

# HOVERING ABOUT with Jim Morley



BY THE TIME YOU READ THIS, those of you who hibernate should have removed the dust sheets from the model and tested your flying ability. If that isn't the case, perhaps you have already tried out a new model or are hoping to complete one before the summer goes. Possibly as an enthusiast, you have kept your hand in all winter but whatever applies you manage a good active season and endeavour to come to the gatherings.

With luck you may read this in time for Sandown Park Symposium, May 15/16, there are bound to be lots of helicopters there, and I think it's safe to say there will be at least four not seen before.

The following weekend at Stoneleigh, Kenilworth, the MAP/RAS Model Craft and Country Show will be held. Invitations have been extended so there will be helicopters there.

The first all-helicopter do looks like being Woburn Park, I am told this will be on Sunday, 18th July. Bretons and Slough come in September/October. Information in the next *Hovering About*.

Followers of 1/1 models may care to be reminded of the *Colt* Helicopter Championship at Cheltenham on June 20th and Middle Wallop during week ending 25th July. Also of interest is the advent of the EH 101.

*EH Industries Ltd.* is a new company, jointly formed by *Augusta* (Italy) and *Westland* (UK) and the 'EH 101' is intended to fulfill the need for a 'Sea King' S61 successor. It has been talked about for a couple of years now and the size and shape just about finalised as shown. It has a five bladed main rotor and three engines and is due to fly in 1985. Will we see a flying model of it before then?

## Still 'Larking' About

In these days of so many big scale helicopters, it is very easy to overlook the fact that out in the wide blue yonder there are still many people enjoying one of the first helicopters available, the *Micro-Mold* 'Lark'.

The PRO from Boscombe Down MAC writes:

"Tyro chopper pilots spend a lot of time near the machine with the engine running, trying to lift off, hover, and move slowly in a controlled manner. After a while the noise, only slightly muffled by the standard silencer, becomes intolerable. A very successful solution with no bad effects other than a slight weight increase is the 'Weston' add-on. The big advantage is that they are made of glass fibre and thus there is no metallic 'ring' to the silencing effect which is quite dramatic, also the exhaust is deflected away from the structure. Engines seem to be unaffected, the modification has been tried on several 'Larks' fitted with OS 25 FSRs.

The fairly well-known, but not often publicised modification of replacing standard 'Lark' paddles with the 'Morley' type has been done — the model is much more responsive now — but perhaps the least known modification is the 'cone start' system marketed by 'Galaxy Models'. This fits on the end of the clutch shaft and enables an electric starter to be used as on a propeller spinner.

Also available from *Galaxy* are 'Barneys' Blades' as an alternative to the *MM* variety. These are spindle moulded and graded for weight and are supplied with 'Fablon' type covering material. They are a little wider in chord and appear to be of most benefit to those 'Larks' which are reluctant to lift off for one reason or another.

Finally I have tried the *World Electronics*



Above: interesting prototype in Japan. Shape of things to come? Uses all Kalt mechanics. Contra rotating rotors eliminate the necessity for torque compensating tail rotor.

Gyro system and since the mechanics are the same, the RCM&E system. Both work very well and have enabled us to fly circuits for the first time! The *WE* system requires an extra servo to enable the gyro authority to be varied from the transmitter. Also the more authority the gyro has, the less movement the transmitter stick produces so it can be difficult to override.

The RCM&E system doesn't have this limitation, reducing the gyro authority reduces the servo response to the gyro but the transmitter control is not affected. Both systems are to be recommended for the beginner in learning to handle the yaw control."

Thank you for that letter, lots of useful information, nicely put. The final modification, or addition rather, was a very opportune comment as the RCM&E circuit looked so promising that it actually tempted me in spite of my aversion to complications.

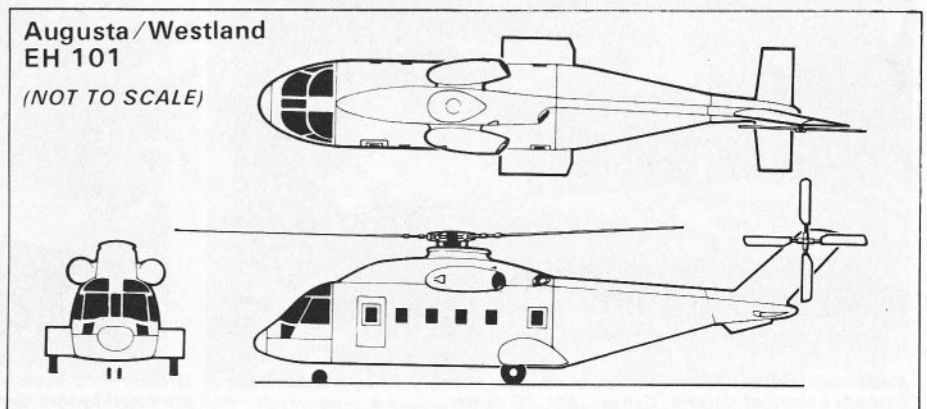
I mean that the facility to simply plug it between the receiver and the servo and control it from another channel on the receiver without another servo, was so acceptable that when a friend volunteered to make one up for me, I was really delighted to try it.

It disturbs me a bit to have an angry bee in the canopy as soon as you switch on the radio, and I suppose I am concerned at the extra current drain on the receiver batteries but that apart it is all advantages. I would

certainly endorse them for training and for scale appearance flying. All 'haste' is taken out of the yaw while maintaining sensitivity and control, flying can be more relaxed and compensation devices between collective and tail are less desirable. With people tempted to use one in their trainer though, I would suggest that it makes it even more important to have a knowledgeable person set up the model first and trim it. Also I endorse the comment in the write-up (January 1982) about not being seen by the neighbours when swinging the model to check mode. Even understanding but insufficiently educated onlookers can think you are going a bit far!

I have been surprised by the people who still think a gyro has to be mounted near the mast or on the centre line of the model. It is a rate gyro, not a heading gyro, and can be mounted anywhere in the model provided it is the right way up. The linear acceleration of it swinging in a radius has no effect at all, because the flywheel is counterbalanced about its pivots, therefore movements in x, y or z axis give no output and only the *Rotation* about the axis (vertical) gives the desired signal.

On the subject of training, over the years I





*Left: Kalt Baron with 22cc petrol motor. Looks the part and apparently sounds like a Bell 47g flying around. Right: Prototype of another new helicopter, the Morley Mk 3. Intended to be an 'easy build' kit. Should be available during the summer.*



have heard a number of stories, about trying the *Hovering About* 'string method'. The latest, from Switzerland, advised me that he found it very successful when combined with his petrified wife.

I do understand; the lady has good cause to be nervous and I admire her devotion and trust. On the whole it does seem to be a method of getting over one stage of the problem of learning to drive two sticks independently at the same time without breaking the helicopter. It so happens that I am currently training a friend by this method and it has made me realise that perhaps the string holder must be a helicopter pilot. This is so that he can recognise the helicopter's movement and act accordingly.

On the other hand, numerous people seem to have succeeded with novice help, so perhaps it is just teamwork that is necessary. One thing has shown up, that is if you do have to do it on a windy day, it is better to have the model downwind, I would like to have more letters on the subject 'How did you learn to hover?'

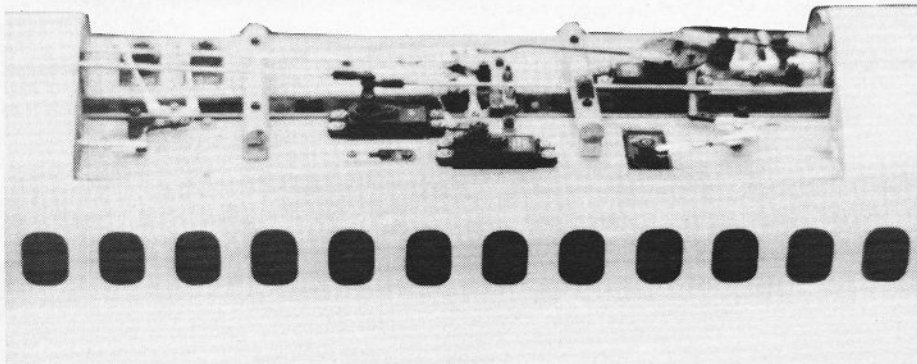
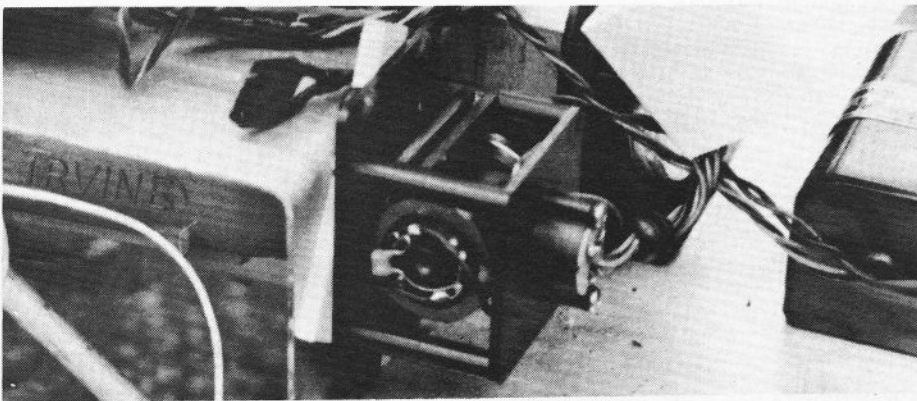
**Tandems again**

It shouldn't be too hard to see a tandem rotor flying this summer judging by reports. It will certainly be interesting.

John Griffiths is about the nearest to home and he has really gone to town on the mixers, mechanical that is, so that you can see what they're doing. He is backing his theory that it is a good idea to go flybarless from the start with his 'Chinook' model and fitted it with two, three-blade heads. The idea is that all the problems of phase lag with rotor speed that usually happen on flybarless heads, will be cancelled out by having one in each direction. He could be right. Pity that at the time of going to press we don't know.

Looking forward to seeing you all *Hovering About* with great success.

*Foot of page; John Griffiths has nine servos with a maze of mixers to try all systems of control for tandem rotor. Fuselage for the 'Chinook' looks great and will be on show at Sandown Park. Below: World Engines gyro mechanics with cover removed shows counter-balance ring on motor at opposite end to flywheel. Stops linear acceleration from affecting the signal output.*



**Blade Tips**

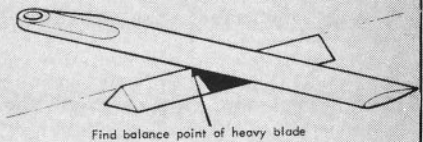
A reader from Sussex has kindly sent information on his method of blade balancing which is new and worth passing on.

The two blades are balanced on the scales and a length of wire cut to make the lighter equal the heavier.

The heavy blade is then balanced on a knife edge to locate its C of G, and then the lighter blade put alongside it and the wire placed along its length at the point to make that blade balance.

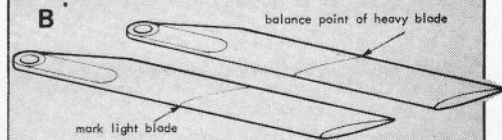
The wire is then pressed into the soft balsa, or a fine groove cut for it, and it should be fixed with epoxy before covering. Of course, you must use identical covering technique on both blades, and I wouldn't like to see the wire right at the blade tip in case it slid out. See Fig. 1.

**Fig. 1 A**



Find balance point of heavy blade

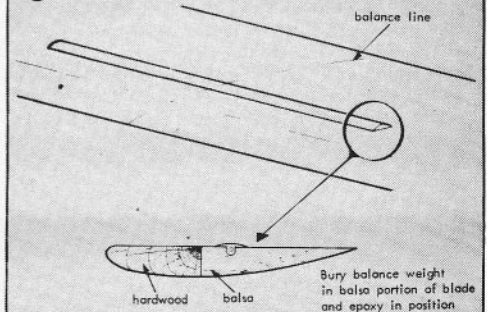
**B**



balance point of heavy blade

mark light blade

**C**



balance line

hardwood balsa

Bury balance weight in balsa portion of blade and epoxy in position