

# HOVERING ABOUT

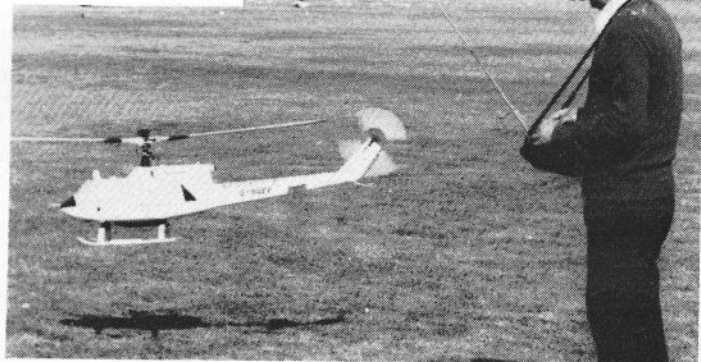
IT SEEMS INCREDIBLE to be writing again for the December issue already. Where has the year gone? What have we done? What has happened in our branch of the sport?

Hovering about, you can't help noticing a lot more helicopters than ever before, an awful lot; no, that isn't the right word; a great many of the original faces are still at it though a few are missing somewhere. There are, however, far more new faces and these come both from experienced fixed wing flyers and complete novices to radio control let alone the flying side of it.

I think anybody who tries a helicopter without any experience at all is accepting quite a challenge but its nice to see people succeed. It helps a lot to have a little help with a temperamental engine and someone to check the radio installation and trim and then all you need is persistence.

You do need persistence, it takes such a small lack of concentration, lack of knowledge or lack of care in preparation to put a model out of action which is expensive in time or money to have another go. That so many have achieved the degree of reliability and skill to do the things we now do with helicopters is really quite surprising. I use the word 'we' reservedly as although I have

*Right; Dave Nieman flew the Hirobo Gazelle in the Novelty competition at Woburn. Below; the Marquis of Tavistock presents an award to Len Mount at Woburn.*



always been confident on the reliability and preparation side I find one of my most disappointing performances is that of remote piloting.

With a helicopter you almost need to anticipate rather than react. Tell it what to do rather than stop it doing what it wants to do, and then of course you need to imagine yourself in it to save yourself having to work out orientation, left is right when its facing you, etc.

I know that a lot of the extraordinary pilots of the moment manage a great deal of practice, good luck to them, but I do find this 'imagining I'm in it' very difficult and as a result find that when the model does something surprising I can't get it back under control.

Maybe its just as well I don't imagine I'm in it, I probably would have had several heart attacks by now and a few weeks back I would have drowned. This was an episode that caused people who had been listening to the jungle telegraph to make remarks to me about building submarines. It was also an occasion to shake my confidence in preparative ability even though it had been an emergency arrangement to fill a gap in a programme.

What happened was that the faithful old 2c of countless demonstrations ended up in 15 feet of water at Thorpe Park. It may interest you to know that after sitting at this depth for two hours and then being fished out by a skin diver the only things wrong with the model were covering split from one main blade and one tail rotorblade broken. The radio was, of course wet, I pulled all the cases off, rinsed in clean water, and put it in the airing cupboard

*Above left; 68 Bretons were attracted to the Bretons MFC, Romford, Essex Scale Fly-in. Above right; Tony Sladen proves it is not just a young man's sport, pensioners do it too!*

to dry. After assembly it worked OK except for one servo which needed a new motor after a check up by the manufacturer. The engine I simply emptied out, changed the fuel in the tank and started. It ran all right but after a while developed a surge and on inspection appeared to have a gummed up piston ring and was pulled out of the model.

That was due to lack of preparation. I don't always do better when I try.

Another 2c had the paintwork on the cabin spoilt by spray from the engine and was to be tidied up for the Breton meeting.

Finding that for some reason or other the cellulose thinners wouldn't remove the paint I put some 'Nitro-Mors' on it and retired immediately for 20 minutes as instructed on the tin.

After that time the paint was lifting nicely ready to be washed off with water, but so was the gel coat. End of one fibreglass cabin.

Also, preparations for the Woburn Abbey meeting were insufficient and comprised charging up the batteries and bolting a 'Magnum' 15cc four-stroke into the then engineless 2c. The former because both models had behaved very well the weekend before and should have been adequate, and the latter (fitting in the four stroke) because I was suddenly fired with enthusiasm to try it and intend making a 1/7th scale Bell 47G to try and improve the sound in flight. I have

always been disappointed with my twin engined Bell 47G in that respect, the noise being more appropriate to a turbine 'copter.

So what happened? Well, feeling dubious anyway in very strong Woburn winds the motor refused to start in one model and I eventually decided the starter battery was on the way out and hadn't taken its charge properly. I subsequently found that it was a dry joint, or some sort of corrosion, inside the power panel but anyway I got the model started by borrowing.

Was all well then? Oh no, the engine needed a tweak of the needle valve, which was unusual but OK it was a lot colder, but then there was obviously not enough pitch on the rotor.

Now this was strange, normally, in colder air, which is heavier, you need less pitch, also in windy conditions it is a good idea to have less pitch than normal but the model had far too little. Even the usual one turn on the link lengths to the flybar was insufficient (unless I turned them the wrong way!) and when the model did lift off it was far too touchy for me, and the immediate bump back to earth made a blade touch the boom.

I was puzzled because the model was such a long way out of trim. I know about blades warping in a hot car, that didn't apply that week, I suspected temperature and even the atmospheric pressure but the change was too dramatic for that anyway. I put it down to the perils of transport and decided to play with my new toy, a video camera outfit. Incidentally, the tape from that was a waste of effort, except for experience, as the wind completely ruined the sound track!

# JIM MORLEY'S R/C HELICOPTER NEWS & DEVELOPMENTS COLUMN

Subsequently I discovered that the bolt holding the mast to the gearbox shaft had come loose. Why I didn't notice the mast going up and down I'll never know. Like I said, you need persistence, but you can't beat a helicopter for whatever it is we do these things for, when they work properly.

To come back to the 'Magnum' 4-stroke fitted in the 2c *Morley*, believe it or not, it looks the part except there's nowhere to put the fuel tank, only needing an offset engine plate and a bigger engine pulley with longer belt to squeeze it into place. My first attempt at gear ratio with the bigger engine pulley wasn't quite right and it didn't fly as it should. I will persist though, in time, and write more on this later, the torque curve may be very different but the power is comparable so it must fly.

Whereas I intend to make a video tape film to replace my well worn Super 8 cine film I gather that Dave Langford, 192 Roselands Drive, Paignton, Devon, has formed a new company specialising in video tapes, aiming at trade stands and special events. He is, I believe, advertising in this issue and has a tape available of the Vilvoorde International meeting already, but when you have a need for filming or a video show he is the man and will be pleased to hear from you.

## Bretons 1981

Judging by the attendance, the scale fly-in organised by the Breton Model Flying Club is the sort of event that helicopter modellers want. If I am any judge I would say that the Club's innovations and efforts this year will enhance their reputation further.

The main event of the day, the scale flight, was very like the previous two years but the marking was slightly simplified and the flying requirements reduced considerably. The only instruction was to simulate the full size equivalent for two minutes and to land in the box when you had finished. Very simple and very quick. Scoring was for ten features marked out of ten, starting with general appearance and going through such things as sound, hover, effort (kit or scratchbuilt) turns, landing etc., and to overall impression (speed and positioning).

Flying was off the very comprehensive peg board, still the best way to do it, and enabled the fun competitions and trimming flights to be done at the same time in another part of the field. These competitions which could be attempted with a sport model to save the scale models comprised Zig-zag, Target landing and Skittles, all against the clock, and a Pirouette competition. A couple of novelties were thrown in just to add variety, these were a Voting Slip and an electronic Coconut Shy.

The voting slip was for each competitor to name the fellow competitor who had impressed him most, for any reason whatever. The prize for this went to John Heaton for a very impressive manoeuvre, a pirouetting circle round himself at waist height. Anyone who flies appreciated that one, and the second novelty was to touch a sensitive contact at the top of a pole a number of times within one minute. Len Mount won this easily with sixteen rings of the bell. Anyone doing better than four won a coconut, unfortunately the box was still pretty full at the end of the day as one competitor did a bit more than touch. Demolish is a suitable word, maybe that's why they're called choppers.

The scale flight was won by John Heaton with his *Graupner* '212', the Concours was won by Len Mount with his beautiful home-

built *Bell* '222' and the pirouette by Alan Paris with the *Hirobo* 'Lama'.

The target landing event, visiting a crescent of boxes, was won by Len Mount with his *Schluter* 'SX81' as was also the skittles. This event was made difficult by having to fly back to the start box after each skittle was knocked over.

The Zig-zag, following a path marked by studs on the ground through a series of gates, was won by Warren Bayley with the *Morley* 2c.

I think the Eastbourne contingent were the only ones to brave the elements and accept the club's offer to camp on the field overnight. The elements were really quite acceptable but for one heavy shower in the early afternoon. There were about 80 models present with 58 entered for the competitions so the club should feel well appreciated.

A full size *Hughes* 300 and an *Enstrom* flown in by two of the competitors added to the day's entertainment.

## BRCHA Woburn Abbey

Coming so soon after the Bretons event, Woburn Abbey could have been short on attendance. It was not. Of course, being so near the motorway network the event tempted a few people from further north and we were all treated to a windy day in beautiful surroundings.

As might be expected from the BRCHA the principal event was to encourage flying skills and they put off entries into the experts' event by saying it would be difficult. In the weather conditions the positioning of the model that they hoped for was even more difficult. The two judges stood well apart so that the true shape of the circles and figures could be seen accurately. Len Mount won this with his *Heliboy*.

Of more general appearance was the novelty event which for some reason combined skittles, limbo, hurdles and slalom. It might be argued that to separate these would have been better as most people failed to complete the course in the two minute time limit, so if the skittles proved tricky you'd had it. Anyway, it did mean that the field was completed in a reasonable time. Meanwhile a static concours was being judged. This was won by Mike Tomalin with an 'Iroquois' fitted with *Schluter* mechanics.

As should happen at all fly-ins, there was space and frequencies from the peg board for trimming, training and demonstrations. Attractive awards were liberally handed out to the deserving and the event was efficiently and enjoyably run. I gather that a date has been agreed already for the 1982 event, July I think, but to be confirmed.

## On more than one rotor

'The MTC II has been designed as a double rotor helicopter with two coaxially contra rotating rotors operating with the same basic torque. The standard tail rotor of single engine helicopters is not required and the performance saved in this way (approx-

mately 7%) is used to increase lift. Each rotor has three blades so as to operate at a low vibration level.

'For cost reasons, the rotor blades have a rectangular form and are built of composite materials. The link with the rotor head is by means of blade holders and flapping hinges. The typical swivel hinges are not used for stability reasons. The rotors are driven by a single stage coaxial mitre gear, using a standard two cylinder two cycle engine.

'The connection between the gearbox and the engine consists of a centrifugal clutch so that immediate separation of the gearbox from the engine is ensured when the engine fails. The vehicle is, therefore, capable of autorotation.

'The control system is designed in such a way that four control interventions are possible independent of each other. The control commands have linear character and there is very little cross influencing even with multiple overriding. Heading is controlled by a change of the torque balance of the two rotors without any additional performance requirement.'

Don't get excited, it's not your next model but the remotely controlled mini helicopter by *Dornier*. The engine is 40hp, the weight is 190kg with 60kg payload, and the rotor diameter 3.2 metres. Think about those statistics.

My thanks to Ron Moulton for drawing my attention to it.

Changing to Chinookery; a number of people have expressed the opinion that I would have done better to use fore and aft cyclic for control of forward flight and left the differential collective for CG corrections more in line with the full size job. On this, apparently, the differential collective trim is used to alter flight attitude in order to reduce the bending on the masts which will obviously affect wear and tear.

If I remember about it I could quote Reynolds numbers and the like but in my view is that on a model the rotors are closer together than the full size, to state the obvious, but the air is the same from the point of view of damping out disturbances, shock waves, eddies, vortices and the like. So I think differential collective control, as opposed to trim, is necessary on a model with tandem rotors.

I look forward to proving myself wrong, or to somebody else doing it, by successfully flying a tandem rotor job as fast as the present generation of single top rotor 'copters. I believe the *Bristol* 173 use combined cyclic and differential collective. Do you follow an old one or a new one?

So what of the year? Some good events, some new innovations, some beautiful models, many new successful flyers, improved flying standards, what more could you want. Helicopters, like the full size version, are growing fast.

*Below left: not intended, but Len Mount found a way to pick up skittles. Below right: Nigel Brackley flew the Kalt AS 350 Squirrel in the Bretons Scale contest.*

