



RO-DART

We gave you F. G. Boreham's inclined hinge discovery for helicopters, and the direct diesel drive 'copter in "It's designed for You" now we present an outstanding Diesel Autogiro

by

DENNIS NEALE

CASUAL conversation in a model shop in 1948 influenced Dennis Neale into trying his hand at a powered Autogiro. His first attempts were not exactly exciting, and so he reverted to the more conventional type of model, but the thrill of rotary wing flight came back to Dennis with the introduction of the .5 c.c. Allbon Dart. With the extra knowledge gained in the two year gap, he was able to approach again the Autogiro idea with more understanding and after reasoning out general principles of design he met with immediate success in the first prototype.

Ro-Dart is developed from that prototype which demonstrated itself so successfully at the Eaton Bray 1951 Summer Camp.

The secret of Ro-Dart's success lies in the arrangement of the rotor, relative to the thrust-line. The advancing blade is at 0° incidence, and retires backwards, as it were, at 10° . Correct tail proportions, weight distribution and rotor blade areas also contribute greatly to its success.

Full building instructions are issued with each full-size A.P.S. Plan; but to aid other rotary wing fans and stimulate your interest, we give flying gen here. **Flying.** Check to see that the C.G. is between the two given lines. If it is in front of the forward line, ballast the tailplane, if behind the rear line, leave it until test flying. Use an 8×4 in., 7×4 in., or 8×5 in. (plastic) prop for the initial flights. With the motor running fairly fast, launch into wind with the rotor revving enough to lift the model from your hand. If the model turns

gently with very little bank, increase the motor speed. The model should now climb. The model turns to the right or left equally well, but needs different trim for right and left. If the model gains no height, check to see that there is no downthrust and if there is, remove it. If there is no downthrust, pack up the rear of the tailplane until the model climbs. If the model flies very fast and does not gain height, and has no downthrust, either sweep back the rotor axle more, or pack up the rear of the tailplane. If the model zooms upwards from a hand-launch, and then stops, dives and pulls out in an "S" turn, check to see you have no upthrust, and pack up the leading edge of the tailplane. It took

me a whole afternoon of flying to recognise this manoeuvre as a stall!! If the model flies with a bank to one way, and has a tendency to side-slip one way, add more dihedral and check that the rotor incidences are correct. If the model heels over to the right, this means the blades on the left hand side of the rotor (from rear) are getting too much lift; therefore, decrease their incidence, and vice-versa for a bank to the left. If the model proves very difficult to trim, change to a different prop. If the rudder and side-thrusts are needed to make the model turn, check to see that the rotor head is vertical, and in extreme cases, use the rotor head to turn the model by bending it in the direction you want it to go, or move the C.G. further back, as this has a stabilising effect. O.K.? Now get rotoring! You will soon become used to the unusual trimming methods.

The Designer . . . Aero-engineering student at Imperial College, London University... aged 17... member Egham M.F.C. . . . Is interested in all aeromodelling except control-line and rubber.



Heading photo is of club-mate Allan Baker, who duplicated the designer's Ro-Dart with equal success.

Left: Den Neale and prototype on the Eaton Bray take-off spot. Note the large prop for the Dart, (8×4 in.).