# Radio Models and electronics

control

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MAP HOBBY MAGAZINE

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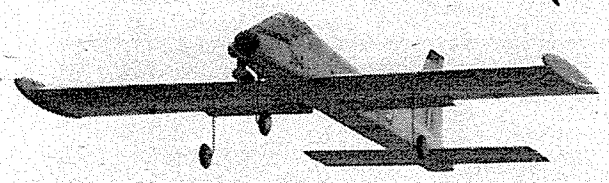
**Pete Russell's STRIKER multi design • PLANE SIMPLE single channel model • New Scale R/C feature • Team Trials**

# STRIKER

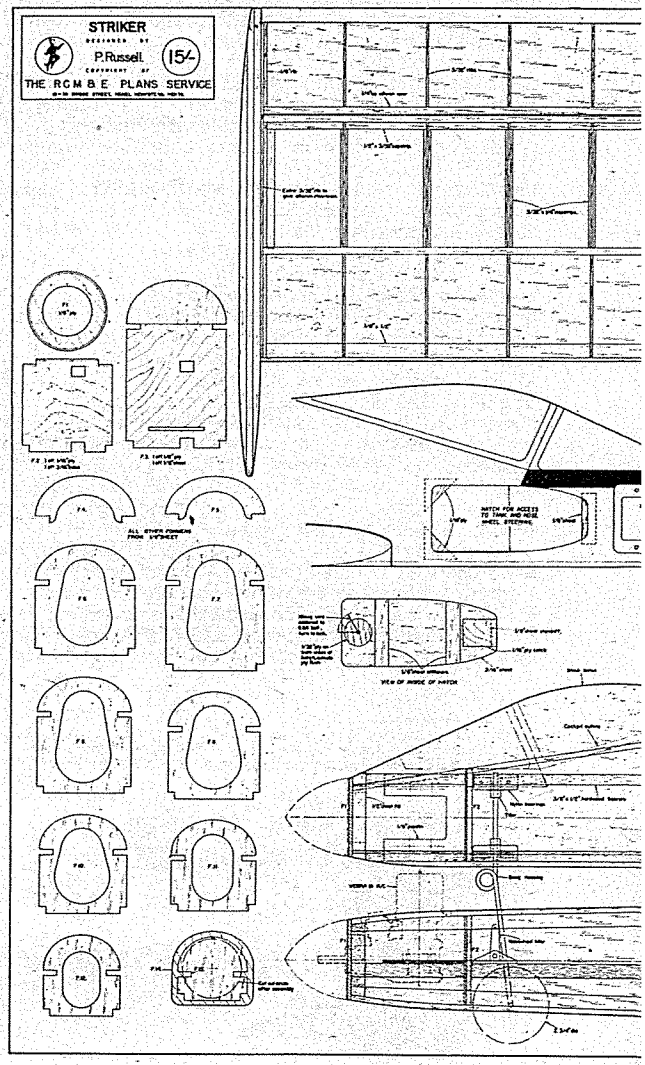


THIS model aeroplane is intended to give a pilot of reasonable experience but perhaps only moderate ability, a chance to do reasonably well in aerobatic competitions. A season of not-very-serious contest activity, using not-very-suitable models, led to the conclusion that it is a good deal more difficult to do the schedule accurately than was first anticipated. The main snags encountered were: 1. Difficulty in maintaining headings in some manoeuvres, 2. Barrelling and variable rates of roll, 3. Inaccurate exits to manoeuvres, 4. Wobbling about in windy conditions.

Watching some of the top men in the business suggested that some of them were having trouble with these things too, judging by the number of corrections being fed in during manoeuvres.

With all this in mind, at the end of last season, a serious think was initiated with the idea of producing a flying machine that would give as much help to the pilot as possible. The following features seemed to be desirable; (a) a long body with more than average side areas balanced about the cg., with no engine offsets, (see snag 1.); (b) to help with snag 2., a short stubby wing with no dihedral and no aileron differential.

The latter might well have made it easier for novice pilots in Cirrus Moths to do co-ordinated turns, but, like the 'Frise' aileron, it's function is to produce yaw in the direction of the applied aileron, a feature clearly out of place on an aeroplane required to do axial rolls. To improve point 3., (c) a symmetrical wing section, fairly thin, say, 12½ per cent, with a moderately sharp entry, together with zero longitudinal dihedral. In the interests of aeronautical literacy, 'decalage' does *not* mean the same as longitudinal dihedral, i.e. the difference in the angles of incidence of the wing and tail. It is a term little used since the early twenties and is defined as 'the difference in angles of incidence of the two wings of a biplane'. I can offer copious references. Vive le différance!

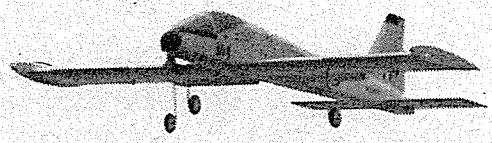


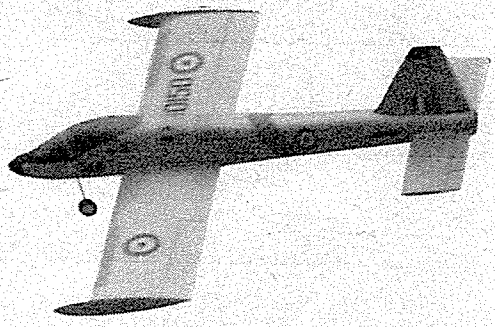

*Full size copies of this 1/7th scale reproduction are ava*

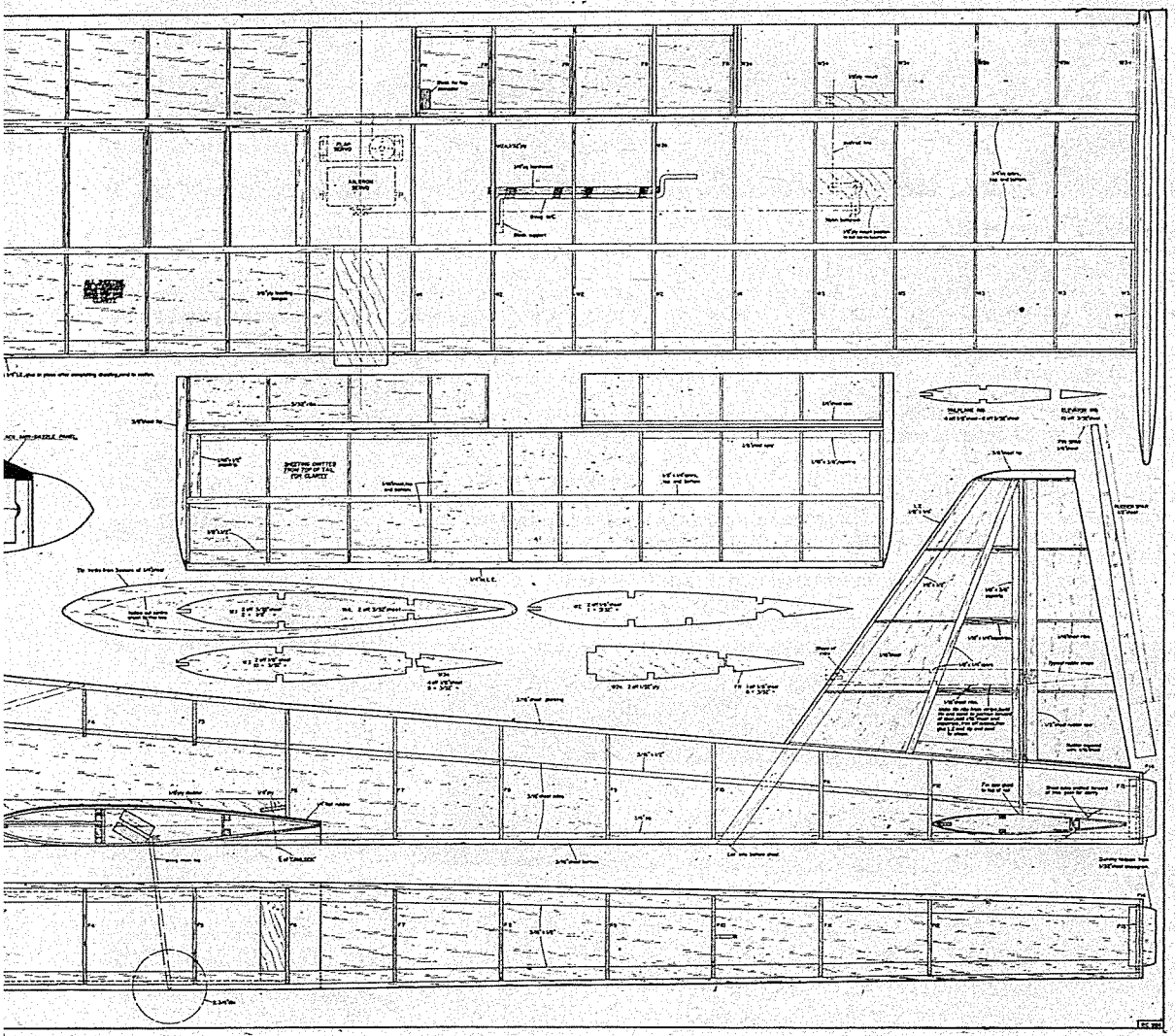
# A contest aerobatic model with real "appearance"

by

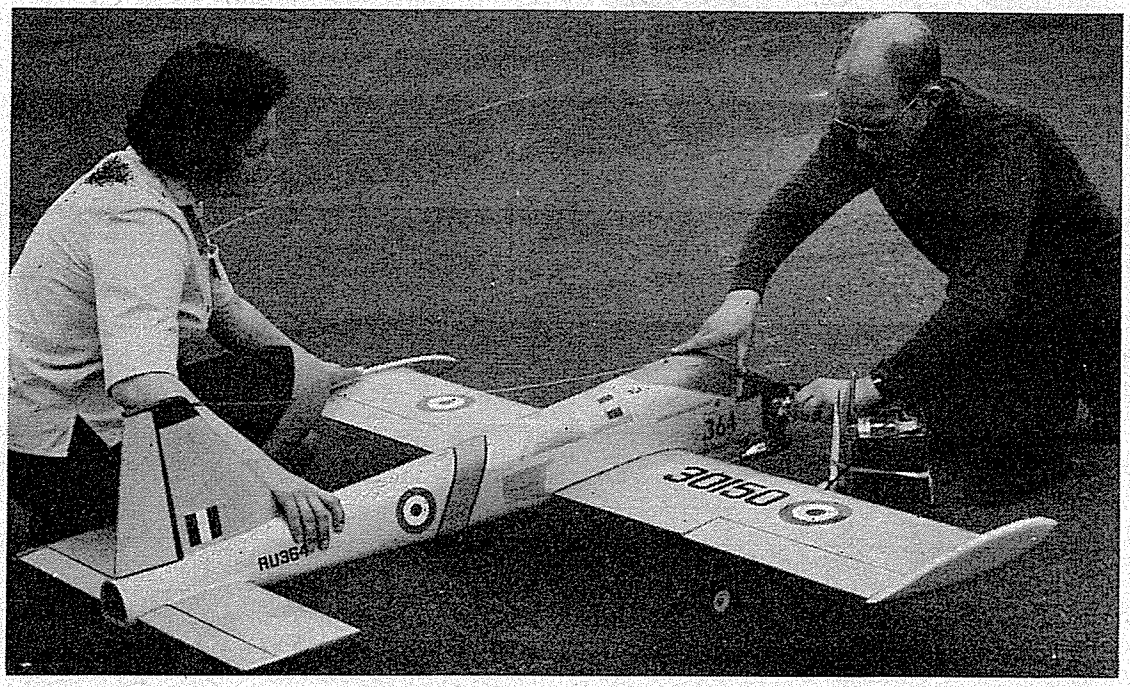
**Peter Russell**







*le from RADIO CONTROL MODELS & ELECTRONICS plans service, plan RC/984, price 15/- inc. post.*



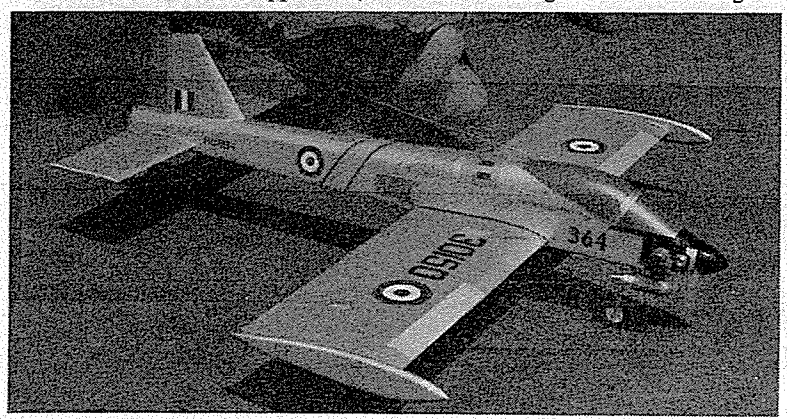

Finally, to minimise the wobbling-about-in-windy conditions, or gust sensitivity, as we say in the trade, a relatively high wing loading (and plenty of power) which will have a side effect in aggravating the current tendency to long flat approaches, with considerable float before touch down. Because current models are aerodynamically clean, but relatively heavy, the margin of speed above the stall that you must have to make a safe approach, takes a long time to dissipate during the flare, due to low drag and high inertia. In spite of this, top pilots can consistently beat a touch-down scatter of 50 feet, but in doing this, they sometimes have to 'plaster it on' at well above stalling speed. You can get away with this if the undercarriage is well designed (and strong enough) but most judges take the view that this constitutes running aground, rather than landing, and they deduct points accordingly.

All this led to the conclusion that flaps should be used. Flaps increase both lift and drag, in varying proportion, according to which type you use, and this means that the extra lift allows a slower approach (but still maintaining the safety margin we mentioned), whilst the extra drag enables you to come in steeper, making it easier to judge the touch-down spot. Perhaps most important of all, the extra drag reduces float before touch-down. For this reason, split flaps, which give high drag compared to lift, and are less prone to flutter than plain flaps, were chosen.

The result of this cogitation was Striker, built in two months and with a third, a fourth and a nineteenth in it's first three comps., which, for this pilot, is good. Ironically, all six landings were lousy, and only three of them were in the small circle, but this just proves that I am an erratic pilot, not that the flaps are no good (honest!). Anyway, if you decide to have a go, you won't find anything unusual about the structure, which has proved entirely reliable over the first 330 flights. Though not exactly a beginners model, it is quite viceless, and anyone who has flown a few multis should have no trouble.

I won't presume to tell you how to build it, save to say that the fuselage is built upright using the full-length bottom as a jig. The wing cut-out is removed when the fuselage is complete except for the planking, as it is easier to line up the wing fasteners with access from the top. The wing and tail are blocked up on a flat board, in the usual way.

The servo installation is not shown because this will depend on what servos you are using, but with all that room there should be no problems, except




**Left: a front three quarter view of Striker. Note wing tip plates and side winder mounting for Webra 61 motor equipped with Webra silencer. Right: flaps down and nose high – Striker low and slow on final approach for landing.**

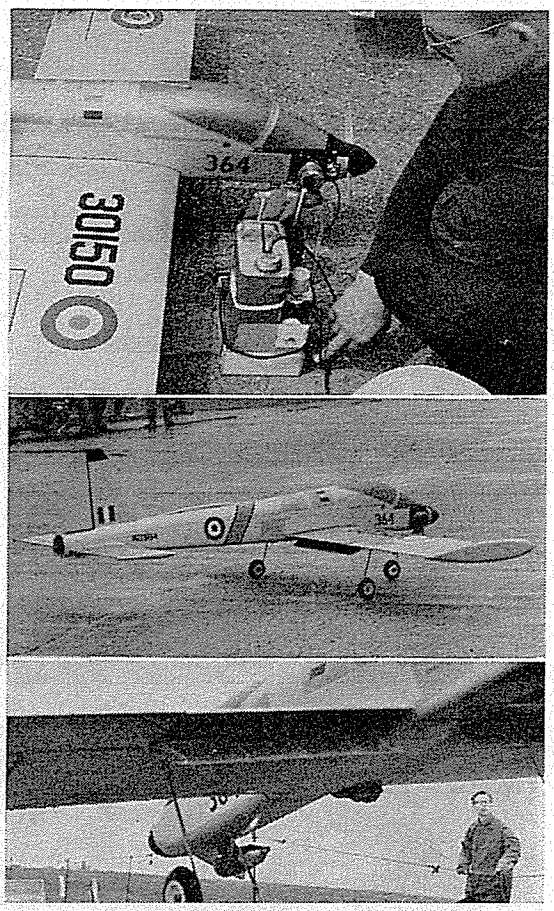
**Left: Pete Russell prepares for a contest flight at this year's Nats ably assisted by wife Bridget whose job it is to retrieve model after flights! Extremely simple lines of model provide striking (sorry about that) appearance. Right: jug up! Pete tanks up Striker using electric fuel pump. Second down: Striker, ready to roll with flaps down. Third down: close-up showing flaps extended on underside of wing. Try them.**

perhaps with the flaps, where a bit of fiddling might be necessary. With mine, I cut a piece of 1/16 in. ply the same shape as the top of the servo. It is taped to the servo after fitting a 6 BA screw and a bellcrank. This is a 90 deg. type with the arm connected to the flaps twice as long as the arm connected to the servo output. This 2:1 gearing will be necessary to get the amount of flap angle required, i.e. at least 45 deg. The first 20-30 deg. simply gives lift and produces a floaty type flare, the very opposite of what we want. It might be worth experimenting with different amounts of flap travel, but I consider 60 deg. to be ideal ready to fly with the extra gubbins for the flaps and an extra 4 x 225 DEAC for the brakes, it weighs an ounce or two under seven pounds, at which weight the Webra 61 has enough power for a fair vertical climb before and after the half-roll at the start of the top hat. Using a good quality 11 x 8 wooden prop, it should run-up to about 10,500 on the ground.

If you are inexperienced, it might be wise to get an 'ace' to make the first flight, but check that the rigging and control ranges are as shown on the plan, that the balance point is on or slightly in front of the spot shown, and that the flaps, when 'up' are pressed firmly against the up stop. This will make flap flutter unlikely, during high speed conditions. Make sure also that the engine is well enough run-in to give full power consistantly, and that the idle is reliable and slow. My Webra is particularly good in this respect, and it's quite important, because these big engines develop a surprising amount of thrust, even below 3,000 r.p.m.

Striker can be hauled off in less than 40 feet, but for the first second or two it will be perilously near the minimum speed for full control, so in the normal way, zero wind, let it go about 175 feet before rotating, then you can climb away at more or less any angle you like You will find that it is the sort of aeroplane that goes where you tell it, without introducing ideas of it's own. After my deltas, the pitch response seemed a bit quick at first, but I imagine it is about normal for this type of toy aeroplane.

The schedule manoeuvres are something that you have to practice on your own, like the piano, only more expensive, so I'll go straight on to the approach, or 'presentation' as the French so aptly put it, and the landing. First take it 'to altitude', slow down, and select full flap.




As they go down, the nose will go up, so remember to be ready to roll on quite a bit of down trim. Try to gauge just how slowly you can fly it, and finally, stall it. When you think you've got the idea, nose down, flaps up, trim, and bring it round into the circuit, then slow down again and as it goes overhead, into wind at about 100 feet, put the flaps down again. If you fly full-size, you might be tempted to go through the 'stage one flap', stage two flap' routine – don't. It just complicates the issue. After all, in the old Spitfire you flipped a tap on the panel and zonk – 90 degrees of flap – take it or leave it!

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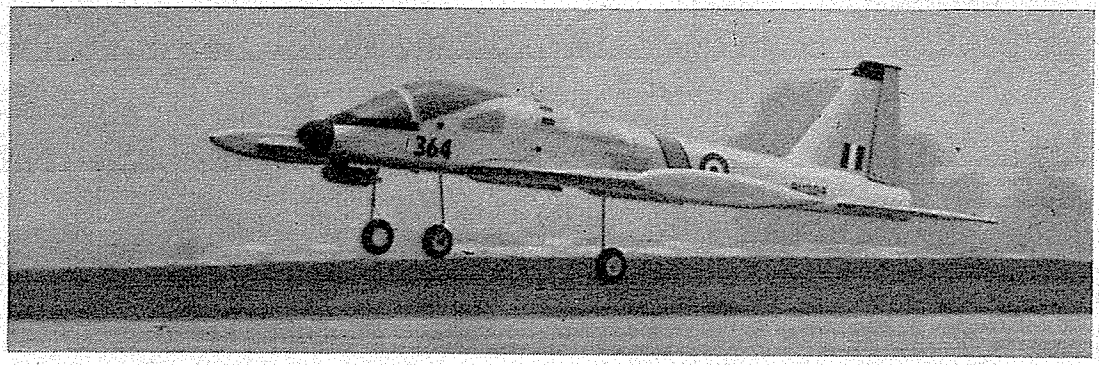

## American Newsletter

*Continued from page* 601

about it to build another, but it's getting easy to fly and I already know of several things that need changing.

*Open Pylon* was an exciting event with all classes of models except Goodyear types participating. I managed 1 min. 10 sec., two seconds ahead of Harold deBolt who flew a semi-scale P-51 which uses a twin carb. K&B 40. There is no doubt about it that pylon racing was the most attractive event there.

The Goodyear race was not very slickly organised, but the entry was good. We had three *Rivets* racers, a couple of *Mustangs* and then the rest. DeBolt and Ed. Keck were way faster than most others, including myself, because I had a new *Rivets* which I'd only flown three times and actually never landed! It had crashed each time! The Rivets I built used a K&K glassfibre fuselage with conventional built-up wings. It turned out at 5½ lbs. with a *Min-X Astromite VI* and no doubt would have been on the 5 lb. mark with the new lightweight equipment. The first flight was 18 inches above the ground when the engine cut and the model spun in, tearing the aluminium undercarriage out and ripping off the 'T' tail. I worked all night and installed a new wire type undercarriage to go flying on the next day. Same thing happened, lift off and spun left, which again broke off the 'T' tail. Back home and instincts took over, I modified the plan. The original plan showed no side thrust and for once in my lifetime, I built according to plan. Two washers under the bearers for side thrust cured this but the model was still very sensitive to elevator. The cornering was quite straight, I could hold full up without it snap rolling, but level flight was hairy, the elevators being so sensitive.

Since then the model has been trimmed out and run on pressure feed with the carburettor opened up 1/64th in. and the spray bar turned down. Using a 30 per cent nitro fuel, it really runs and is quite hairy.

The final event was combat which was another great one for spectators. Models were fitted with 10 ft. of string and 40 ft. of crepe streamer 2 inches wide. Judges counted the number of passes made and gave 15 points for a cut, 1 point for a pass. Only 'Pappy' deBolt managed to cut an opponent's streamer, although one character actually cut his own! I managed a 5th, my opponent had a lean engine run half way through, so that the 6 minutes combat time was not used up.

*R/C Scale* was quite interesting, especially the big scale models built by Bill Bertrand and Bob Laubengayer. (First mentioned last month). Bill Bertrand's DVII actually had inspection covers to scale thickness! I would say that the quantity and quality of scale competitors is equal to that in Britain and I found that the U.S. modellers have the impression that superb scale models are everywhere in Britain.

## Striker

*Continued from page* 605

After a normal, perhaps fairly slow circuit, the final turn will want to be about 300 feet back and about 40 feet up. Squeeze a bit of extra power on for the turn, then line up and slow down more. The stall is docile, but it does stall eventually, so don't overdo it. Flare at about 5 feet and land with the nose a shade higher than normal. At first you probably will think that the flaps aren't doing a lot of good, but as you learn to judge that all important speed, you will come to appreciate their worth. For this reason, do all your landings with full flap, even when its windy.

To convince myself, I once did twenty landings in quick succession, alternately with and without flap. My average touch down scatter without flap, I am ashamed to say, was 150 feet, yet with the flaps, it was a respectable 70 feet. Many people would be able to better these figures, but it is the difference that is significant. Anyway, when you've got used to using them, after, say, 50 flights, try a dead-stick, flapless landing. The way it whistles past you and disappears into the distance should convince you!

By the way, I don't recommend you to use them for take-off, and if you should need to overshoot a landing, leave them down. If you pull them up at 15 feet altitude and low speed, the sudden loss of lift and change of trim will need some pretty quick thinking. Unlike some full-size aeroplanes, this one will go round the circuit quite happily with them down, though it might be a good idea not to let the speed build up.

I hope you will like the 364, but if you have any queries or criticisms, or if Fred Deudney wants to write for my autograph, the address is: 14 Sunshine Villas, Gladstone Terrace, Kremenchug, S. Ukraine.

## Radio Motor Commentary

*Continued from page* 608

The Taipan has one or two sensible features of its own. The front bearing, for example, is a special large i.d. ball-journal of Japanese manufacture, enabling a 12 mm. dia. front journal to be used instead of the much smaller journals used by other engines (e.g. only 7 mm. dia. on Super-Tigre) and this has allowed ample room to accommodate a screw-in, removable ¼ in. prop stud to substantially reduce the incidence of shaft replacement following crash damage. The front bearing is protected from the entry of dirt by a recessed prop driver very similar to that of the Enya 60-II. Very sensible, also, is the good strong crankcase front end with its long beam mounting lugs extending well forward.

The whole engine is obviously constructed to high standards. At the moment, the manufacturer's silencer for the Taipan is not available but, as soon as we have one of these, we will include a full report on this interesting new Australian motor. Meanwhile, some idea of its general design and construction can be gained from the accompanying photographs.