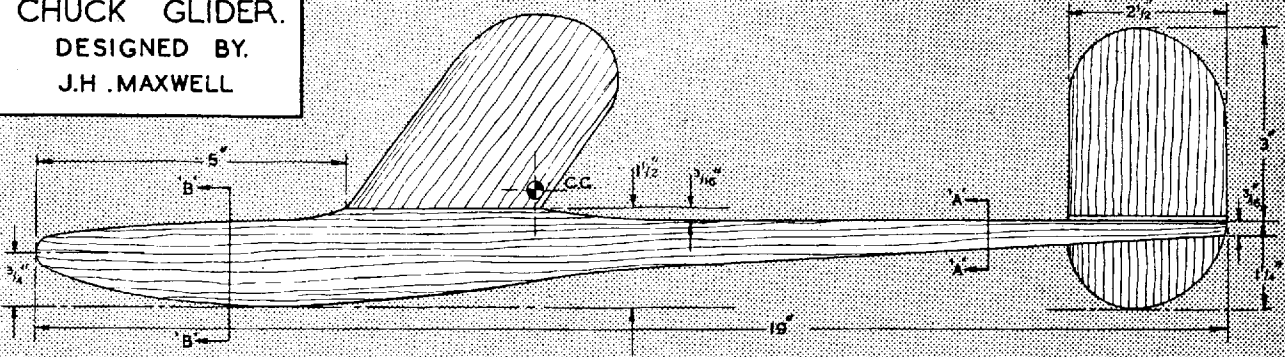
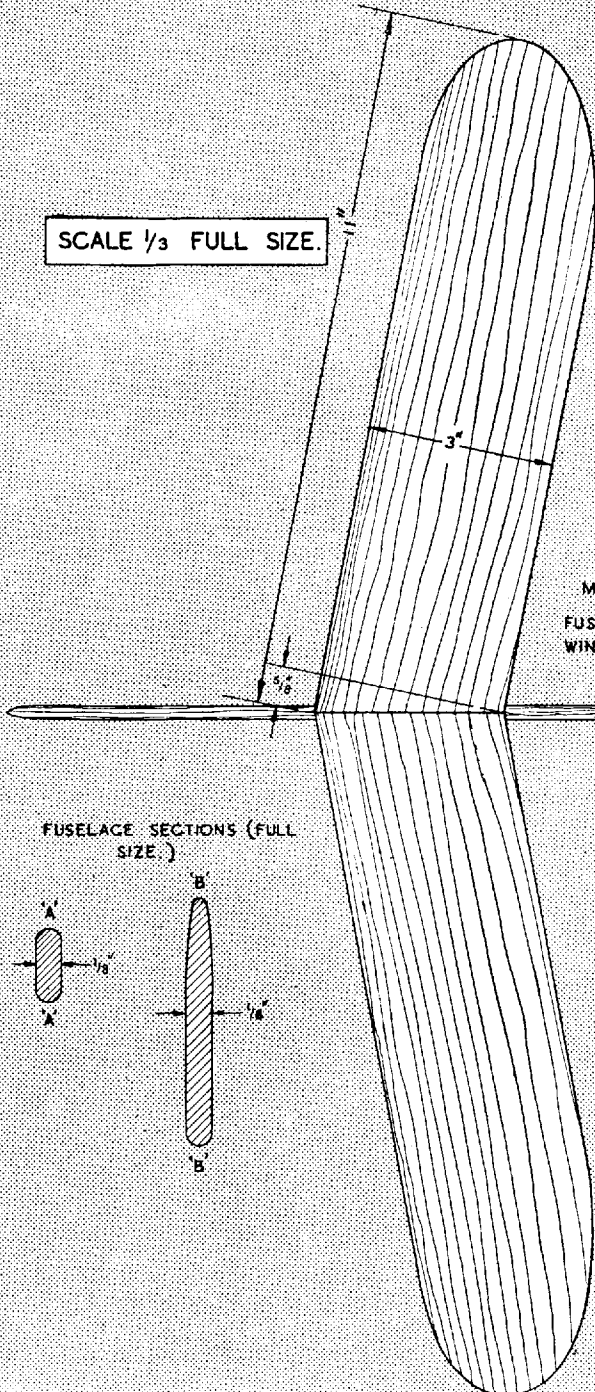


**CHUCK GLIDER.**  
 DESIGNED BY.  
 J.H. MAXWELL

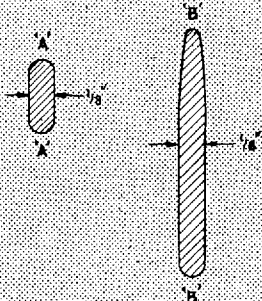


SCALE 1/3 FULL SIZE.

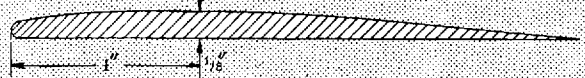


MATERIALS :-  
 FUSELAGE- SPRUCE.  
 WINGS- BALSA.

FUSELAGE SECTIONS (FULL SIZE.)



WING SECTION (FULL SIZE)



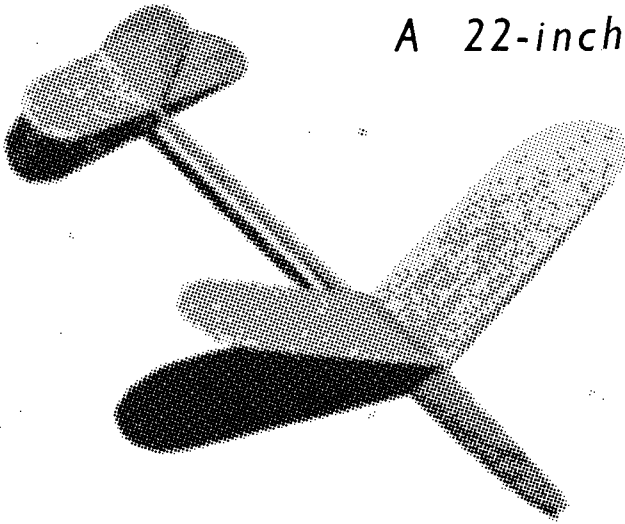
TAIL & FIN SECTION (FULL SIZE)



TAIL & FIN SECTION (FULL SIZE)

## A 22-inch Span CHUCK GLIDER

BY J · H · MAXWELL



**T**HERE is a tendency in some quarters to deride the all-balsa type of hand launch glider because of its small size and simple construction. In a way, the critics can hardly be blamed, since the real American style of hand launch, or "chuck" glider (I prefer the latter term, as it avoids confusion with the big, slope soaring jobs) is a comparatively rare bird in this country, and, probably, never having seen a good example, they base their opinions on the simple sheet balsa beginners' gliders.

The fact of the matter is that the chuck glider can be a most efficient type, and this is not surprising when one realizes that some of the best brains amongst American aeromodellers have helped in its development. Chuck gliders are made small (usually less than 2 ft. span) because that has been found to be the optimum size for throwing and performance. Again, the "all-balsa" or at least "all-wood" construction has proved itself superior to built-up methods, by virtue of its greater strength and its ability to take on a better finish.

Furthermore, the chuck glider has an appeal all of its own in that it requires not only skill in design, construction and flying, but also—shall we say—athletic skill in throwing. This throwing is by no means a matter of brute strength—although a strong right arm does help—for, on several occasions, I have seen it demonstrated that a good launching technique will get a glider higher than sheer muscle. This aspect of chuck gliding gives it a spectacular quality; a sort of combination of javelin throwing and model flying; which, together with the fact that the models usually circle well within sight, makes it worth the consideration of all competition secretaries who are interested in attracting the general public to their flying meetings.

The model about to be described is a typical sturdy example of the chuck glider, capable of averaging around the minute mark. It has done up to 1:55 over dead flat country in cool weather, but, presumably, some slight, though not noticeable, rising currents must have been present. The design was produced by the simple yet effective method of blending what experience has shown to be the best features from several successful American models.

The fuselage, which is pure Joe Hervat in shape, is made from  $\frac{1}{8}$  in. spruce, or wood of similar density, for strength. If balsa is used, it should be of the hardest grade and  $\frac{1}{4}$  in. thick. One thing which must be guarded

against is the tendency to make the fuselage too slender towards the tail. This is likely to lead to the whole tail end snapping off in a bad nose landing.

The wings have the typical sweep back and are fashioned from  $\frac{1}{8}$  in. sheet medium balsa. If carefully used, a sharp knife or razor blade will save time in rough shaping the aerofoil section, then a sandpaper block finishes the job.

As can be imagined, a lusty launch puts considerable strain on the wings and, in consequence, the wings-to-fuselage joint must be very strong. The necessary strength is obtained by applying at least three coats of good cement—allowing each to dry before applying the next—and spreading these over the wings and fuselage for about an inch all round the joint.

The tail surfaces are quite straightforward, being made from  $\frac{1}{16}$  in. or slightly thinner softish balsa. Again plenty of cement is used in joining these to the fuselage.

A smooth glossy finish is an important asset to any chuck glider, and it is surprising what a difference this can make to the performance. Firstly, the model is carefully and thoroughly sanded with the finest obtainable grade of paper; then the whole is treated with a wood filler, well rubbed in and, when dry, well rubbed off with more fine sandpaper. Finally, the gloss is applied in the form of several coats of thick dope, or high gloss varnish. The latter gives a marvellous polish, but is somewhat heavy.

Trimming, on the original model, was performed by lightly riveting little plugs of lead into the nose. These, having been made a little too long at first, were gradually cut down with a pen-knife until the proper balance was obtained; and finally riveted flush. Some builders prefer clay or plasticine for balancing, and the reader can take his choice.

This type of model allows quite a lot of latitude as regards weight, provided that the C.G. is in the correct position, but it is recommended that the total should be between  $\frac{3}{4}$  and 1 $\frac{1}{2}$  ozs. A heavy model is easier to throw high, but, of course, it flies faster. It is possible to make this model entirely from "balsa substitute," but the wings and tail must be lightened by means of large holes covered with tissue.

Once the model is gliding satisfactorily from the usual shoulder-high launches, it is time to look into the subject of real high-power throwing. There are several different throwing styles, but the one described here is that which I have found most successful. All the directions are for right-handed throwing, so that a left-handed man should reverse the instructions.

As a preliminary, the glider must be adjusted to fly in left circles, by warping down the trailing edge of the right wing and warping up the trailing edge of the left half of the tail-plane. A little left rudder may also be required but the exact adjustments can only be found by experiment.

The throw itself is an under-arm swing something akin to what one would use to make a flat pebble skip over water; except that the glider is thrown up at a steep angle of about 75 degrees instead of horizontally.

*Continued on page 385.*