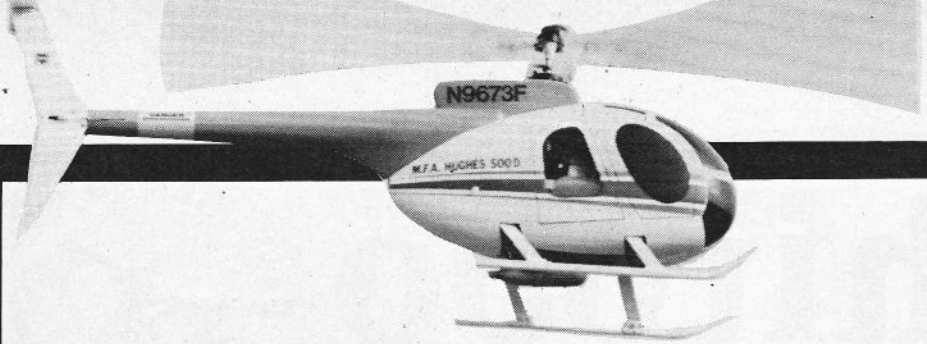


HELI-PAD

by John Heaton

Adventures with the Kalt Autogiro

I RATHER FANCIED 'having a go' with one of these devices when I first saw one and I hope you may find what I have to relate to be of some interest. I can't really add anything to Jack Barnard's constructional details and, for those of you who didn't read his review, it really is very easy. (see November 1980 and January 1981 issues of Radio Modeller).

I fitted mine with an **HGK45** motor and found, on the day of completion, that there was sufficient wind to really spin up the rotor with the model hand held; this was useful as I could now check the blade tracking and control response with the model held safely above my head. The rpm was very high, higher than a helicopter, I then tried a few taxying hops on the tarmac, getting the hang of gently accelerating from well down wind to spin up the rotor from its wheel drive. I found that all of a sudden the air takes over from the mechanical drive and the rotor really spins up quickly, until this happens you have no chance of any flight or control. I repeated these hops, gradually realising that I was getting onto full throttle for longer and longer but the model was rising only about a yard off the runway, even at optimum flying speed i.e. faster, and it sank level,slower, and it sank tail down.

(I would be very interested to hear from readers who have built and flown this model using motors of other power and types. I personally found the HP40 to have more than enough power and would have expected other 40s to produce the same sort of performance – very interesting. – Ed.).

Above and left: two views of John's autogiro which appears on close inspection to have more modifications than he mentions in the text — an extra wheel at the tail for one! His spin-up device, mentioned briefly in the text, can be seen to the rear of, and below, the spinner.

Back to the workshop where I fitted an **OS '50** engine, then, when I returned to the runway I had complete success, a good rate of climb and I started learning how to get the best from an autogiro. I noted interesting characteristics such as one tends to over-flare on landing and then drop a few feet causing the blades to flex down and smash the rudder! What happens is, as you approach, (as with a fixed wing) get close to the ground and start to flare you get a double effect, as you increase the angle of attack the blades speed up and you get a double lift effect. You get used to giving a slight flare then a touch of forward cyclic to avoid overdoing it all the time, using much more throttle than you would on a fixed wing. The forward cyclic effect on touch down helps to keep the blades away from the rudder. Actually, flying around doesn't arouse much comment, it's just sort of normal, but, don't give negative 'G' or you will obviously crash. It is quite fascinating to approach at an extreme nose up angle (about 45%) and then bang on full throttle and climb away at what looks like a suicidal speed, no matter how high you raise the nose you still retain full control and if taken to the limit it will just descend tail down despite full power.

During this learning process I tried many different things like blade angle and pitch settings — finding nothing much wrong with the standard setup and the amount of negative pitch not critical, standard it is about —1½° I tried zero to —3° and it still flew.

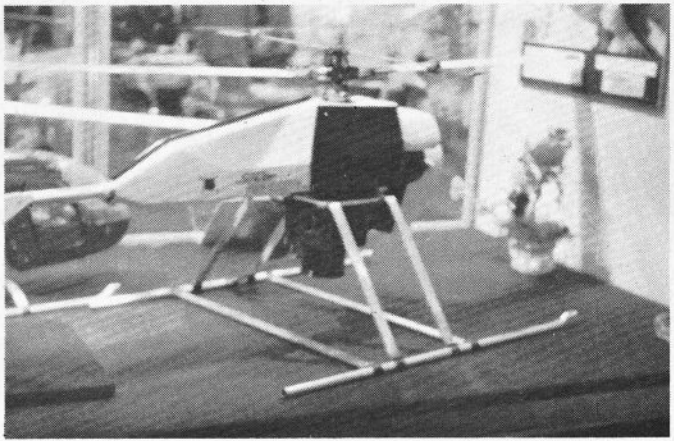
About the only improvement I thought of was to change the spin up

device from the wheel to the engine. This I did using full-size type design and I had total success. I engage the rotor at tickover, spin the blades, disengage, rev-up and take off after an approximately 5ft run, even from grass. One other modification I made was to alter the shape of the rudder to enable an electric starter to be used, my fingers still bear the scars of using the 'silly method'. All-in-all, I have found the little autogiro a fascinating challenge. Paradoxically I found this simple, in concept, little model the most difficult to perfect that I have yet tried. Yet just flying around is simple, in fact nothing about it is difficult but I have done more damage to this model than any I can remember but I still mend it and come back for more, such is the fascination. This is not a reflection on the model, just the autogiro principal which combines the worst of all worlds, with no advantages. A lot of my customers were impressed by the Wallis Autogiro programme on the television but I'm afraid I was not. In my opinion Mr Wallis did nothing with his flying machines that this generation of powered hang gliders cannot do with a fifth of the power, cost, and complexity. If only Mr Wallis had channelled his effort into a lightweight helicopter at a reasonable cost this in my view would have been far more worthwhile.

Nuremburg Hobby and Toy Fair

I took time off this year to visit the annual trade fair at Nuremburg. Nothing startling to report I am afraid except perhaps a sign of a world wide recession. I went on a scheduled flight from Luton. The most exciting part of the whole trip was flying myself up from Thruxton in a Cessna. It just happened to pour with rain all the way and I had to be vectored in with QDMs from Luton radar, not seeing the runway through the gloom until established downwind. Happily at the airport I met Dave Nieman and we 'sort of' teamed up and spent all day searching out the interesting items; the weather later turned sunny and pleasant.

The largest stand at the show was **Graupner's,** whose little *Go-Kart* took my fancy. Also on show was a rehash of the *Graupner 222* – this time with flybar. **Schulter** had a new model on show called the *SX81* which looked like a sport version of their Lockheed featuring a retracting undercarriage device. Also on show was a purpose-made photographic model helicopter equipped with a large petrol engine. I was rather disappointed in that there was very little shown on the helicopter scene which we had not already seen. See you next month.



Right: two models seen on the Schluter stand at the Nuremburg show. Top is a purpose-designed model for air-to-ground photography and, bottom, the SX81 featuring retracting undercarriage.