HELICOPTERS ARE FUN!

says FRANCIS G. BOREHAM who introduces a selection of novelties for indoors or outdoors

BUZZCOPTER is one of a series of underslung engine torque reaction helicopters starting from Francis Boreham's successful "Spraycopter", which flew at N.H. Gala 1961. This model has the advantage of flying either tethered or in free flight and is also capable of rising from the ground.

Auto-rotation is reasonably good even with the two bladed rotor, as the freewheel isolates the engine and propeller unit completely, thus permitting higher rotor r.p.m. and eliminating the drag of the usual top mounted engine.

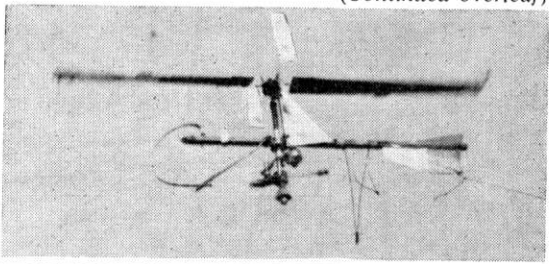
Construction is quite simple and straightforward, though perhaps unusual for the average aeromodeller. It employs many novel components, but can be made easily in the average home "worshop". Main structure is of aluminium tubing but alternatively balsa *could* be used since the design of pylon and engine unit permits the same drive to be mounted in various type fuselages either built up or in flat sheet silhouette form.

The important top and bottom bearings are brass tubes or bushes soldered to tin clips bolted to the pylon tube, which should be plugged with wood inserts at these points. The vertical drive shaft is a 15 s.w.g. cycle spoke which can be screwed into the engine back plate if it has such a tapping for the tank and locked with nut or screwed nipple. A small bob weight on wire stays balances the offset cylinder and is attached to the engine bearers by small bolts. The fuel tank is a small size tin control line type approximately $1\frac{1}{2}$ x $\frac{1}{2}$ x $\frac{1}{2}$ in. and is retained by a tin clip soldered and then bolted to the bearers opposite the engine cylinder.

Springy wire u/c legs coupled with the bamboo front skid gives necessary ground clearance. Wheels are not fitted as they are not required for vertical take-offs. A rubber grommett or thimble on the propeller nut guards the engine for heavy impacts. The tin lid hub is provided with a brass tube or bush soldered in the centre and should be an easy running fit on the rotor axle.

The rotor blades are connected to the drive shaft by a dog clutch, permitting the blades to free wheel when the engine is not running, and allowing a slower rate of descent. This item, while improving the performance, is not absolutely essential, and those building the simplest possible model may like

(*Continued overleaf*)



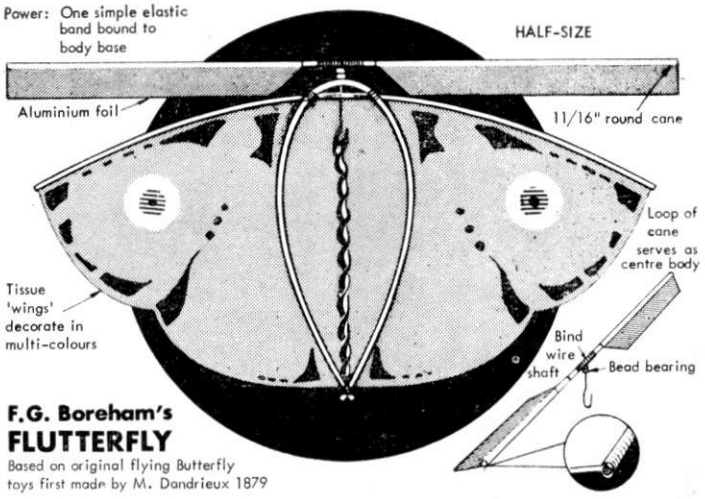
to discard it and lock the rotor hub to the drive shaft by soldering.

Care should be taken to keep the weight as low as possible and all up weight should be under 6 oz. using the Quickstart Dart engine.

It will be realised that a light model will be able to climb higher, and descend more slowly than a heavy model.

For early test flights, try out in calm air and R.O.G. only after experience of several flights. To hand launch, hold the helicopter by the tubular structure in front of stabiliser, and when rotor r.p.m. is steady, simply release — *do not throw* into the air.

For tethered flying use light cord or thread attached to the bolt securing the stabiliser to the fuselage.



Flutterfly is very simple. Start by bending 7½ x $\frac{1}{16}$ in. cane to shape of body join by binding at the base. Wing spar is 7 in. of cane bound in position as shown. Drill or make a hole through the cane for the propeller shaft wire to work freely. The propeller is made with a 7 in. cane spar and blades of aluminium paper glued as shown, don't forget a spot of oil on the shaft for best results and climb!

An indoor model

Crane fly full-size plans on page opposite are for something you can make from materials in the scrap box and add household miscellany such as beads for bearings and bottle corks. The drawing itself is self explanatory and photo below illustrates general assembly. It can be made in 90 minutes and will ascend to a considerable height, even on ordinary rubber band power. Adjust the power for a general indoor cruise or outside altitude attempts.

Another approach, but strictly for outdoors, is the **Flying Machine** single blade direct drive helicopter as first introduced by Charles McCutcheon in AEROMODELLER for *July* 1954. These fascinating machines have been widely copied in almost every country throughout the world but particularly so in Soviet zone nations, where they hold many records for altitude distance and duration. Dick Place has produced a miniature version for the little Cox engines and dimension drawings at right enable you to make a most effective replica. Launch with a flick of the wrist at the C.G. position to start rotation and stand back as the flying razor chops its way upwards.

Or perhaps you prefer a novelty made of cane and tissue? Here's one which will flutter wonderfully in any living room and can be made for the most elementary rubber band power.

Crane fly ready for winding and a jaunt around the room.