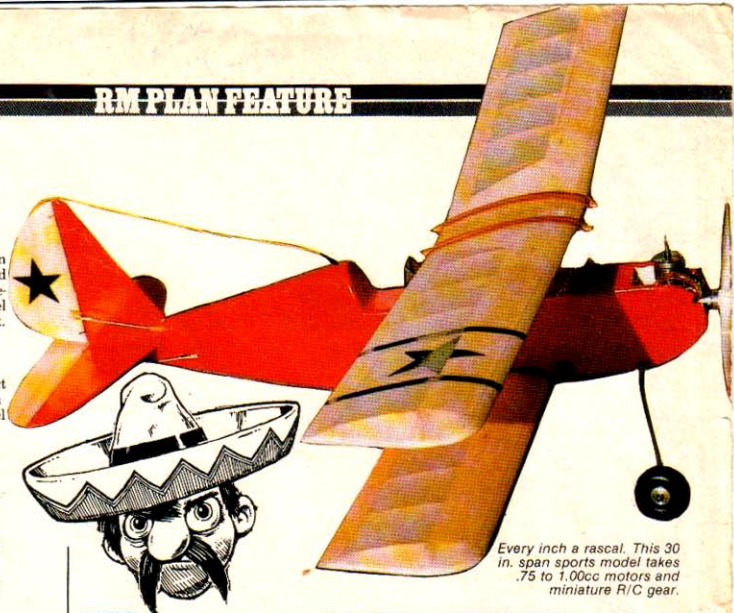
A good 0.75-1.00cc. diesel or glow motor will be suitable as a power unit; anything bigger would be too powerful. A miniature receiver, servos and nicad will be required for the radio installation. The prototype used two servos on rudder and elevator, but if you have a suitable throttle equipped motor it should be possible to squeeze in a third miniature servo.

So, if your interest has been stimulated, let's get down to the business of construction.

Fuselage

All balsa used for construction should be as light as possible without sacrificing strength. Reject any wood which has a spongy feel to it. Start by making up a kit of parts for the whole fuselage, including engine-bearers undercarriage, and cabane struts. When cutting-out 1/8 inch ply formers F1 and F2, make sure that the engine-bearer spacing suits your engine, and do not forget to make a hole for the fuel-pipe in F1.

Commence assembly by gluing the 1/64 inch ply doublers to the basic balsa sides. The 18swg. wire cabane is formed by epoxying the main-frames direct to the ply doublers on each fuselage side before assembly, and then soldering the diagonal brace in place. It is vital to ensure correct alignment of the cabane at this stage. At the same time bind and epoxy the undercarriage to F1, and the tailskid to F4. The fuselage can now be assembled by epoxying the sides to



Every inch a rascal. This 30 in. span sports model takes .75 to 1.00cc motors and miniature R/C gear.

BANDITO

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formers F1, F2, and F3. Allow to set before drawing together at F4 and the tail-end. Check alignment at every stage.

Complete by adding top and bottom sheeting and 1/2 inch nose-block. Round everything off with a razor plane and sand to a smooth finish. (A tapered scrap balsa oil-deflector may be inserted in front of F1 between the bearers to help divert exhaust-sludge to a suitable

drain-hole). The tail-end is slightly tricky; the balsa infill is tack-glued in place and shaped with the fuselage, then cut away and split in two to fit around the fin and tailplane. Finally, add wire cross-bracings to the cabane and 1/4 x 1/8 inch spruce wing-seatings. Allow sufficient overhang for the wing-retaining bands.

Tailplane and fin

These could be made from one piece of 1/8 inch balsa and hinged with Solarfilm or your own preferred method. The laminated construction shown on the plan has worked very well. The hinging of the control surfaces is achieved by incorporating double-sided tape or thin mylar between the 1/16 inch balsa laminations. (Use mylar cut from



the "plastic" draughting sheets as used in drawing-offices, one sheet is rather expensive but will provide enough hingeable material for years). If you use double-sided tape for the hinges, beware, it is easily dissolved by dope finishes.

Wings

Once again, commence by making up a kit of parts. The snag with biplanes, even small ones, is that wing construction takes twice as long!

The centre sections are made first by gluing ribs, spars and ply dihedral-braces to the bottom 1/16 inch balsa sheeting, then adding top spar, leading-edge and trailing-edge, and finally top sheeting. The outer panels are made by pinning down leading and trailing-edges and bottom spars, then adding the ribs, top spar, top sheeting and tips. When the glue has set on all panels, remove them from the building board, shape the leading edges and sand smooth. Join outer panels to centre-sections by cutting slots for the dihedral braces in the root ribs of the outer panels. Apply glue to the braces and root ribs and slot the outer panels in place over the braces on each side of the centre sections. Check that the dihedral angle is the same for each wing panel on top and bottom wings and prop up the tips until the glue is dry.

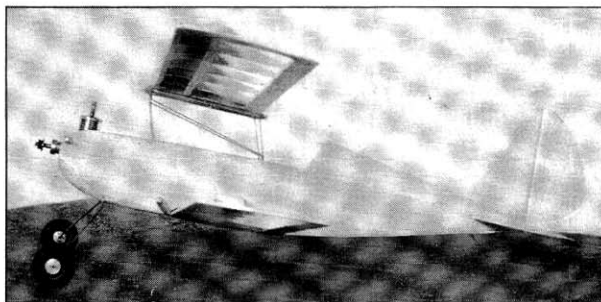
Covering and finishing

This is largely a matter of personal preference. Traditional dope and tissue was used on the prototype, with Solarlac colour finish and fuel-proofer on the fuselage. Remember to give the engine and tank bays a thorough coating of dope and fuel-proofer. Alternatively, you could use Solarfilm or Solartex. I usually cover and finish tailplane and fin before fixing these items to the fuselage. A simple windscreen bent from acetate sheet and spot-glued to the top of the fuselage adds to the appearance.

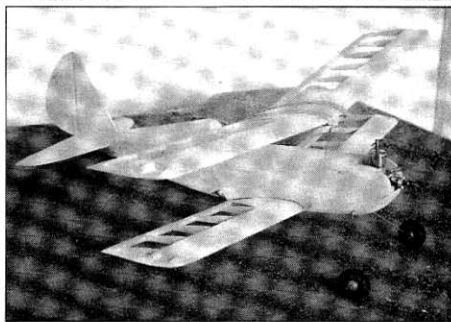
Controls and assembly

Installation of miniature R/C equipment in a small model such as 'Bandito' is inevitably a fiddly process, so work methodically and slowly to avoid frustration. The servos on the prototype were screwed to 3/8 inch square hard balsa rails and a closed-loop fishing trace system proved best for the rudder. A straightforward 18swg wire push-rod bound to a balsa dowel for stiffness was used for the elevator. All control-horns were made by hand from fibre-glass circuit board (ply or dural are also suitable).

Finally, bolt the engine in place, incorporating washers under the rear of the mounting lugs for downthrust if it is unthrottled. Install the fuel tank by cutting a hatch in the top deck. Assemble the finished airframe using 1/4 inch wide rubber-bands, checking alignment and incidence of wings and tailplane. Make sure that the model balances in the correct position by



Simplicity with strength is the keynote with Andrew's pretty vintage-style design; engine in the prototype is a PAW 100 diesel. Sheeted upper leading edges of wings make for high knock-resistance while sheet tail surfaces are fast to build, tough and easy to repair should the need arise. Model is just big enough to accept a third mini-servo for throttle if your motor has one.



supporting under the top wing centre-section. Of course, any warps on the flying surfaces should be removed. The prototype, with Fleet miniature R/C and PAW 100 diesel weighed 19oz when complete.

Flying

Select a day when the wind is not too strong for first flights. With everything correctly set up, a firm hand-launch with the motor set for optimum power output should have your 'Bandito' climbing away smartly. A small amount of left rudder trim may be required to counteract torque, and, if the e.g. is well forward, a small amount of up-elevator trim on the glide. (Motor torque effects can be reduced by using smaller propeller sizes). A motor run of between two to three minutes, depending on size, will result from the 15cc. capacity fuel tank, during which time the model can climb to a considerable height and appear very small indeed. Provided that the wind is not too strong a further two to three minutes glide will result. 'Bandito' has a surprisingly good glide, so make use of any available thermals to prolong the flight time, although, as with all biplanes, airframe drag is very high, and it will be necessary to "press-on" with down elevator to prevent the little model from drifting too far down-

wind if the wind is strong. (There is little point in attempting R.O.G. take-offs with models this small unless you have a very smooth strip).

Although, as with any model, lighter winds are preferable, there is no need to regard 'Bandito' as a fair weather flyer only. My flight-log weather notes for the prototype's first flying session read as follows: Windspeed 20-25mph, 10/10 cloud, heavy rain before flights, waterlogged ground. The second outing was little better: Windspeed 15mph., 8/10 cloud, continuous heavy snow showers, snow covering hard, frozen ground. Of course, it is not recommended that you test your model in such conditions, but it can be done!

Finally, the full range of rudder/elevator aerobatics is possible with this little biplane, loops and spins being especially attractive. Inverted flying is quite easy but allow enough height to half-loop out as the model can be reluctant to roll back to the upright position. Axial rolls are the one manoeuvre that it is not good at, due to the inverted stability. However, barrel-rolls (applying some up elevator) are satisfactory.

You will find that 'Bandito' is a durable sports model of great character, ideal for small fields and quick outings, recommended for all owners of miniature R/C equipment and small diesels.