

ELI-PAD

by John Heaton

AS WINTER has signalled the end of the display and competition season, we can all get down to some model building! I am going to delve into some ideas of my own this month but first will give you the rundown on the latest general news item, namely a new helicopter from Graupner.

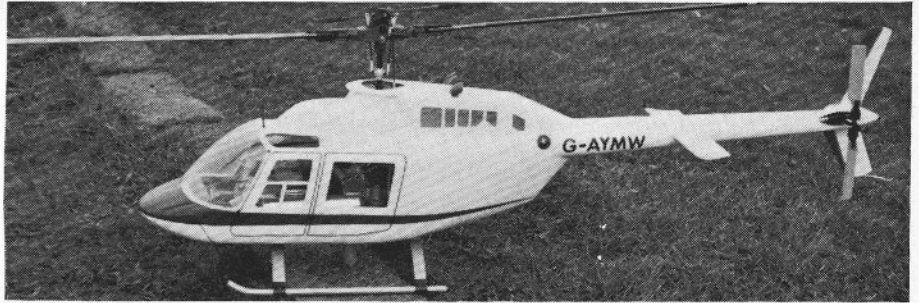
I have only seen brochures as we go to press but this model should be in the shops by the time this issue comes out. It is a medium size job (*Falcon/Baron* size) for 40/60 motors and followed the usual trainer/sports model layout with nylon cog mechanics. Freewheel is included and I imagine this model will be to Graupner's usual high standard of engineering, therefore the price of £245 seems to be reasonable. The head looks like and is rumoured to be a Heim *Star Ranger* item, which will be interesting and good or bad depending on how you like the way the *Star Rangers* fly! Mind you, head design is a funny thing and subtle differences can transform characteristics, so I shall look forward to flying one of these models.

Stretch that head

I had put together a new model (Kalt *Jet Ranger*, OS 50 power, L series Futaba radio) and was in the process of setting it up when an idea came to me. It always seems that models with wide span flybars have better cyclic handling than those with short ones. I gathered this feeling from experiences with Kalt *Baron* trainers and *Baron 50's*, the trainer having the shorter flybar, and comparisons between Hirobo 707's and Hirobo scale jobs, the scale ones having longer flybars.

The Kalt *Jet Ranger* using the Hiller type paddles, like the 212, *Baron*, *Lark*, *Morley* etc, had the characteristic lag on cyclic control and I figured that if I extended the flybar the paddles would have more effect. I simply made a new flybar six inches longer than the original and tried it. There was a definite effect, the cyclic lag being reduced to nearly nil, the trouble was it was now far too sensitive. So thinking cap on again and I decided the paddles were too light. I happened to have an early *Morley* in the workshop with solid alloy paddles, which were quickly slipped on and hey presto, what I considered to be the ideal control response; immediate but gentle response to the controls while the model will stay horizontal with the stick in the middle. The model's flight pattern was transformed, now feeling as if it were a much heavier and steadier machine.

With its new extended fly-bar, the *Jet Ranger* is stable enough to be flown 'thumbs off'.



Above: the *Jet Ranger* described in the text.

To make sure these were definite effects and not largely psychological, I reverted back to the standard set up and the improvements really showed. Mind you, this docile behaviour is not to everyone's taste. I would estimate that about two out of every ten flyers would say "I don't like that, it's not very sporty", but the other eight would welcome added stability and smoothness.

I carried on setting up the *Jet Ranger* and a fine reliable performer it seems to be, the standard cable tail drive giving no trouble at all. When you think about it, it could be safer than piano wire as it should start to fray before it fails, giving advance warning, whereas a piano wire drive looks perfect until too late.

The model is fitted with strobes and the *Jet Ranger* shape takes a lot of beating. I set the model up with a lot of differential on the throttle, the servo link nearly going over-centre at low throttle, hence the carb opens slowly at first then fast, while the collective is nearly linear, which seems to work out quite nicely. Low throttle corresponds to zero pitch and full bore equals 8°. The model does rev up when the throttle is opened wide, so it could do with a bit more pitch at the top end, but as it is rarely used I didn't bother to make the adjustments. The only disappointing aspect of this model is the high exhaust noise. It has the standard Kalt muffler which in its own right is quite efficient, however when compared to my *Cobra* with dual mufflers, or the old 212, she seems a bit raucous.

I originally took one of the new Gold coloured (G-series) Futabas from the shelf to fit in the *Jet Ranger*, which looks and feels a fine set and the servo reversing makes installation that much easier. The trouble was the throttle trim only works at the low end on the fixed wing mode and not at all at the top end, so I would have ended up with no idle in my preferred 'pull-for-lift' helicopter mode. I couldn't find any way of switching this round as you can on the Futaba J-series

helicopter set, so I ended up installing an L-series. A pity really as I wanted to try those new servos with the remote pots (FP-S128) which sound such a good idea.

I was so pleased with the *Jet Ranger's* performance that I decided to alter my *Cobra* which I only then realised had always been a bit lively. Try as I might, I couldn't find any more metal paddles so I ended up drilling holes in the plastic ones and then filling the holes with lead to double the weight. (Drill the holes into the paddles from the inboard-end-out and not fully through the paddles, so that centrifugal force will not throw the weight out). A longer flybar was fitted, and again, the characteristics were transformed. I also reduced the movement on the tail rotor, which has always been excessive, and it's given the old girl a new lease of life.

Talking scale

I have just read the editor's comments after my Nationals report and what a good idea, for as they pointed out the present helicopter event is purely pattern flying. A Scale helicopter competition along the lines on events such as the Bretons and Woburn fly-ins would be a superb thing for the helicopter movement. The sort of thing I can envisage would be:

Scale Appearance	Marks 0-10
Extra Effort	0-10 (3 blades, retracts, scratch built, etc.)
Flight, Take off, circuit and landing	0-10 realism
Figure of eight 10 sq. metres	0-10
Three chosen manoeuvres	0-10 each manoeuvre
Overall smoothness, quietness and realism	0-10

This would make the competition open to almost any flyer whilst providing a little scope for those putting more effort in. For example, the chosen manoeuvre could be as simple as a run-on landing, or 90° look-out turn or a more difficult thing like pirouettes. Perhaps we could have a competition along these lines early in 1983, I would welcome any views and would be willing to promote any such contest.

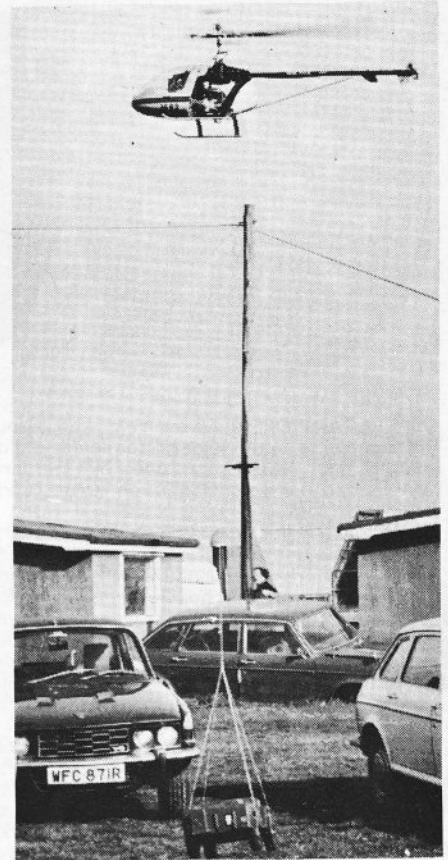
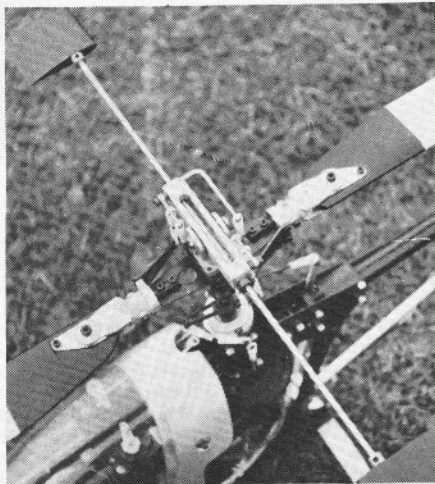
Four stroke engines

Quite a few people ask why we don't fit our helicopters with the new breed of four stroke engines. I think the answer is that we just





Above the *Baron 20* tested by your columnist, which has proved itself capable of lifting an Action Man jeep, as shown right. Below: the mechanics of the *Baron 20* and left: the modified head which now employs cut down paddles and wheel collets to compensate for the lost weight. It should be noted that fly-bar modifications are quite fundamental and should be treated with the respect that serious changes deserve.



haven't got round to it. I cannot think of any real reason why it should not be 100% successful, think how easy it would be to take the exhaust away. I know a couple of people have tried it without real success. Jim Morley has used a 15cc job in one of his Bell 47's fitting a heavier flywheel and revising (gearing up) the ratio. I gather it left the ground but was not a success. My view on what is needed is standard gearing, around 10:1, but with longer blades and tail boom to increase efficiency. An Enya 60FS and a KKK Hughes 300 (glow motor) mock me from the shop's shelves every day, and I must say I am tempted. Who will put on the first public airing of a four stroke powered helicopter in a 1983 Helicopter Scale Event?

Baron 20 Flight Test

I have seen various reports on this machine but they all seem to have been written by people who are not helicopter flyers, which is fine as an article on how I fared with helicopters but is hardly a test of the machine. I'm sure most helicopter enthusiasts are familiar with how a *Baron 20* looks and what it is, an exquisitely constructed miniature trainer/sports job. The differences between it and a *Baron 50* model are (size apart) the clutch, which is a one-piece plastic item with friction surfaces which you bond on (not that easy actually and I find Araldite best), and flexibility is given to the rotor head by a spring plate instead of the rubber restrained teeter hinge seen in most designs.

First impressions on start up were of smoothness and delicacy like a little jewel, clutch take up was early and dragged a little but as the clutch is trailing shoe and friction surface is Ferodo type no overheating occurred. I was quite impressed. First hops indicated three things; very smooth running, the tail was very sensitive and so was the cyclic. No problems were encountered though, and I felt so confident that I did high circuits on the first tankful. Its high power to weight ratio was very apparent, the full bore climb was unbelievable. Subsequently, I tried its lifting power and it lifted the Action Man jeep that I use as a load on my *Iroquois* in Scale competitions and it lifted it with no

more effort, quite remarkable. I would say the model's handling characteristics were more sporty than training and control response was more powerful than I like, so after the first flight I decided to soften the control effect. I sawed the plastic paddles in half (after all they are the same size as the petrol *Baron*) and added a wheel collet on the inside for a bit more stabilising weight. The tail control I shifted to the inner hole on the servo output, a quick check round, nothing amiss and try again. Absolutely spot on for me, that is gentle but firm control. On the next few tankfuls I did some pirouettes and nose-in circles despite the reasonable breeze and was frankly impressed. It runs, handles and feels very sweet and the OS 25 FSR which the model is really designed for (ready tapped mounting block) performed beautifully. The turn of speed was remarkable and there were in fact no nasty flight characteristics at all.

I set up my model the same as all my models, almost linear collective pitch take off

from servo but quite a lot of differential on the throttle arm. Low throttle — low trim equals 0° pitch, low throttle — high trim equals 5° pitch. Full power — high trim equals 10° pitch. The engine easily takes this amount of pitch without it sagging even in prolonged full bore climb outs. I can see no mechanical horrors in the design and I feel if assembled correctly, it would give hundreds of hours of reliable flying at no great expense.

I use Acoms radios in a lot of my models simply because it is the cheapest and works fine. As I build up to a dozen new models a year, costs are quite a consideration, I have had people flying on these sets for over a year now with no inherent problems and it seems that the new version takes 10 kc spacing as well as any. Mind you, for my money I would sooner have the AM version with its considerable cost saving, as I do not fly at clubs very often and make sure I don't fly on adjacent frequencies.

The 'blade cosies' on this *Corvette SST* are among the latest accessories from Hirobo.

