

Just right for point-eight motors -

Gary Mayes' scale Swiss subject...

THE AC4 Gentleman was a product of Comte, the earliest Swiss aircraft manufacturer. First flown in 1928, the type was a high wing, strut-braced monoplane for a pilot and two passengers.

The prototype was delivered to Ad Astra on 18th September 1930, registered as CH-262. It was fitted with a 105hp Cirrus Hermes in-line engine. This was later changed to a more powerful Armstrong Siddeley Genet Major of 140hp. Sometime during the thirties the Swiss changed their registration system and this aeroplane was re-registered as HB-IKO.

Today the Comte is preserved by Swissair after extensive restoration and is kept in one of their hangars at Zurich. At present it is shod with 'doughnut' low-pressure tyres plus a tailwheel, and it sports an enlarged rudder. These features were probably introduced as a concession to operating from paved runways, for which this aircraft certainly would not have been designed.

Here's the model

I have taken the liberty of giving the model large-diameter wheels, a tail-skid and smaller rudder like those fitted in the thirties in order to give it an appearance more typical of the period. When designing this replica I did not have the luxury of three-view drawings to hand, so I worked from photographs; therefore it may not be dimensionally 100 per cent accurate. However, its functional lines and stable high-wing layout make it an ideal subject for a simple scale model.

Begin!

Make the fuselage first. Start by building two identical sides flat on the building board, one on top of the other to ensure accuracy. Use medium-hard stock for the longerons as they are not curved very much, and must

resist any tendency for the covering to pull them in between the spacers. Double-glue all joints if you are using balsa cement.

Cut out formers F1, F2 (plywood), F4 (balsa) and fabricate F3 with the grain running as shown. Also cut out the rear u/c support from plywood, not forgetting to drill a series of holes for binding; this also applies to F2. Cement the sides to F3 and F4 ensuring that all is square. When dry, join the tail end together and fix F2 in place, drawing the sides in with rubber bands. As an aid to accuracy I usually mark centre lines on the top and bottom edge of all formers, thus allowing a check of fuselage alignment by sighting from the stern post. Follow with all spacers top and bottom, gussets, wing location dowels and aluminium tubes for the wing and strut retention bands.

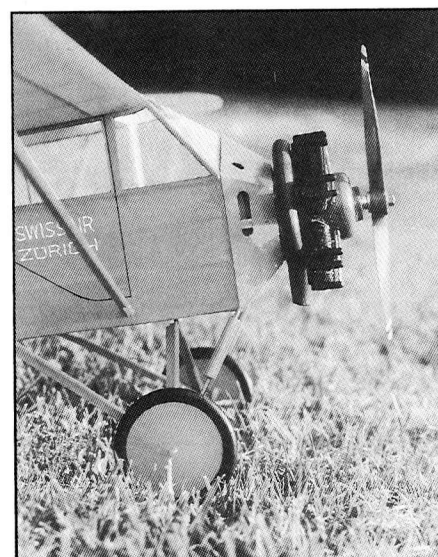
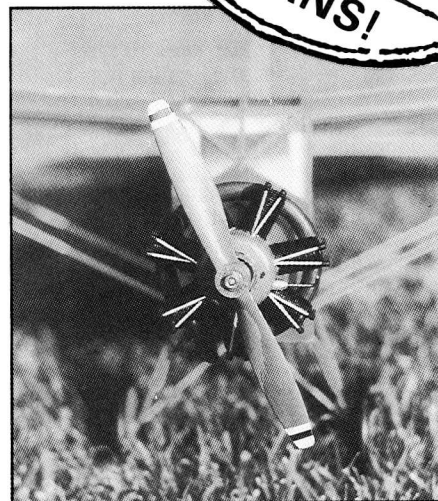
Bend the undercarriage from 16swg wire. Mark all lengths with an indelible marker pen, or similar, before you start bending; this will help in making things symmetrical. The u/c is held in brass tubes to allow the wire to spring a little. Sew the tubes in place with strong thread and coat with cement. Bind the axle/spreader to the legs with fusewire and solder the joints.

Make the cruciform firewall support from 3/16in sheet balsa and cement in place, together with F1. Cut a hole in the horizontal member to take the fuel tank. The stringers on the sides are notched to half their thickness where they meet the uprights, and are then cemented in place, followed by three stringers on the underside, the windshield frame members, the 1/16in plywood tailskid, and thin card glued with PVA to represent the fairings on the undercarriage legs.

Motor matters

Now for the juicy bit at the front! Screw the engine mount to the firewall, setting it

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Above: Radial engine is fully detailed on plan. Couldn't be simpler. Below: 38in high-wing subject not only looks good but flies like a sport model!

Comte A.C.4



Gentleman

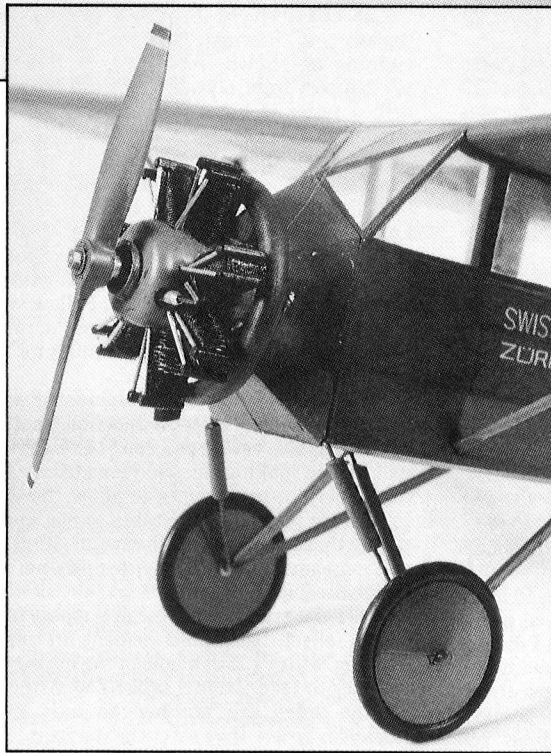
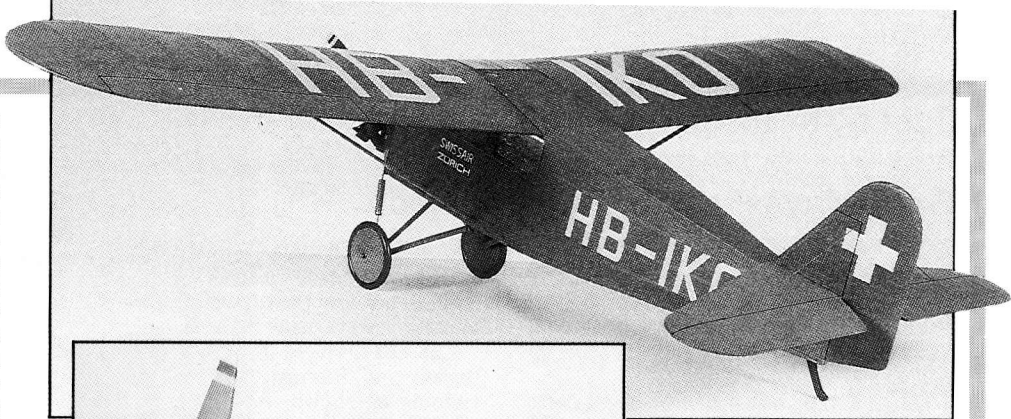
to the required side and downthrust angles with a suitable tapered balsa packer. Note that the mount needs to be slightly 'port and upwards' of the vertical and horizontal centre lines to position the prop driver centrally. The crankcase for the dummy motor is made from a small plastic bottle. (Mine came from the local homebrew shop). Cut it to length and drill a series of 1/16in holes to receive the pushrod covers and the location pegs for the cylinders. The cylinders are round section balsa, would with thread to represent the cooling fins and drilled at one end to take the location pegs made from 1/16in dowel. The rocker covers are shaped from 1/8in sq balsa and carefully drilled to take the aluminium tube pushrod covers before being cemented in place. Make six cylinders like this and a short cylinder head used to disguise the model engine (DC Dart in the original). This is retained by a wire clip bent to engage in between two cooling fins and bound onto the dummy cylinder head. Next, paint all seven cylinders black. Epoxy the cylinders and pushrod covers in place; cut out a hole for the needle valve, and paint the crankcase grey.

To make the exhaust laminate a balsa ring from three layers of 1/8in sheet. You may need to experiment with the grain direction before you get one to stay flat. Sand the good one to a round section, cut a segment from it and cement back in place turned through 180 degrees to represent the open end. Paint it and then glue to the back of the cylinders.

The completed dummy engine is held in place by two small self-tappers, which engage short lengths of dowel protruding from the firewall just inside the crankhouse. The gap between F1 and F2 is covered with an aluminium litho plate fairing, or you can try 1/32in sheet balsa. On my model the paint soon started to wear off the aluminium giving it an authentic 'in service' look.

Wings

The wings are of straightforward conventional construction. The ribs are best made by the sandwich method, thus: cut two template ribs accurately from thin plywood; next cut the required number of oversize rectangular rib blanks from 1/8in and 1/16in sheet balsa. Stand the blanks together on your building board with a template at each end, the bottom edges of which need to be raised slightly on some scrap 1/16in balsa, then pin the whole lot together. Carefully carve and sand the resultant block to the shape of the template ribs, including notches for the spars which need to be a nice snug fit. When finished pull the pins out... and, hey presto! a complete set of ribs all with nice square edges. Next fabricate the wing tips from 3/16in sheet, and when dry, remove from the board. Select good straight TE section, mark out and notch them and then pin them over the plan. Set the lower spars and leading edges in place holding them with pins. Cement the ribs in place, setting the root ribs at the required angle, followed by the wing-tips which need packing up at the front. Fit the top spars and mark out and notch the outboard ribs for the dummy aileron spars. Unpin from the board when dry and sand the leading edge and tips to shape. Bend rubber band hooks from 20swg wire and cement onto thin ply reinforcements on the inside of the root ribs. Bind short lengths of aluminium tube to the lower spars where shown for the strut mountings to complete the wing panels.



Above: Red and white colour scheme is cheerful and bright. Use thin dope over red tissue if you can. Left: Detailing is simple but effective. Long live sport scale!

Tail affairs

The tailplane is simply built over the plan with 'rectangular' ribs. When the cement is dry, remove and sand to a streamline section. The fin is built in a similar fashion. All that's left to construct are the wheels and wing struts. To make the wheels cut out 1/16in ply discs and laminate with 1/32in balsa on each side. Drill the centre and epoxy in place a length of 16swg brass tubing; or, better still, a screwed brass locked in place with attendant nut, also epoxied. If you opt for the screwed brass bush, first cut away the balsa on either side to allow the head on one side and the nut on the other to grip the plywood. The tyres can be made from lengths of neoprene rubber cut from an O-ring or fuel tubing. Join with superglue (cyanoacrylate) and then epoxy in place. The finished wheels are retained on their axles by small washers held with epoxy.

The lift struts are made from 1/4in x 1/8in obechi or possibly hard balsa sanded to a streamline section and then accurately cut to length with one end bevelled to meet the fuselage sides. 20swg wire fittings are bent to shape and bound in place. Use a light coloured thread for this as the paint won't disguise a dark colour.

Finishing

Cover the entire model lightweight Modelspan tissue. Use red pre-coloured paper if you can get it. Two coats of 50/50 clear dope and thinners should be sufficient to fill all the pores and taugthen the paper. Cut the windows to shape from clear plastic sheet and glue them in place. I placed strips of tissue over the framework to disguise the

thickness of the glazing at the edges and make the paint less glossy; however, that may be more trouble than it's worth. Paint with red colour dope which is best sprayed on (I use a humble scent - spray - type squirter) all over. Cut the registration letters and the crosses on the tail from white tissue and fix in place with clear dope. Leave them to dry well before carefully painting them with white dope or enamel. This method helps to stop the red base colour from leaching through the white. Remember, you can paint enamel over cellulose but not vice-versa. Paint on the hinge lines and other details. Don't forget to paint the propeller; nothing looks worse than a brightly coloured nylon prop on a scale model!

Glue the fin onto the tailplane, but off leave the bracing wires until the model has been trimmed for flight. Temporarily retain the tail with rubber bands. Finally balance the model carefully with the CG in the position shown, securing any ballast as far forwards or rearwards as possible to minimise the weight needed.

The Gentleman takes the air

Test glide into the mandatory long grass, aiming for a straight or slight left turn. Under power you should be looking for large left-hand circles, although mine insists on turning to the right without adverse effect. (It could be that the radial engine tends to interrupt and straighten the prop wash, which reduces pressures on the rudder). Incidentally, you may find engine starting easier with the model turned on its side. You should be rewarded with a gentle and realistic flier if you keep the weight down. Just the job for those calm evenings.