

### Bi-Simpl

M/s when the total period is 120 mS, i.e. at about 8.5 c/s. At (60 + 240) mS the M/S is 20:80 (3.3 c/s) and at (60 + 15) mS the M/s is 80:20 (13 c/s). So to select C3, decide what range of rates you wish to use on your control pulse box (usually dictated by the receiver relay response at high speed and extreme mark space) and pick C3 to give 50/50 M/S at the mid frequency.

Suppose you chose 4 to 12 c/s; the M/S must be 50:50 at 8 c/s. Put an ohmmeter or a meter, resistor and battery in series with the second channel relay contacts, and adjust C3 to give half full scale reading when the receiver is being pulsed at 8 c/s. Should you then have an inadequate range of variation of second channel M/S you are using too small a range of rates.

### Application

As far as the practical application of the system goes, we find it advantageous to use the pulsing M/S on elevator and the rate generated M/S on rudder. This is because the pulsing M/S gives a smoother effect on the critical control (i.e. elevator) whereas the distribution of rate variation on most pulsers is poor, so giving a non-linear effect to the second channel. This has no serious effect on the ailerons on rudder, but might be troublesome on elevator. However, we are only in the early stages of development, so go ahead and make your own choice! We will be delighted to help enthusiasts who need it and in following articles, details will be given of suitable servos and control linkages and of a filter circuit for simultaneous engine control.

## ... The Plan Opposite

# JERRY NELSON'S "QUALIFIER"

ONE of the interesting people we met at R.A.F. Kenley last August, during the 1962 World R/C Championships was the young Californian Gerald Nelson, whose (model) piloting prowess had already won him a place in the 1963 U.S.A. R/C team. (The Americans selected their team early).

Following his preference for a lightly loaded Aerobatic model, Jerry has designed a series of models featuring a large wing, one of which was the *Sultan* (R.C.M. & E., November, 1962). *Qualifier* represents a lightly loaded streamlined layout using a thin semi-symmetrical wing section as distinct from the fully symmetrical sectioned *Sultan* which *Qualifier* actually pre-dates.

*Qualifier* is a successful competition model. The designer flew it to first place at the 1961 U.S. West Coast Championships, a premier multi event out there and repeated this win in 1962 with a *Sultan*.

The original *Qualifier* appeared with a two wheel undercarriage since Jerry prefers this arrangement. However, the American multi aerobatic schedule, which includes a "touch-and-go" landing, virtually necessitates the use of the tricycle undercarriage fitted later.

Though now considered "outdated" by strip ailerons, the *Qualifier's* inset tip ailerons are a pleasing compromise between the docile and over responsive, imparting smoothness yet still effective enough for excellent four-point rolls. Landing technique is to bring the model in low for a flat approach with a little excess speed, then throttling right back to allow it to settle on the runway.

Streamlined proportions limit installation space. Servos are placed in two banks of two down the fuselage. As shown, the receiver compartment is large enough for only a relayless set. But by moving the servos rearward as far as the wing trailing edge line, and re-arranging the fuselage structure at the receiver compartment, a ten channel relay receiver could be accommodated without much trouble.

Modellers interested in obtaining full size plans may do so from the designer, Gerald Nelson, 8638 Patterson Pass Road, Livermore, California, U.S.A. Full size plans for the tricycle undercarried *Qualifier II* appeared in the March, 1963, edition of the American publication *Model Aircraft World*.

