



By
**DAVE
NIEMAN**



STRAIGHT

THE third annual R/C Helicopter Fly-In took place at R.A.F. Odiham on June 20th. This meeting has in the past attracted a large number of enthusiasts, but owing to the forecast of inclement weather, attendance was down on previous years. Even so, there were almost forty models in the line up, twenty of which were entered to fly in the competition. It was interesting to note the predominance of smaller models, possibly due to the fact that the 5Kg weight limit was enforced, excluding some competitive, but unfortunately overweight, models.

The competition was divided into three classes; MINI, (engines up to .20cu.in.) which was later amended to include engines up to .25, a sensible move as the new HB 25 is proving to be a very good helicopter engine; HOME BUILT (commercially available mechanics permitted) and OPEN (any model up to 10cc). The usual schedule was flown, but with the inclusion of a hovering circle with the tail of the model facing the pilot. There was a stiff breeze blowing, causing a few hairy moments and a couple of fatalities, models that is. But the general standard of flying has noticeably improved and with the arrival of several new faces there was an atmosphere of enthusiasm and participation which has become characteristic of this meeting.

During a break in the proceedings, Mike Young flew a really convincing demonstration with the new Kavan Alouette. The model appeared agile, yet very stable in the hover and completely at home in the wind conditions prevailing. Another model which aroused a lot of interest was Andrew Thompson's entry in the Home Built class. Completely scratch built, the model was HP61 powered with collective pitch. The unusual transmission layout enabled the motor to be started from the side of the model.

There can be no doubt as to the popularity of this particular meeting, for it drew support from as far afield as Scotland in the form of Willie Patterson, and Gary Richardson from the wilds of Yorkshire. All credit to Norman Couling and his team for organising an enjoyable day.

3rd Annual SMAE Fly-in, Odiham Results

Mini		
M. Western	1	1,180
M. Harris	2	870
HOME BUILT		
M. Western	1	1,285
R. Bowman	2	1,240
A. Thompson	3	990
P. Dubock	4	795
D. Maxted	5	600
R. Sterman	6	360
OPEN		
G. Richardson	1	1,550
D. Nieman	2	1,535
W. Patterson	3	1,375
M. Western	4	1,250
R. Bowman	5	1,190
M. Harris	6	1,020
A. Sharman	7	1,005
V. Nordigian	8	865
P. Christy	9	800
D. Maxted	10	630
P. Ashford	11	310
J. Crampton	RETIRED	

British R/C Helicopter Association

The R/C Helicopter is steadily growing in popularity. It is no longer in its infancy and in order that it may continue to mature, I feel that it could use some assistance. At present the only body which has an interest purely in Helicopters is of American origin, namely the National R/C Helicopter Association of which there are several members in this country, myself included. Although the NRCHA does an excellent job with information, newsletters, grading schemes, etc. there is no active official here, all correspondence and enrolment being

channelled through Belgium. Now I realise that we are in the Common Market and all that, but what about organising something a little closer to home. In my travels, I meet so many keen chopper owners who soldier on alone or in small groups, unable to obtain the help or advice that is so necessary with the many problems that can arise when one is new to Helicopters. The benefits from such an organisation are many. Some which immediately spring to mind are: published guidelines for Safety Standards, training sessions, a source of information on new items and modifications, competitions, plus a set standard of judging so that everyone knows what is expected of them. It could help with lists of spare parts and suppliers, ask some of the lads who live out in the sticks about the time spent waiting whilst their local model shop sends for that vital spare, that's if they can be bothered to order them at all. I could go on and on about it but the fact is, we do need something to bring people with a common interest together and that alone will secure the future of our sport.

This is not just an excuse to build 20 lb monsters or bend the existing rules or cast aspersions on the ability of SMAE. I am sure that a properly organised British RCHA could cement the whole scene together and do a great deal to further helicopters and the sport as a whole. Comments and suggestions would be most welcome, but keep them clean please! Pat Dubock has kindly volunteered his services in an administrative capacity and he can be reached at: 169 Waters Drive, Staines, Middlesex. Good news for chopper fliers, the word has been spreading that it can be more comfortable and precise to fly using a transmitter tray. To cater for the growing demand RipMax will shortly be releasing a neat moulded plastic tray complete with straps which are adjustable for both height and rake.



Line-up of helicopters at 3rd annual R/C 'copter fly-in at Odiham, June 20th. Wide variety of designs present.

OUR SPECIALIST INTEREST R/C HELICOPTER COLUMN

The unit will have provision for an owner's name plate and will be made to suit a range of different transmitters.

That's a good question . . .

Phil White from Orkney writes regarding a .61 powered scale model of a Westland Lynx. He says

"Are there any disadvantages in having four main and tail rotor blades? Is it necessary to have a standard speed servo for collective pitch, as my idea for collective would require a more powerful servo? I worked on the full size Lynx, building, balancing and tracking the main rotors, which were prone to vibration. Do models suffer with the same problems?"

The answer to the first question is yes, there may be problems with four main rotors. Although there have been some attempts at multi-bladed models, I have no knowledge of a completely successful example. I assume that you are a newcomer to R/C choppers and if this is the case, then build a scale model by all means, but stick to a proven two blade Hiller system as is employed in the commercial kits: learn to fly and gain some experience, it will make experimenting a lot easier.

MODELS AT ODIHAM

Below far left: tiny Cox .049 powered May Fly designed and built by Peter Valentine (right of picture) is flown here by Mike Weston. Mechanics of May Fly seen below 2nd left. Ingenious achievement. Below centre: nicely finished Bell Jet Ranger from Kavan kit by Willie Patterson. Below right: two views of functional and effective original machine by Andrew Thompson.

The Hiller system employs a stabiliser bar and paddles which relieve the cyclic servos of any great load and impart stability to the model. To use a four blade rotor head, one would have to direct couple the cyclic servos via the washplate to the blade pitch change arms or use some form of gyroscopic or aerodynamic damping in the system. The former would be unwise, as there are no servos available with sufficient power and necessary speed to cope with the loads involved. The latter would be a more practical way of overcoming the problem, but would require engineering facilities and a lot of "Suck it and See". I would be interested to see your own idea for a collective system before commenting any further. As to the vibration problem, imbalance is inherent in the design of some models, but with careful assembly, proper blade balancing and tracking, vibration can be kept to an absolute minimum.

Another letter from John Briggs of Manchester, concerns a problem he is having with a DS22 fitted with a Schluter collective head. John has had experience with several different helicopters and has flown the DS22 with a fixed pitch head for some time. On fitting the collective head, the trouble really started:

"I tried to fly a circuit at about 30 ft. but the speed began to build up rather uncomfortably, so I eased back on the cyclic and the throttle just a bit. Then an alarming thing happened. There was a rapid loss of height in the turn, which no amount of throttle or back stick would prevent. By the time I had finished, the model was doing about 60 mph, but still with a tendency to sink in the turn. After fitting a Webra Speed HC and extensive repairs to the model, I am getting a bit wary about flying it around".

John also refers to a comment I made in the building instructions for the Jet Ranger with Schluter mechanics, when I advised against use of a flapping head. That particular model flies better with a rigid head. The remark about not flying very well without the tail boom was meant to imply that it is very easy to chop it off using a flapping head.

My own experience with several DS22's is that this model is one that really needs flapping hinges, not flying particularly well with a fixed head. Although stable in the hover, when flown at high speed the wedge shape nose and large flat belly can produce some hairy pitching reaction to fore and aft cyclic control. When you say that the speed built up, it could be that the airflow over the nose of the model was high enough to prevent recovery from the dive. Another possible cause of loss of height could be in the setting up of the collective pitch. The flybar on the Schluter Expert head passes through the two side plates of the head and is moved up and down to effect collective and tilted for cyclic control. It is possible that with full collective, plenty of back stick and some opposite cyclic to correct the turn (as would be

necessary to recover from the 'death dive') that the flybar actually touches the side plates. This would have the effect of reduced cyclic control with disastrous results. When properly set up, this head does work well. But check the flybar at all combinations of extreme control movements with trim and ensure that you have the recommended movement of the swashplate. One final point, I notice that you use a training undercarriage with castoring wheels. Do not underestimate the possible adverse effect on the model that this type of landing gear can produce, especially as the speed increases. Unfortunately, John, you have not chosen the best model for screaming around, but with a little care it can be made to fly quite nicely.

Thank you for your favourable comments on 'Straight Up', I won't tell the Editor what you said about the rest of R.C.M. & E.! (There's one like Nieman in every crowd—Ed!)

One of the most attractive full size helicopters flying today is the subject I have chosen for a scale project. The AGUSTA A109 'HIRUNDO'. The model is about the same size as the Bell Huey Cobra and features a retractable tricycle undercarriage which is an ingenious piece of design by Tony Bray. The main undercarriage doors open and then close once again after the wheels are down. Properly counterbalanced, it is intended to power the system with one Futaba retract servo. Schluter mechanics will be fitted initially, but it is a simple job to fit Jet Ranger mechanics with hardly any alterations to the existing woodwork. If the demand warrants it, a limited number of fuselages will be available eventually.

Blade balancing unit - by Mike Young

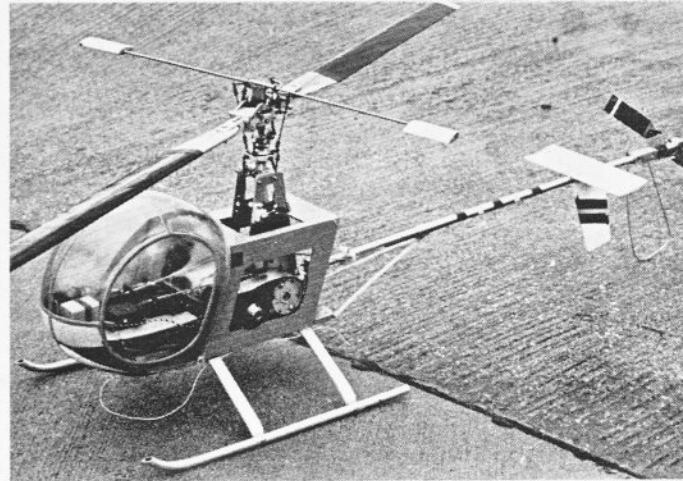
Since the introduction of model helicopters, I have seen models which have shaken themselves to bits before even lifting off the ground and others which run with turbine-like smoothness. Remember, it is not only the model which takes the hammering, the radio has to as well.

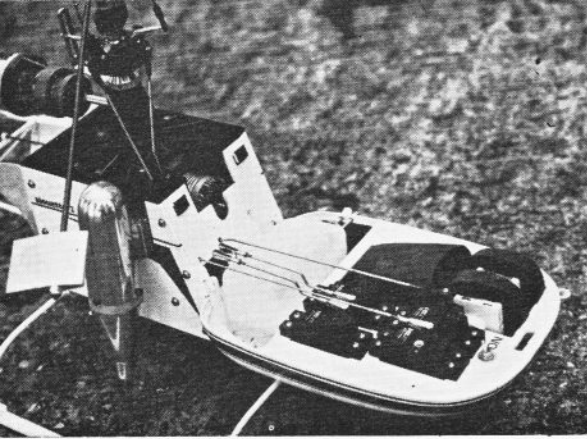
This cheap, easy to make Balance Beam could help turn your model into the turbine type model.

The main Balance Beam can be made from spruce, hardwood, hard balsa - I made mine from 1/4in. x 2 in. Ramin. The most important dimension is from the pivot point to the outer edge of the alignment bar. When made, it can be finally balanced by sanding the lower edge until it balances level on the base.

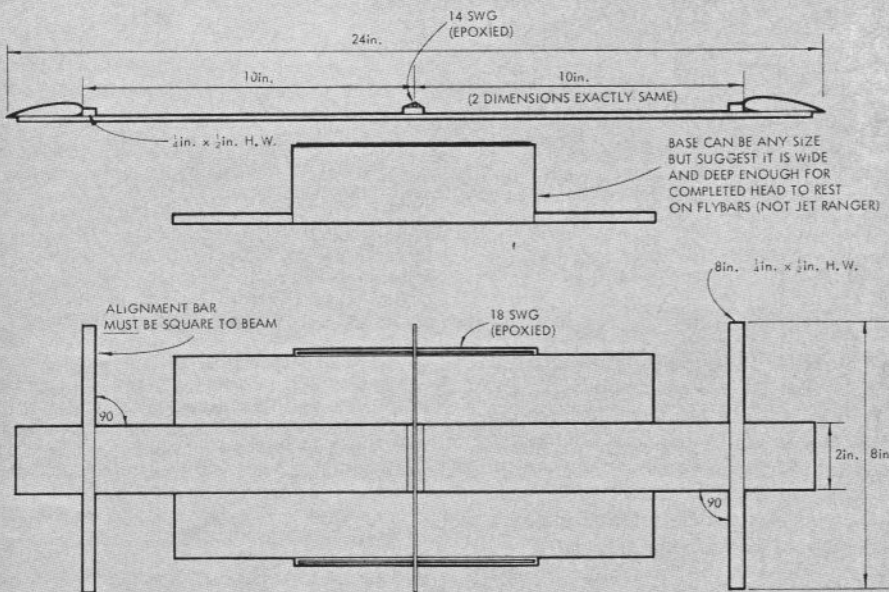
The Base can be almost any size, although it is wise to make it wide and deep enough to fit the completed head. The 18 swg piano-wire along the upper edge makes for smaller point contact for the Beam.

The basic idea of the balancer is to make both blades (with extra 'balance covering') weigh the same, then assemble the head completely and move the 'balance covering' along the lighter blade to get the centre of gravity of both blades the same by levelling the assembled head on the Base.

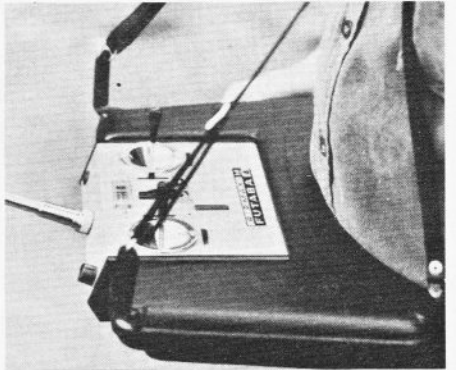
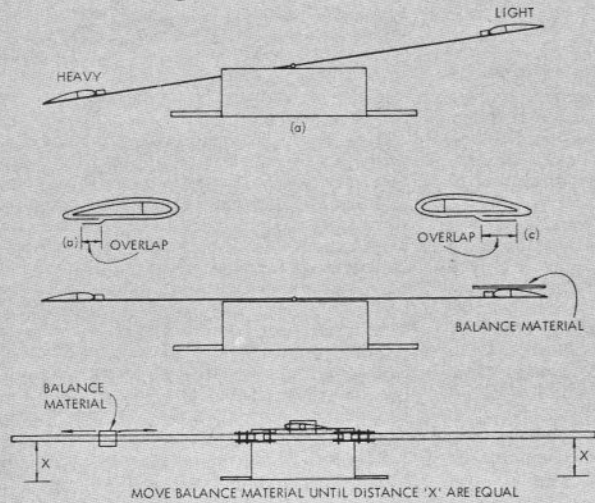




Mike Young demonstrated new Kavan Alouette 2 at Odiham. Small .40 powered machine combines excellent stability with agility. Radio installation and linkage detail shown far left. Below: transmitter tray to be available shortly from RipMax is ideal for helicopter flying.



Mike Young's blade balance



Sequence for Balancing

1. Rest both uncovered, but prepared (painted) blades on Beam with *leading* edges against alignment bars. If one blade is excessively heavy, the light blade must have more covering over its entire length. This is done by varying the overlap of the covering under the blade. See Fig. (b) (c). If on the other hand, one blade is only slightly heavy cover blades with equal overlaps.

2. The covered blades, complete with tip marking tapes, then require final matching. Place the *leading* edges against the alignment bars. Starting with a long length of covering material (less backing paper!) which is overweight (overlength). Gradually reduce length of material until Beam balances level. This piece of covering material will be used to 'balance' the completed head.

3. Now assemble the head, complete with blades (NOT Jet Ranger's). The assembled head is then sat on the base with the flybar on the 18 swg rails. The Balance material is then slid, contact side upwards, along the *LIGHT* blade until the complete head assembly balances level. (Keep clear of draughts, open windows, etc., as this can make balancing almost impossible).

Mark position of 'balance material', then reverse head on base unit and re-check balance. If satisfactory, carefully fit material in marked position.

4. On the Jet Ranger head, more accurate balance may be obtained if one of the flybars is slid through the main pivot bearing (before assembly of head) and this used as a balance point for the blade assembly.

Below: our columnist's latest and most ambitious project to date is this Agusta A109 Hirundo, to feature glass fibre fuselage seen below left. 10 cc powered machine will also feature fully retracting undercarriage system.

