



Here's a pretty little biplane for 'Galloping Ghost' fans! 36 in. span for 1.5cc power

by D. G. THOMAS

GIGI is my first successful "G.G." controlled model, after many unsuccessful projects. The reason for my success with this model is due mainly to the acquisition of an old R.C.S. pulse-proportional transmitter—and the change over to push-rod control of the flying surfaces in the model, instead of the usual torque-rod and "bird cage" at the rear end.

This ironmongery type of control fitted to a model is, I think, the reason why so few modellers seem able to cope with "Galloping

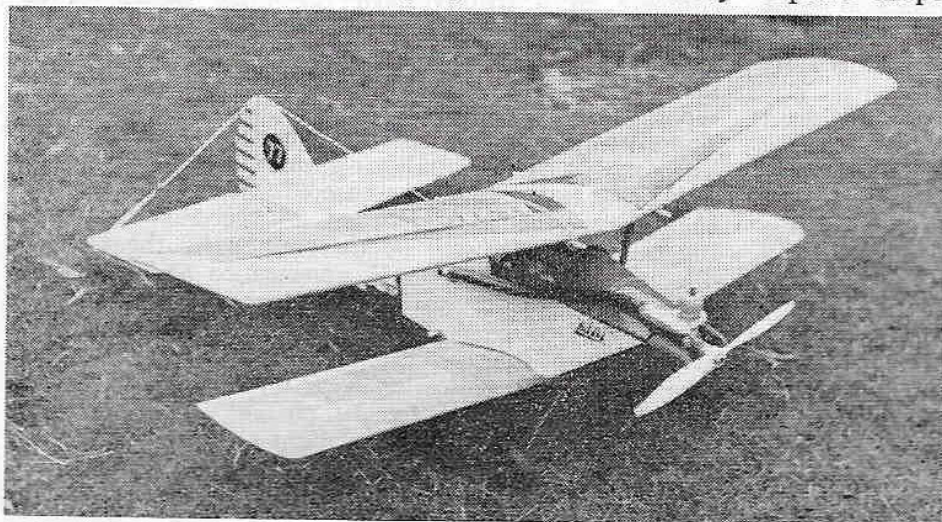
Ghost." The bending of the "bird-cage" and the positioning of the hinge-lines relative to each other, is something which has to be spotted on if it is to work correctly, whereas the push-pull system used in *Gigi* is simple to install and gives completely independent adjustment of rudder and elevator. Of course, the whole external set-up is much neater and allows scale type tail surfaces to be used.

Gigi herself was an attempt to capture the lines of the old-fashioned "cobby" biplane shape,

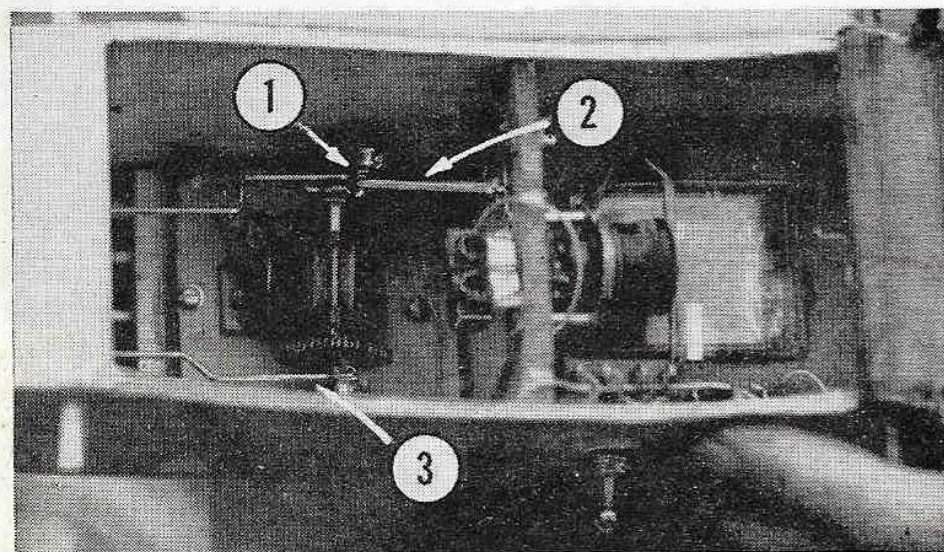
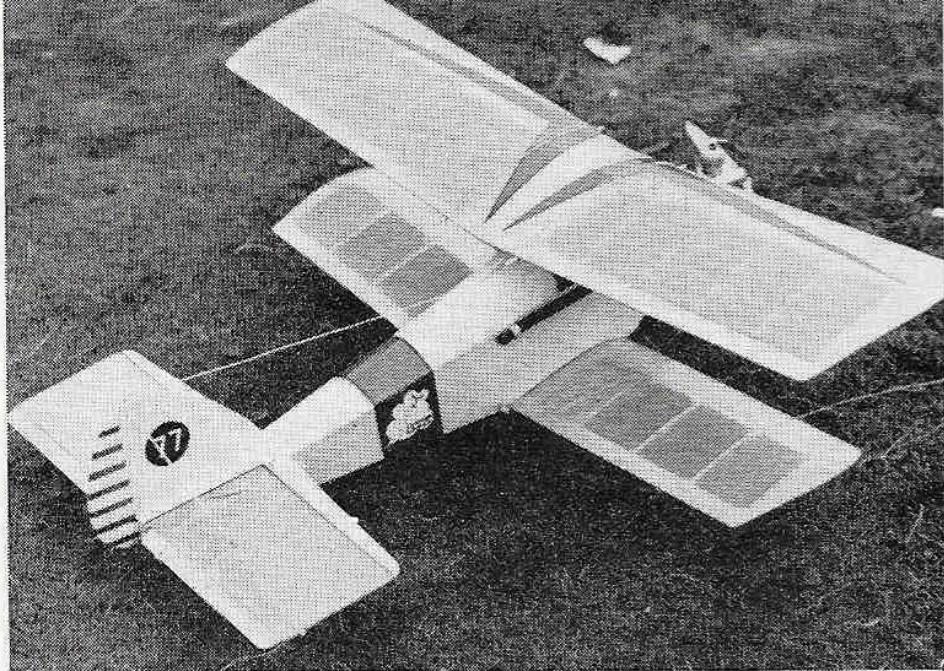
without too many frills in construction. With a 1.5c.c. engine the model is very nippy and can be flown in fairly strong wind conditions. The original model started life with a Webra Record, but the present power unit is something of a veteran, being a reconditioned 1.8c.c. Elfin PB! Nevertheless it is giving excellent service.

Construction

This should not offer any difficulty to the average modeller, the assembly of the cabane struts to their respective formers being, perhaps, the only part of the construction requiring special attention. The struts themselves should be bent to shape and secured to their formers with nylon thread. The stitched parts are then covered with strips of fine fibreglass matting (about $\frac{1}{4}$ in. wide) through which balsa cement is worked with the fingers. The fine matting is similar in thickness and texture to heavyweight Modelspan tissue and this method of attaching wire parts to balsa or ply is both quick, easy



Heading picture shows designer Dave Thomas with original "Gigi" and the R.C.S. galloping ghost transmitter he found so successful for the Mighty Midget servo he used.



Note diminutive elevators—very effective with high pulse-rates—on this rear view of "Gigi". Installation view shows (1) elevator crank, (2) rubber band for centring and (3) rudder crank, for the push-rod system used on this Mighty Midget servo.

and results in a very strong bond.

The undercarriage and tailwheel strut are fastened to the fuselage using the same method or substituting fibreglass resin. The undercart was originally secured with the usual rubber bands round dowels but, as one or two rough landings on grass resulted in its "retracting" back into the lower wing, the permanent method was deemed more satisfactory. Apart from occasionally having to straighten one of the legs, this method has given no trouble.

The fore and aft struts on the cabane assembly, which support the upper wing, are left until the fuselage has been completed, when any small error in the strut assembly, which could result in an incorrect incidence angle, may be put right.

"G.G." installation

The Mighty Midget motor is mounted across the fuselage and has a pin Araldited into the main

gear wheel— $\frac{1}{4}$ in. throw is ideal. This is the rudder crank, to which the push-rod is attached. A suitable stop is arranged on the Mighty Midget base-plate to restrict the rudder crank to a total movement of 270 deg.

At the pulley end of the motor's main drive, another crank is soldered on, again with $\frac{1}{4}$ in. throw, at 90 deg. to the rudder crank. As well as being the attachment point for the elevator push-rod, this also serves as the attachment point for the rubber-band tensioner. The tension of this band need only be sufficient to bias the crank towards centre and does not have to be strong enough actually to pull the crank back to the centre position. The servo on the original hardly moves at all from either extreme throw under rubber-band tension, yet it works perfectly through all positions of the transmitter control-stick. Connections at the actual control-surface ends are by way of the usual

nylon horns and adjustable clevises available at most model shops.

Trimming and flying

The model has no bad habits, if trimmed and balanced as shown on the plan, and can be flown quite easily on rudder only. Thrust-line may vary according to the engine used, but 3 to 5 deg. down and 3 deg. side-thrust should be adequate for most motors in the 1.5c.c. range.

As with most biplane layouts *Gigi* recovers from a stall without any fuss and, with ordinary rudder turns, she will stay "glued" in a turn until opposite rudder is applied—very handy for pylon racing! My own handy method of trimming for "G.G." control is to balance the model slightly tail-heavy—enough to give a safe climbing angle with the Tx control-stick centred. For straight and level flight, a forward stick position has to be maintained (i.e. down elevator) and, of course, this means a faster overall pulse-rate, is used, which helps to eliminate any "gallop" present in the set-up. This may sound a little strange, but it does work in practice and, indeed, most of our club members who fly G.G. use this trim with complete success.

Who's for pylon racing?

Small-model pylon racing is catching on fast in the Liverpool club, and *Gigi* is ideal for this sort of event, being a very pretty sight when rounding the pylons at about 10ft. up—if you have the nerve! With a good transmitter and servo set-up, Galloping Ghost control is not as difficult as some modellers think and, in my opinion, is even superior to 4-channel reeds! True proportional control is available—and, with the new American G.G. servos coming onto the market, proportional engine control is now also available.

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FOOTNOTE: We have had numerous requests for a pulser design, which can be "added-on" to existing transmitters, for use with Galloping Ghost systems, and will shortly be publishing two such devices—one a relatively simple, relay pulser and the other a somewhat more sophisticated set-up to give the desirable high pulse-rate characteristics. Eds.