



# The R6-B.

A 5 feet span Functional Radio Control design for motors from 1.3 c.c. to 2.5 c.c.

By Allan Rowe

*Frank Bethwaite, a New Zealand airline pilot, well-known to all aeromodellers as the holder of the World Radio Control Sailplane Record, was recently in Melbourne Australia, where he impressed the Aussie modellers with this R6-B borrowed from Les Wright for the occasion. Note the authentic touch provided by the "Digger" on horseback in the background*

replacement of batteries as required and the winding of the "Relaytor" rubber. The model, now six months old, has been in the air every week-end as well as frequently during lunch hours and in the evenings after work.

The need for a strictly functional machine, simple of construction, repair and maintenance influenced amongst other things the placing of the motor and the absence of conventional undercarriage.

It seemed both an unnecessary and expensive bow to convention to place a valuable engine in the nose which is normally the point of impact in the event of pilot miscalculation. Furthermore, such a position apart from ensuring an aeroplane continually messy with exhaust oil, precluded the use of a highly efficient air-screw (paper-thin highly polished blades are hard work and break easily), increased fuselage drag due to slip-stream velocity, introduced undesirable twisting forces requiring critical thrust-line adjustments and prevented a clean entry at the most aerodynamically important point of the fuselage. Possible alternative placings for the motor included the rear of the fuselage and the top of the fin, but the arrangement shown was finally adopted. Specifically, the advantages of this engine position in actual practice are:

1. The angle at which the motor is set is immaterial because the slipstream has no intruding surface on which to react. Hence no critical adjustment of thrust-line is required and it is sufficient to line up the motor by eye.
2. All exhaust oil is blown clear of the model passing over the tailplane and between the fins. As a result, the model lands in a perfectly clean condition after 30-40 minute flights.
3. Because the slipstream does not have to create drag pushing past obstacles such as wings, fuselage, engine, etc., all the available thrust is used for its proper purpose. Consequently, big results are obtained with small capacity engines with a resultant economy of operation. When several hours flying are packed into each afternoon outing, this question of fuel consumption becomes a very real consideration and the efficient use of a small capacity engine is a useful contribution to overall economy.

As most of our flying in this country is carried out from rough fields, the only justification for the retention

of a conventional undercarriage has been its value (doubtful) as a propeller protector on landing. The skid finally adopted for R6-B fulfills its function as a landing device but its replacement by a bicycle undercarriage with wheels inset and the rear wheel say  $\frac{1}{2}$ " forward of the C.G. would permit take-off from reasonable ground.

R6-B was originally flown with an inverted Mills 1.3 (thinned and polished narrow blade 9" x 4") fitted with a 20 minute streamlined tank.

In this form and with moderate rudder movement precision manoeuvres may be carried out with flat skidding turns.

With the same motor, but with maximum rudder deflection, the model becomes moderately aerobic, instantaneous control response (and recovery) permitting "ground attack" methods with perfect safety particularly in view of the model's non-stall characteristic. In this trim tight turns as low as 3-4 feet from the ground may be safely performed by the key blipping method (micro-switch essential) and recoveries from wing overs at the same height are also O.K. in reasonable weather. In this trim also, the model has quite a useful rate of climb and can be used for combat flying or just flying for fun—thermal hunting for the free-flight boys, cloud chasing, etc. The model's biggest advantage in combat flying is its ability to "hang on the prop" in a vertical climb and gradually ease off to its regular climb angle without any stall as speed diminishes to normal. Thus from a position alongside an opponent a peel off and climb under his tail is possible without any penalty of lost flying speed.

With full rudder deflection and fitted with an inverted gravity fed FROG 250 (thinned and polished wide blade 10 x 7), the model is fast, with a rapid rate of climb and is highly aerobic. For continuous aerobatics a model must combine a rapid rate of climb with a clean plunging spiral dive which initiates immediately control is applied and is as near a straight vertical plunge as possible. A tight fluttering spiral or a slow developing spiral is useless. R6-B combines these desired characteristics and as the gravity fed FROG runs steadily in all positions, smooth non-stop aerobatics are possible. A dive of approximately 100-150 feet gives sufficient speed for consecutive barrel rolls but one turn of spiral dive is usually sufficient for all other manoeuvres possible by remote control. Combat flying in this trim is not recommended in view of the increased collision risk due to greater speed and the violent effects of momentary over control, but if you like it that way—well go to it.

Full size drawings of the R6-B., as per fifth scale reproduction opposite, are available from the Aeromodeller Plans Service, Price 6/-