



Andrew Crisp's

'ACCIPITER'

A/2 specification glider of simple lines and high performance features

THE STORY of this model goes right back to the German glider published on page 23 of the 1952 *Aeromodeller Annual*, Karl Heinz Denzin's 2nd placer in the 1953 World Champs. was also an influence. Several A/1s made during the '50s convinced me of the good towing characteristics of the 'pod and boom' layout.

Then I became involved in power flying until 1961 when I obtained a German 'Helios' kit. This I modified by slimming the fuselage right down *a la* 'Spinne', and using an under-fin. From time to time, people claim that these are bad and cause spiral instability, but I feel this is due more to warps than fin position.

Two versions of this model were made, and lasted for ages, being very reliable both on tow and in flight. I suppose it was rather like an A/2 version of the old 'Pelican', which can't be bad!

In an effort to increase 'still air' time, a new model was built with much greater span (82 in.) and smaller tail (68 sq. in.) A Hank Cole airfoil was used, and it appeared capable of around 2:25 on a calm evening. Wing warps are used for trim; thus the 'Ship' flies on straight rudder for glide and offset for the tow. Despite having a long nose (8 in.) stall recovery was instant due to a heavily under-cambered and very light tail which weighed .2 oz.

Hoping to increase the unassisted time still further, the first Accipiter was made. This was 86½ in. span, the wing being covered in sheet. Twenty flights made on late summer evenings ranged from 2:30 to 2:45 so the object of the new model had been achieved. Unfortunately, when flying in quite a mild wind the wing folded, so this was discarded as being impracticable.

This now brings us to the present 'Accipiter' which I think would need a force eight gale of wind before the V wing breaks! It is best to make the flying surfaces first so that they can age while the rest is made.

Wing

Start with the trailing edge first. Pin down *flat* on the

plan, and glue the joint for the tapered tip. Remember to make opposite sides!

Remove from the plan and notch to receive ribs.

Pin back down again with required packing for under camber. Then pin down the L.E. and glue in the ribs, remembering that those at the root are undercut for the sheeting. The tapered tip ribs are cut down from full length ones and sanded to an airfoil shape, *when* the complete job is finished.

Fit the upper spars while the wings are still on the board and the lower spar on removal.

The brass or aluminium tubes for the 12 s.w.g. dowels are fitted by cutting away the ribs at the appropriate places and gluing the tubes to the L.E. and spar with 'Araldite' or equivalent epoxy. There is no need to make the tube notches very accurate, as a slight oversizeness helps when lining up. The epoxy does the rest! Before this adhesive has had time to harden, slip the dowels into the tubes and pin the whole lot down so that the wing halves line up *at the same incidence*. A very light trace of oil on the wires will prevent them from sticking should there be any excess of epoxy around.

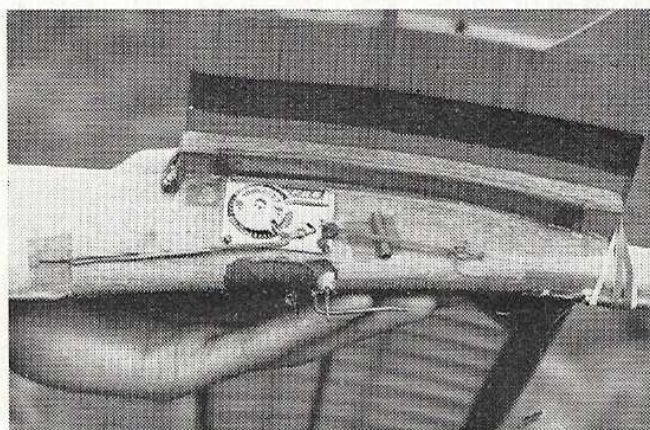
When all is dry, remove from the board, separate the halves and sheet the roots, top and bottom with hard 1/32 in. balsa.

Carve down the leading edge to the section shown, add the ply facing ribs, and give the whole wing a good sanding. The tip blocks, of course, must be of very light material.

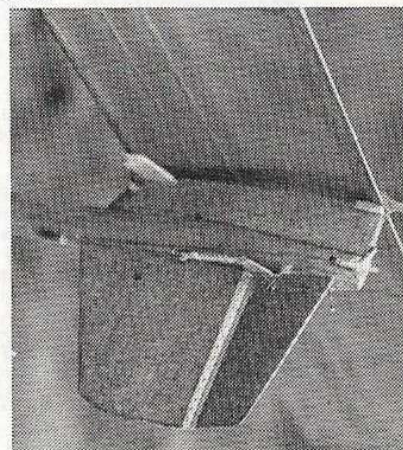
Give the wing a coat of dope *prior* to covering and *do not* sand any more. This helps the covering procedure, especially if one is using silk or heavy Modelspan, and using dope to stick it down.

On the original, the wing roots were covered in bandage before the actual covering was applied.

The tail trailing edge is done in the same way as the wing. Otherwise, assembly is pretty simple. The top spars are added when all is still pinned down, and the bottom ones on removal.



Close-up views of the 'Andy' man's timer trip and auto-rudder gear show use of elastic bands to release timer stop lever when towing pin is withdrawn. Note use of left rudder. Full details on plan for timer installation, and method of building-in wing wash-out.



Try and use light wood on the tail. Cover with Jap tissue and dope sparingly. It should weigh no more than .25 oz. – yes, one-quarter of an ounce *maximum*!

Fuselage

The fuselage is started by cutting the $\frac{1}{2}$ sheet pod core and making the hole for the nose weight and recesses for the longerons at the rear.

The $\frac{1}{8}$ in. sheet sides are then cut and the $\frac{1}{8}$ in. spruce longerons, suitably tapered and cemented to them. Now glue the top and bottom of the boom. Having cut out the $\frac{1}{4}$ in. sheet pod facings, glue *one* on.

Now make up the fins and tack cement in position. Roughly rubber band the flying surfaces in position, and try and gauge how much lead is required in the nose to get the correct centre of gravity.

(On the plan a hole is shown for adding small amounts of ballast, so slightly underestimate and find exact position with lead shot, sealing off afterwards).

Add remaining pod side, remove fins, and carve and sand everything to the sections shown. Cover with lightweight tissue paper, then glue on the fins properly, also the wing mount. Pre-cementing here is advisable, of course.

Now all the fiddly 'details' can be added – dowels, tubes, etc. I prefer all my lines to be outside of the fuselage in case of breakage. Auto-rudder adjustment is simple. Stick 'bendable' pins in the back of the fuselage to find tow and glide positions then 'Araldite' firm.

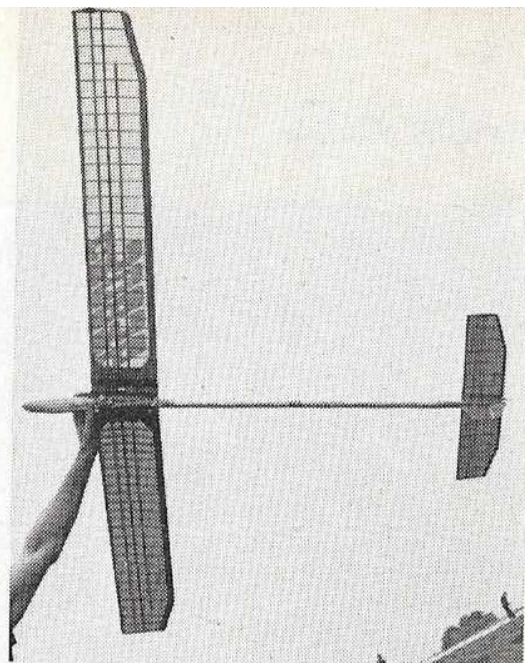
The timer on-off system is the essence of simplicity, yet I have never seen it used before. Drawings are included in a separate detail on the plan (also T.E. details). An extra pin comes off the towline ring, which goes through one strand of the elastic band (attached to the timer on-off switch – and holding it in the 'ON' position).

This is pulled backwards and the pin goes into the $\frac{1}{8}$ in. inside diameter tube just behind the timer. This switches the arm to the 'off' position. The top of the pin protrudes from the $\frac{1}{8}$ in. tube, and the auto-rudder line hooks on to this.

When the line falls away, the rudder line 'pings' back and the band 'pings' forward, starting the timer. All *very* simple! It should be added that the d/t descent is particularly safe and non-spinning, due to the fairly large fin and long moment arm.

Finally, should the model be underweight, make a hole in the wing mount at the C.G. and add lead there.

Straight dihedral, underfin, slender fuselage boom make Accipiter a distinctive shape, and one with good performance too!



Flying

First check that the auto-rudder and dethermaliser systems are 100 per cent sound! Do not worry too much about the wing and tail incidence, but the centre of gravity must be exactly as per plan. There should be no intentional warps, other than the natural washout, induced by the construction, in the tips.

Start by test gliding with the rudder *straight* and note any natural turning tendency. Then connect the band up to the appropriate side of the auto rudder, and encourage this natural turn. I believe this makes a model more thermal prone and less likely to spiral in strong lift.

You will probably need to add some negative on the tail. When the glide is roughly sorted out, towing can be tried. The original is very docile and was 'solo-launched' from the start.

There is no adjustable device for the tow-hook. If anything is vastly wrong it is probably a misplaced C.G. Minute variations in position can be effected by U-shaped pieces of wire being pushed into the fuselage over the hook to act as a stop for the towing ring.

One nice thing about this design is its ability to hang well back on the line when hunting for lift. Contact with a thermal should shoot the model straight overhead.

If the model is sluggish in its stall recovery and has a disappointing duration in evening air, it is worthwhile adding a cord turbulator $\frac{1}{4}$ in. back from the leading edge. The original did not need this, but it has helped some of the writer's other designs.