# HELI-PAD

*by JOHN HEATON*

BEFORE PROCEEDING with the *Lama* project I will take this opportunity to thank all those at Slough for the splendid End of Season Fly-in. All the 'names' were in evidence and we all had a lot of fun doing our best in the competitions arranged.

Dave Nieman won the scale flying event with his **Hirobo** *Cobra,* whilst yours truly had revenge by taking the limbo honours. Warren Bailey gave another virtuoso performance by winning the skittles, with, I believe, a borrowed *Morley,* having done a little 'nasty' to his own. Len Mount had a spot all to himself and gave a truly polished display of inverted flying to within a foot of the ground.

A nice feeling for myself was in seeing two participants perform very well in the events knowing that they only got into helicopters this year. So well done John from the Newbury Club with his *707* and also the gent whose name I cannot recall but who flies a *Falcon* and drives a VW Caravanette and whom I had the pleasure of chatting to at various events this year.

It was nice to be able to say, for the first time I believe, that two autogyros were displayed. I took my **Kalt** *Robin* along and had some good flights, in fact Roy and I planned to do some formation stuff but unfortunately we ran out of daylight.

Thanks again boys for a good day.

Having wrapped up a few constructional pointers on the *Lama* last month here as promised is how I set my models up.

Control runs from servos to the cyclic and tail rotor controls give least problems – just use the long servo horns with links on the outermost hole and you have ample movement, make sure nothing jams on full deflection. This makes the model as sensitive as possible but after all 'proportional' control is the 'name-of-the-game.'

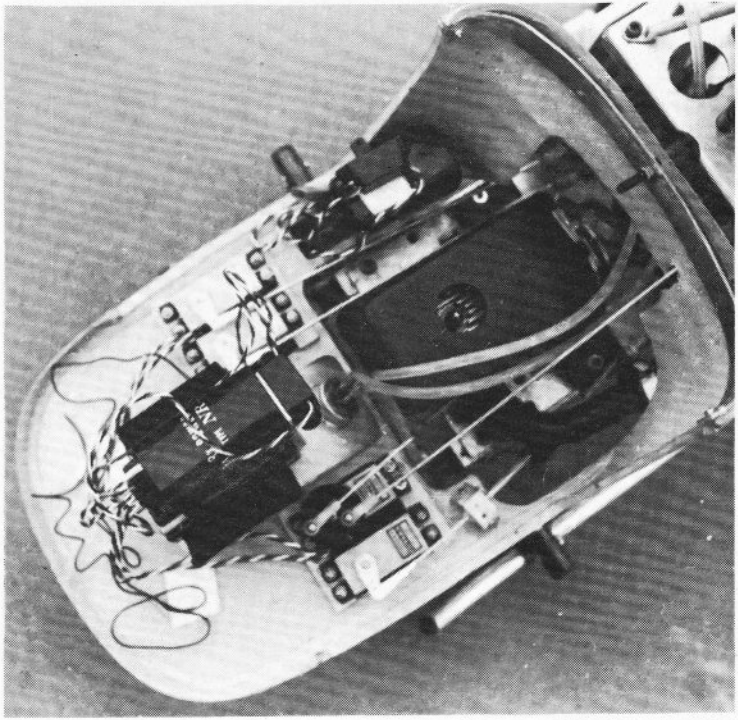
One has to make a decision whether to use tail rotor compensation or not. I personally prefer to do without it as it makes for an easier installation; also you have more 'feel' for how the model is flying and the engine is running. With clockwise turning rotors this means that you tend to need right rudder control for climb and left for descent. I think it is better to trim the model so that you have to hold anything up to ½ stick movement to the right to hold the tail in the hover, you will find the model trims about right in the circuit, this corresponds to full size practice.

The most critical set up is the all important correlation between throttle and collective pitch. To optimise autorotation you need about −2° negative on the main blades. The maximum pitch setting on my models is for example +7° on the *Lama* +12° on the Kalt *Cobra* and +8° on the *Hughes 500.* The difficult thing is to couple the throttle with the pitch so you get a constant RPM whatever the collective setting. (It is important to realise that this sort of fine tuning is my personal way of setting up my own helicopters to get them to fly to my satisfaction and a beginner may be better advised to set up according to the manufacture instructions). My way of achieving this ideal constant RPM is to use a considerable differential on the throttle servo output arm. As can be seen from the photo, I rig thrings so the first 1/3 of stick movement opens the throttle very little. Otherwise if you go to negative pitch with a linear throttle connection you find yourself at about ¼ throttle on the carb. and only a couple of degrees positive pitch, and the engine over revs with insufficient load. With the differential linkage the first part of stick movement only increases pitch so that when throttle eventually opens there is substantial pitch to load the engine. In the air of course, the rotor revs are constant, because, as the engine throttles right off around zero pitch, the blades freewheel in autorotation. In some flight situations i.e. pulling 'G's at high collective pitch settings, the motor may not cope with the added load and you must decrease pitch to avoid dangerous rotor speed decay situations. Those of you who have dabbled with this sort of thing will realise that many things come into play such as power output of engine; type of engine; type of fuel etc. but I have always found that you can achieve an ideal setup with only a mechanical linkage. The nice thing is to be able to have a high rate of descent without the rotor speed decaying and making control sloppy. Anyone, as me, brought up on fixed pitch models will know what I mean.

The next subject will be the **Kalt** *Cobra*. I will give brief details of the kit contents and an indepth review with flying reports next month. I'm sure everyone knows the subject as the *Cobra* was first seen over a decade ago (full size that is). Kit contents are very impressive with

gearbox and head ready made, rotor blades pre-finished (although I prefer to paint my own colour on them to match the model) fuzz has nice panel lines crying out for rivet detail, which I intend to give them. Tail rotor blades are ready made plastic, nicely cambered. The autorotation free-wheel comes as standard in the kit. Full details next month.

Just a brief note before closing regarding the Japanese **Hirobo** team's inverted flying. I have had word from Dave as to how it was done. There is a switch on the transmitter which, when thrown, reverses the direction of the collective servo tail rotor and pitch control. Separate throttle servo stays as per normal. The model is rolled and switched and then controls more or less the same way as the right way up. Easy when you know!



**Right; this picture of the radio installation shows quite clearly the throttle servo (second from bottom) with pushrods to motor and collective pitch control. Note the considerable differential movement, mentioned in the text, between the two contols — this is very critical. Note also the connecting linkage to all servos — John says Z-bends should never be used on helicopter control linkages.**