

HOVERING

WITH JIM MORLEY

ABOUT

AT THIS END of the season it's a good idea to sit back, take stock and plan ahead a bit.

Yet again there has been an obvious increase in the popularity of helicopters, both full-size and model. A better than usual summer in this country has enabled more than usual use of them. We have seen a lot of new faces at meetings, some of them doing incredibly well in competition really challenging the long-standing experts. Most of the new faces belong to people who have been interested in helicopters for some time and have now decided that the time is ripe for them to try one of their own.

I am continuously amazed by two things, first, how quickly some people can master the basics and enjoy hovering about with a modern model and secondly how long the fascination lasts with much to learn about helicopters.

A short while ago the Farnborough International Airshow was held with, as you would expect, a fair proportion devoted to helicopters. There was nothing very new and dramatic revealed except that the Russian Mil Mi 26 was there for the first time and that is the biggest thing in helicopters you can imagine. It is enormous.

Unfortunately it didn't fly on the day that I went and I only saw on television how slow the main rotor speed was. Probably only about 2 or 300r.p.m. Of course, the blade tip speed was well up due to the huge rotor diameter and the tips rushed by in fast sequence because of the eight blades, but you could assess the speed by watching the swash plate driver. Apart from the size, one of the most interesting features was the make-up of the main rotor blades. They comprised of many length-wise sections each about eighteen inches long and with a row of rivets on the skin at each joint, as if they were made by tacking each piece of one after the other. Maybe they were, why not?

Actually the most subtle differences in helicopters for some time is now onobtrusively taking place. This is in the aerodynamic section of the blades and is due to the highly sophisticated computer analysis of test results possible. Until recently, the helicopter designer had been completely unable to take advantage of advanced aerofoil sections giving more lift and less drag because the environment round the section is changing so much, from high and low speeds forward through sideways to backwards in fact, at rapidly changing angles of attack. So 'Supercritical' aerofoils had to be left for the exclusive use of fixed wing machines.

Now, however, sections can be designed that recover more rapidly from a sudden change of angle of attack, that have less violent pitching moment changes about the stall and other features that are liable to happen to a rotor blade in normal use. Fortunately in models we don't have the

same structural difficulties that they have with full-size rotors, so none of these discoveries is likely to have any effect for us, we fly in the same air but, with much narrower blades, it not always slower!

Coming back to earth again, at Farnborough, helicopter exhibits were mostly examples of new tunes being played on old instruments with the emphasis perhaps on what helicopters could carry. *Agusta* spoiled things for me by showing a A109K with fixed undercarriage, subtle that, I'm sorry if you don't see why! The *Westland* stand had on one end a painting full size, of the EH101 with a box let in as a mock-up of the passenger compartment. A very useful size it was too, but more interesting was a mock-up of the cockpit with a display of the C.R.T. instrumentation. Quite a revolution this, apparently now installed and working in a W30. The W30 was shown in many roles and the 'Lynx 3', with the W30 tail boom doesn't look as unaesthetic as you might think.

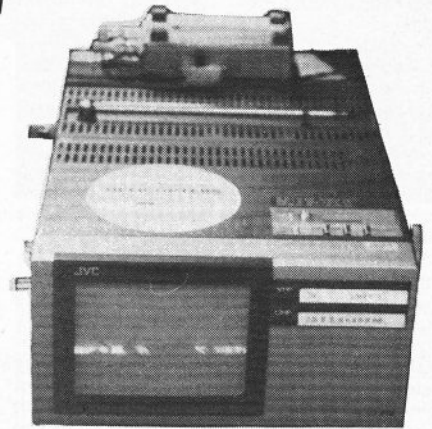
Another helicopter that looked better in the flesh, so to speak, is the *Bell 400* series 'Twin Ranger'. It was only there in mock-up form, but looked good, outline drawings and artists impressions always seemed to make it look a bit 'over-fed' to me. I didn't dare ask if the tail rotor was going to be better aligned with the ring fin on the real thing.

Although it is *Sikorsky* who seem to be the leader in the search for greater efficiency, both with composite structures and airfoils for the rotor, I notice that *Bell* too are deviating from the near symmetrical section parallel chord right out to the tips that we have got used to.

Perhaps the most obvious thing about the helicopters on show was that half of them had all sorts of things stuck on the outside to spoil the basic shape. I mean of course, armaments, gunsights, radars, sensors, winches, stretchers, buckets, nets, not to mention cable cutters, aerials and pitot heads.

From the hovering about point of view there were two other devices worthy of mention, the first of course is the *British Aerospace* 'Harrier' which is still a thrill even after all these years (since 1962) and I so wanted, but failed to get, a photo of the 'Harrier' with one of the natural variety in the foreground. Actually it was a *Kestrel* that seemed to take very little notice of all the extra activity on its patch — except the 'Harrier'!

The other thing was the *Airship Industries* demonstration of the 'Skyship'. Admittedly it



Above: JVC video monitor used in conjunction with airborne camera for real time video.



Above: Denis Cross from Southampton flew his fully detailed *Sea King* with working winch in action. Below: excellent *Wycombe Club/Slough R/C Fly In* at Chinnor. FAI Schedule flight in foreground, scale gathering in centre and novelty far distance. Plenty of room and spectators all along behind.



was a calm day but at last it looks as if it is past the novelty stage and an airship could really be useful.

The latest thing in thrust these days is the 'unducted fan'. These look pretty lethal, with many scimitar shaped blades sticking from the outside of the jet engines pod, but I suppose if they are high up at the back of the aircraft it is O.K. Strange isn't it after several years of thinking the propeller was 'out' for use in performance aircraft. The ordinary propeller seems to be undergoing a facelift too, as a result of computer analysis and new materials like main rotor blades I suppose. Stand by for new style tail rotors next.

Funny thing after my paragraph in the last H.A. about police helicopters and motorways. Yesterday I was rushing back along the M4, the road was clear and the sun was shining so the roof was open and I was zipping along in fine style in the fast lane.

Suddenly, all systems alert with a noise like a flailing piece of tyre. You've guessed it, of course, it was not only a helicopter, but THE one. An AS350 'Squirrel' in black striped white not more than fifty feet above me and going about forty miles an hour faster.

He kept going right into the distance, completely ignoring the undulations the bends in the road and the speed limit that us poor mortals have to keep.

I was really envious.

Aerial photography

Perhaps my challenge to produce a photo of a model helicopter from a model helicopter wasn't difficult enough for this technological age. It seems the thing now is to send aloft a video camera and record the scene. There was even one at the Slough R/C Meeting but the set-up wouldn't behave. Pity because it has been done and I would like to have seen it.

Strictly it's illegal but if you are a licensed HAM it is only bending the rules a little bit to have the transmitted signal not quite at your finger-tips.

Anyway, I don't really think I would have many entries for my competition if it was for a video. But since it is for a still black and white — or colour print if you like — I do hope for some interesting pictures. Please let me do the deciding that yours is not good enough, you may be the only entrant! But hurry, mid November is the closing date.

High Wycombe fly-in

Getting back to models, my prediction earlier in the year about seeing more multi-bladed rotor heads in the scale comps just doesn't seem to have happened.

True John Griffiths won the scale award at the joint High Wycombe Slough R/C fly-in with his five-bladed 'Sea King', and there



Interesting experiment seen at Chinnor. Kalt model with Hitachi camera to JVC monitor.

considerable effort expended so far on the very well run events has resulted in some extremely talented flyers, not only being found but given invaluable practice, we can only hope that a solution will be found.

The final taking place at Chinnor at the end of season fly-in, was third place Carl Eiver, second Mike Cogger, and first place also winning the *Ripmax* Trophy was Len Mount. Many congratulations for splendid flying.

I was amused to note that my criticism in this column last year of this event has been heeded. Perhaps I am taking credit unjustifiably, needing to walk through the flying to get to and from the car park was an obvious mistake but anyway, this year's event must have been one of the most successful so far. The organisers were extremely lucky to have excellent weather on the day despite dismal rain and wind both before and after, and the High Wycombe club for efficiently marshalling. How else can you describe being met at the gate with a site plan, plenty of space to park near the model pound, secure Transmitter Control separate flight lines for each of the three events (F.A.I., novelty and scale) and qualified judges including a pilot of full-size helicopters, from Skyline Helicopters nearby.

The F.A.I. result has been related, the scale although easy on the flying was demanding on detail. Denis Cross's really beautiful 'Sea King' was second to John Griffith's similar model in spite of a novel winched Action Man. Len Mount was pushed into third in spite of firing rockets from his *BO105*. The novelty event broke too many models, including one of Len Mount's so it wasn't just that people weren't good enough. What happened to balsa poles for flying in between? Somebody must think up challenging novelty events that don't result in a misjudged manoeuvre ending in disaster. Any ideas?

There have also been lots of other well run and successful meetings throughout the season mostly where one of the BRCHA FAI heats was run at the same time. There were feelings that sometimes — and only sometimes — this spoils the event for everything except the FAI flyers. It's a point worth noting, maybe it will be more interesting next year when scale is to receive the emphasis from the BRCHA, or so it has been suggested. This could mean that we see a return to more real modelling with helicopters as opposed to sport flying. For most this will be a kit with an extra amount of detail built in, but it would be nice to see a few examples of real initiative. The trouble is it takes such an awful long time. A few of the special models that I know of like Johnny Burkliams Tilt rotor and John Barrows 'Chinook', have been in the workshop for about three years. The potential is enormous, not only for interesting vintage helicopters, but for unique machines like the 'Belvedere', the futuristic LHX machine, experimental machines like the *Lockheed* stop rotor or 'X' wing.

Or how about a Fairey 'Rotodyne,' not with tip jets but a driven rotor. I'm sure that torque effect could be taken out by having one of the side mounted forward thrust propellers with reversed pitch. Dream about it over Christmas — between rushing out and flying when the weather is kind of course. — Cheers!



Above: another view of the Denis Cross 'Sea King' winching up its crew man.

was a sample of an interesting machined from solid plastic hub for Heim mechanics in both three-blade and four-blade form, which I hope to find out more about, but none of them were flown in the flying part of the day. Next year perhaps.

What did happen was a really determined effort by the BRCHA to promote the FAI schedule aerobatics competition with the idea of being able to present a worthy team to represent this country at European and World Championships. In the past the BRCHA seemed determined to be independent of the SMAE and due to lack of understanding and/or communication have had a few problems. Now that they are to become affiliated and have run a series of heats all over the country to find the best at the schedule aerobatics it seems that the biggest problem will be money to send the competitors to Canada for the event. Since the

