ASPIS!

Build this attractive vintage style free flight model for 0.5cc engines by 'Pete' Fisher

Above, the smart lines of 'Aspis' have graced these pages several times in the last year – now is your chance to build your own musical dragon!

Introduction

The 'Aspis' is named after a small musical dragon. It is a *Vintage Style* semi-scale free flight sports model, for leisurely flying, under all weather conditions. Three 'Aspis' models have been built and tested. All flew *off the board*, with no modifications required, giving pleasing and ultra stable flight characteristics. The first flights were on Jurby aerodrome, on 7th May 1985.

Design and development

The 'Aspis' is the 319th model built by the designer. It is intended for use with a 'Dart' 0.5cc diesel, as per the prototypes, or any other small diesel or glow-plug engine of 0.3-0.8cc. Construction is straightforward and traditional; but incorporates an unusual and efficient elliptical type wing plan form; which greatly enhances the overall character of the design. The swept back leading edge helps to provide extra lateral stability without the excess dihedral, sometimes used on small free flight models. The final concept is developed from a long line of sports free flight models, designed for *Performance Kits*, the last of which was the very successful *P.K.* 'Wasp Wings' of a similar size.

Construction

Fuselage: Before commencing construction, cover the plan with a piece of wax paper, the inside wrappings of cereal packets are suitable, this stops the structure from sticking to it.

Build the two basic fuselage sides, made up of 1/8in × 1/8in longerons, uprights and diagonals, nose formers and wing gussets of 1/8th sheet, together with the tailplane gussets, directly over the plan. When the first side is finished, build the second over it, to ensure identical shapes.

Assemble the fuselage, over the plan view, starting with the six 1/8in × 1/8in spacers under the wing centre section. Check vertical alignment with a set-square. Draw in the tail section, fit the tail post and then the other spacers. Fit firewall B2 and bulkhead B1, then smear the entire inside of the engine bay with balsa cement from B2 forward; to act as additional fuel proofing.

Smear the engine bearers with cement and mount the engine with 8 B.A. nuts and bolts and washers, then securely cement the unit to the inside of the front 1/8in sheet nose formers. The engine cowling is steamed, shaped and smeared on the inside with cement and then having mounted a small free flight fuel tank, worked into position over B2. Carefully check down and side-thrust as per the plan.

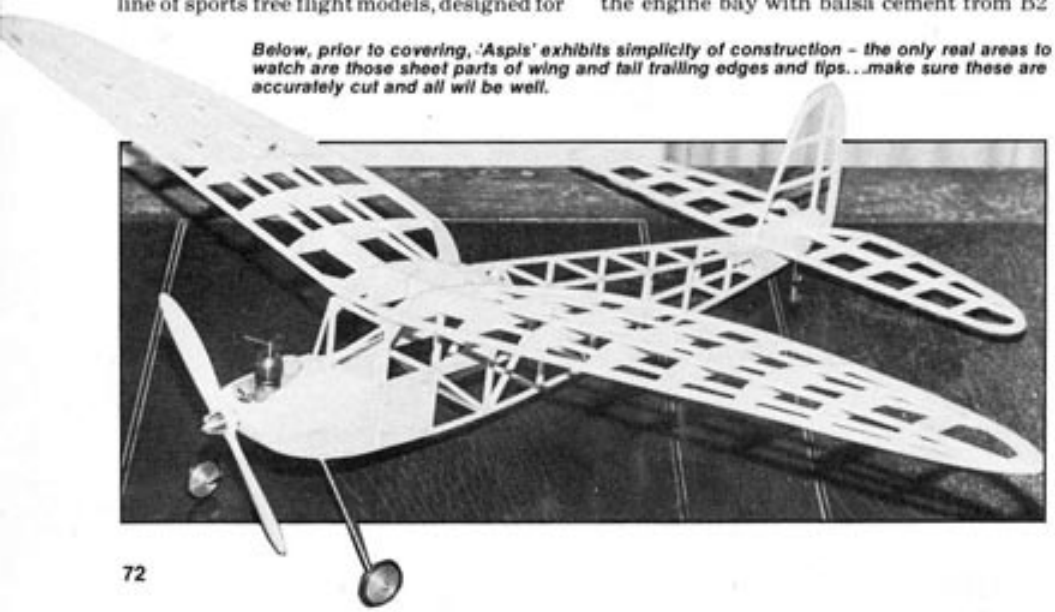
Undercarriage: Bend the undercarriage wire to shape over the full size drawing on the plan. Bind the upright sections of the wire to pieces of hard 1/8in × 1/4in balsa with strong carpet thread and cement securely in position. Finally fit the 1/8in undercarriage gussets at each corner, where the legs protrude from the base of the fuselage. The wheels are located by threading the axles to 8 B.A. Final 1/16in sheeting can now be fitted.

Fin: Build directly over the plan. Start with main 1/8in sq fin pillar, then formers F1-4, and finally the 1/8in sq leading edge and lateral members. The finished unit should be sanded to an airfoil section.

Tailplane: Shape the 1/4in × 1/8in mainspar, so that it tapers to 1/8in sq at the tips, and pin over the plan. Fit 3/16in sq leading edge and formers T1-3. The 1/4in × 1/8in tailplane ribs are shaped and sanded to blend with the mainspar and leading edge to form airfoil sections. Fit gussets and fairings. After covering, the fin is cemented in position, check alignment with a set-square.

Wings: Pin W1-4 over the plan, followed by the lower 1/8in sq main-spars. Fit the ribs R1-9, canting root rib R1 with the dihedral template shown on the plan. Fit leading edge and top main spars. Fit gussets. Having built the centre section, assemble the wing panels, checking the 2.4in dihedral at *each* tip. Fit the 1/16in sheet inter-spar webbing. The entire structure should be shaped to a smooth airfoil section, taking special care at the wing tips.

Below, prior to covering, 'Aspis' exhibits simplicity of construction – the only real areas to watch are those sheet parts of wing and tail trailing edges and tips...make sure these are accurately cut and all will be well.



Covering and Finish: Firstly sandpaper the airframe all over; then cover the model, a section at a time, taking care to cover the underside of the flying surfaces first, then overlapping the top covering, by about 1/8in. The prototypes were covered with heavy-weight *Modelspan*; followed by two coats of *H.M.G.* clear dope, and one of fuelproofer (all-up weight of prototype was 6½oz).

Flight testing

Test Gliding: Check that the balance point (CG) is in the position marked on the plan. On a calm day, hand launch the 'Aspis', from shoulder height, with wings level, towards a point on the ground about 100 yards away from you. If it dives, place a piece of 1/16in scrap balsa under the trailing edge of the tailplane. If it stalls, place it under the leading edge. Trim for a long flat glide, with a slight left hand turn. Take care to launch into the wind.

Powered Flight: Use reduced power on initial flights. Trim for a slow left hand turn under power. Ensure that the engine run does not exceed 20 secs and check that your name and address is clearly displayed on the model.