

## New Delta by 'Vultan' designer Laurie Ellis is especially for the ·5 to ·8 c.c. diesels

# J A V E L A N

THE JAVELAN is the fourteenth of a series of Delta design by S/Ldr. Laurie Ellis of "Vultan" fame. In each design various ideas have been tried to ascertain the characteristics of the delta wing in model sizes. The better features of each design have been built into the Javelan and the results have paid off. Perhaps those deltas should not be called "designs" instead they should be termed "projects". Not being a theoretical or mathematical bod., Laurie tackled these "projects" from a purely practical angle, it is surprising what one can learn by the trial and error method. Laurie does not recommend more power than the Mills .75 or Allbon Merlin for the Javelan. Experimenters *could* try a Spitfire but they might encounter trimming difficulties. Experience has shown that a delta does not need a great deal of power to fly it and any power in excess of that required, brings trouble.

If the Javelan is built the way it is shown on the plan, one will have a robust model which will give hours of fun and fly in conditions bad enough to ground the conventional.

**Wing.** Pin leading edge and trailing edge on plan. Position the centre cap strip, but do not cement along the centre line as dihedral break forms here. Fix all  $\frac{1}{16}$  x  $\frac{1}{4}$  lower cap strips. Now add  $\frac{1}{8}$  sq. lower spar. Fit rib W.1 in position and cement along the right side. This rib is to be placed directly over the crack formed by centre cap strips. Work on the right side of the wing only, add strip at T.E., top  $\frac{1}{8}$ th sq. spars, and sheet leading edge, then fit top cap strips and T.E. Add reflexed trailing edge and elevons with an angle of 21 degrees. When the cement is dry raise the right wing tip  $2\frac{1}{2}$  inches and run cement along *left* side of W.1. This makes the dihedral break complete. Proceed as for right side. Sheet centre section. When dry remove from plan. Shape the droop snoot as shown and cement in position. The wing now should be covered and doped.

**Fin and Tailplane** are built on the same principle as wing.

**Fuselage.** Build lower fuselage crutch inverted on plan. Pin the longerons on plan. Install mount support then sew leg to F12 and cement in position. Add all

formers, stringers and while still on the plan, cover with  $\frac{1}{32}$  sheet. Carve the balsa nose block to approx. shape and hollow out. Cement in position. Lift fuselage from plan and sand smooth and cover. Now install main undercarriage legs. Sew around longeron with a binding fit. This will allow the legs to move back and forth easily. Fit 20 s.w.g. undercarriage leg support. Thus the wheels may be moved back and forth to attain the best position in relation to the C.G.

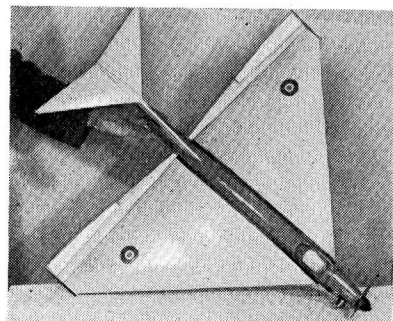
The  $\frac{1}{8}$  ply engine mount can now be cemented in the slot. If using the Mills .75 the TOP of the mounting lugs are placed on the left face of the mount with the cylinder sticking out on the right side. This gives the desired thrust off-set. If you use an Allbon Merlin, mount the engine with the cylinder to the left and the BOTTOM of the mounts against the left face of the ply mount.

The offset thrust line is necessary to avoid the use of approx. 7° right thrust. It is hardly noticeable. The wing may now be cemented to the fuselage. The "V" of the leading edge of the wing should be right up against the  $\frac{1}{8}$  ply engine mount cut-out. Cement F8 to F11 in place. Slide paper tubes on dowels in fin and fit R1 in position. Cement paper tubes to R1. Cement rear paper tube to lower support. Make sure fin is vertical. When dry the fin will slide off tubes. Cement the remainder of the formers across top of the centres. Fit the remainder of the formers across top of the centre section, add all stringers. Cover with  $\frac{1}{32}$  sheet, sand smooth and cover. Build up cowl to suit engine used, the front end of the cowl acting as a support for the upper front part of the engine mount to keep it from vibrating.

**General Notes.** The original model was first flown with a Dart and an all up weight of  $9\frac{3}{4}$  oz. C.G. position was forward of that on the plan. The model flew very well using a Stant 7 x 3 cut down to  $6\frac{1}{2}$ ".

A Mills .75 is at present powering the model. Indicated C.G. seems best for this power. With the Mills or Merlin use a Stant 7 x 3 for best performance. Original weight with the Mills was  $10\frac{1}{2}$  oz. and after several flights the model was ballasted to a weight of 13 oz., and it showed little change in flight characteristics. Take off run remained at 20 feet and the climb away seemed unchanged. Glide the model over grass. Adjust elevons until glide is flat without a stall, then adjust rubber tab for very slight turn to the RIGHT. Be very careful with the tab because the model answers it readily. Use  $\frac{3}{4}$  power and a hand launch, it will now go into a steep initial climb and turn to the left, when the engine stops it will glide to the right. Now give her full bore and watch it sizzle, for this run give it at least fifteen second run because it may show stalling tendencies and will take a few seconds to iron itself out. Now try a few R.O.G.'s (and once you have tried one, they will all be R.O.G.'s... they are lovely).

Laurie has had some very successful deltas but can safely say that this one is the best in every respect and would not hesitate to show it off anywhere. It is a sport flyer but it will hold its own with the best of them. It cannot, however, compete against the pylon variety because it is not a contest job.



*Like the Vultan, the Javelan carries a slight twist in its name to indicate the full-size aircraft on which it is based. Virtually a double-delta, this latest Ellis product will fly in all conditions, even when the wind is too strong for conventional models*

