

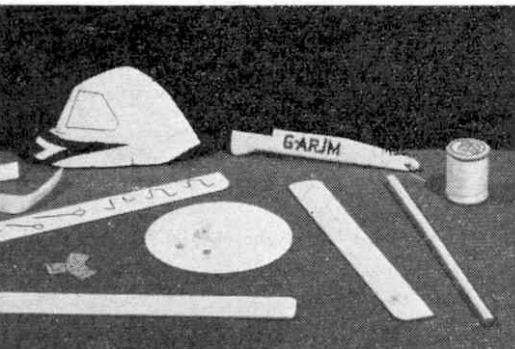
build your own
flying model
helicopter from
this design by
Ray Malmström

the "ascenda"

MODEL helicopters are fascinating, unusual flying machines and it is strange that so few designs, particularly rubber-powered ones, are available to aeromodellers. Therefore, this month, Meccano Magazine presents especially for you, a new helicopter design, the Ascenda. Watching Ascenda fly vertically upwards, hover at a good height and then descend slowly as the power runs out, is a new kind of model flying that no other model aircraft can provide.

Although not a beginner's model, if you have a little aeromodelling experience, you should not find Ascenda difficult to

The simple parts required for the model



construct and fly. Start construction with the rotor unit. Cut out the rotor head from $\frac{1}{8}$ inch plywood and drill the centre hole to take a 20 s.w.g. wire shaft. Bend three wire rotor supports. Check and see they are all the same size. Next, bend the part that cements to the root of the rotor blades to the angle shown on the plan. Again check to see you have bent the same angle into all three supports.

Cement one rotor blade support wire to each arm of the rotor head. Using $\frac{1}{2}$ inch wide thin tape or silk, fasten the wire supports to the three rotor head arms. Cement well and lay aside to dry thoroughly.

Cut three rotor blades from $\frac{1}{8}$ inch medium grade sheet balsa. Sandpaper to section and attach the blades to the wire supports using tape or silk to fasten the wire securely to the blades. Check with the easi-build sketches, then lay aside to dry. Make the motor stick (pylon) as shown in the sketches. Bind the bearing block and the lower hook securely to the motor stick with thread and cement well.

Now, before proceeding, you must balance the rotor blades. Hang the rotor up and if one of the blades hangs down, add a very small amount of Plasticine

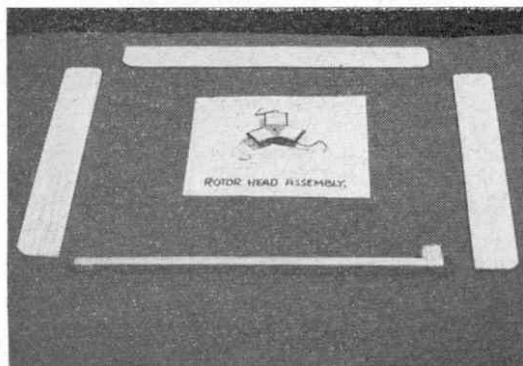
to one or both of the other blade tips. Continue to balance the blades until all three hang perfectly level. This careful balancing is most important.

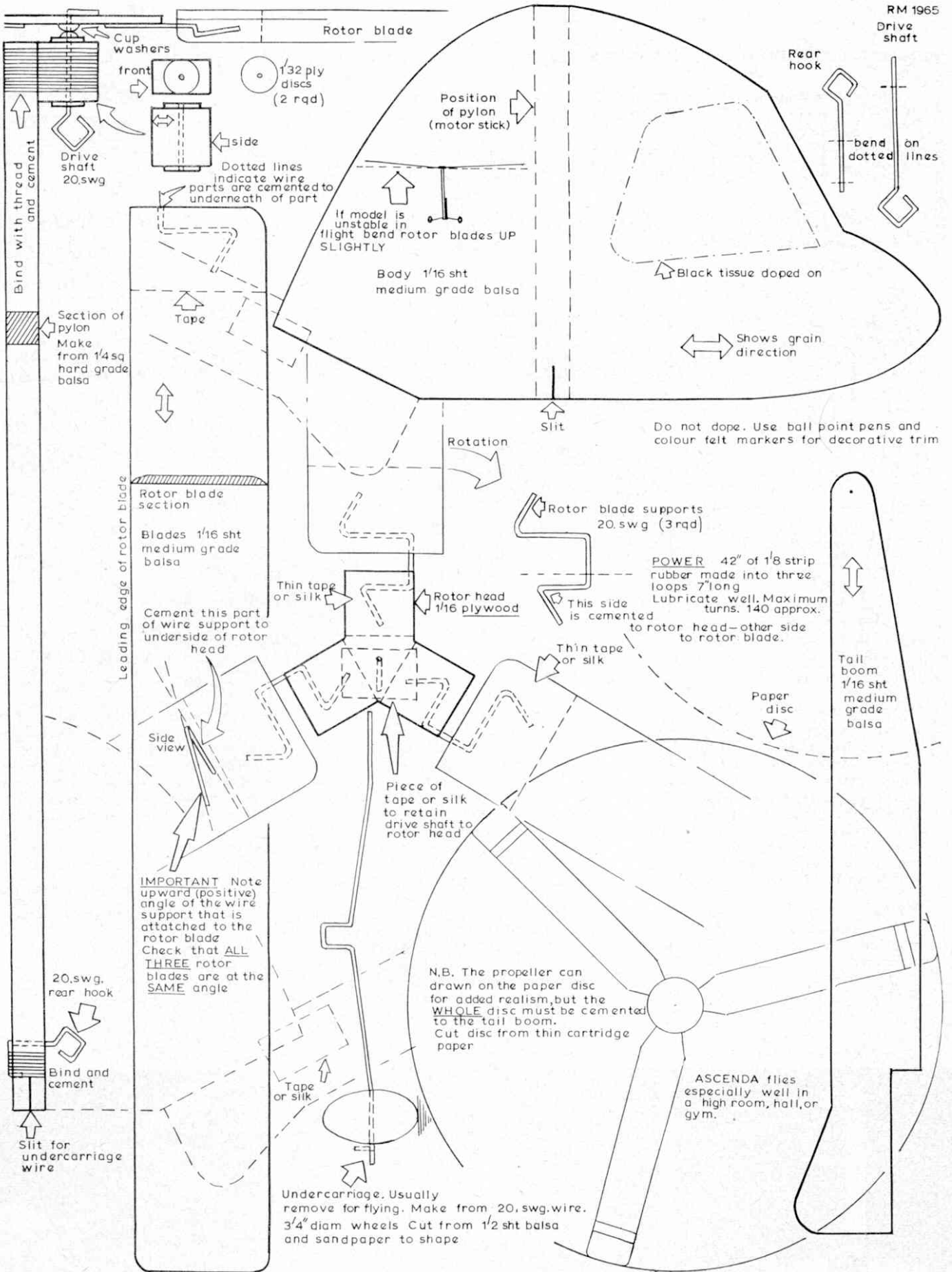
Assemble the balanced rotor unit to the top of the motor stick. The drive shaft is 20 s.w.g. wire. Note the two cup washers between the rotor head and the bearing block. Bend the end of the drive shaft over and lock the rotor head with a piece of tape or silk, cement well and allow to dry thoroughly.

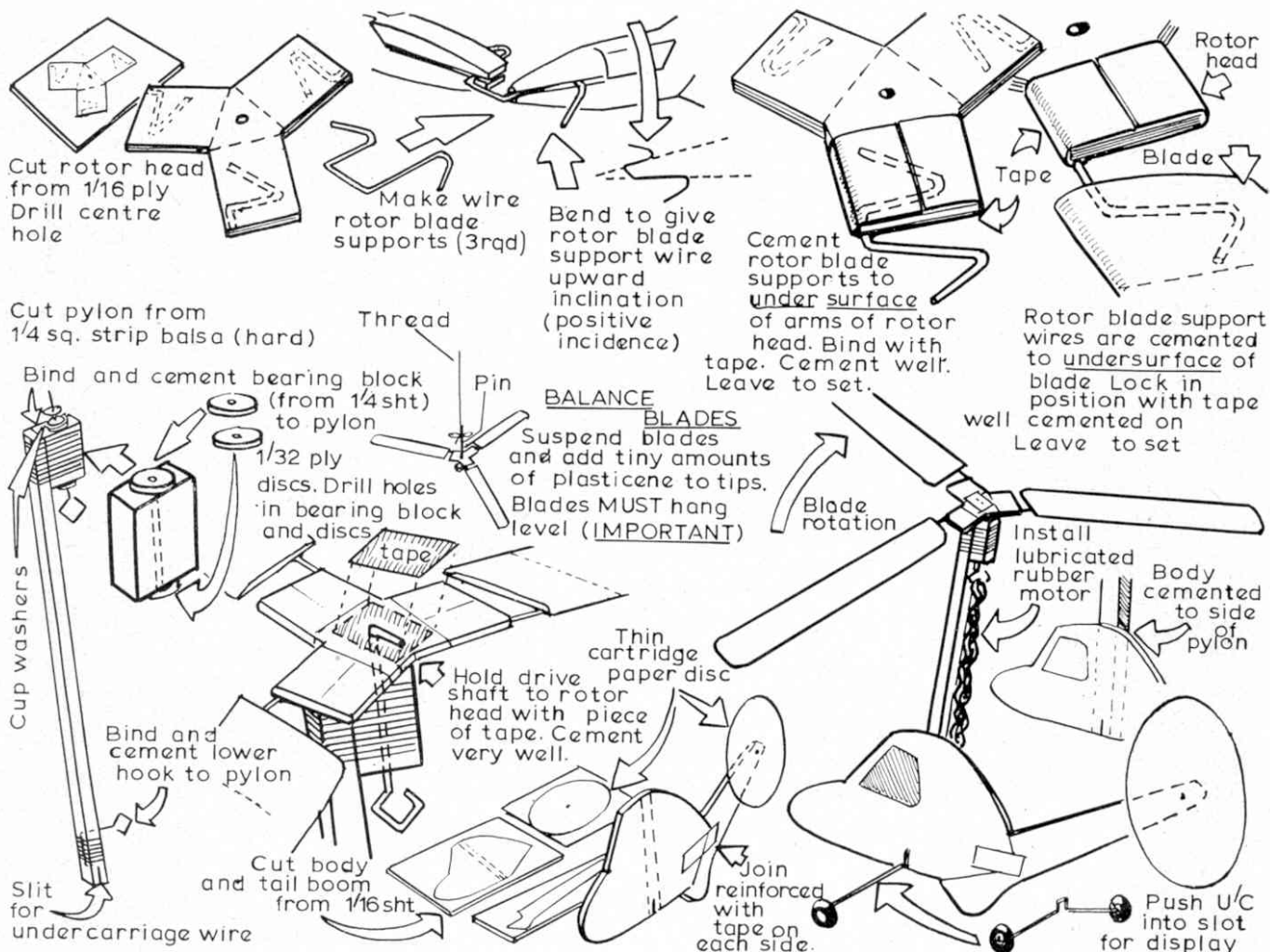
Cut fuselage and tail boom from $\frac{1}{8}$ inch medium grade sheet and join together. Add the 4 inch diameter anti-spin disc, made from thin cartridge paper, to the end of the tail boom and then cement the fuselage unit to the motor pylon.

The simple undercarriage is for display only. It fits in a slit cut in the base of

Accuracy is vital with the rotor head







the motor stick and is removed for flying.
 Make up the rubber motor from a 42 inch length of $\frac{1}{8}$ inch wide strip rubber. Make this into three loops, approximately 7 inches long. Rub on rubber lubricant and install the motor between the hooks on the motor stick. Your Ascenda is now ready for flying, except for any decoration in ball-point pen or coloured felt markers, you may wish to apply. Do not dope your model!

Flying

Your Ascenda will fly either outdoors or indoors. For outdoor testing, choose some soft grass and a calm day. There are no glide tests with a helicopter, so holding the model in one hand by the motor stick, wind the rotor blades in an

anti-clockwise direction about 70 to 80 turns. Then, holding the rotor with one hand, steady the model by holding the bottom of the motor stick and fuselage with the other. Now release the rotor and gently move the model vertically upwards and letting go, try and avoid tilting it one way or the other.
 If your Ascenda topples over and falls to the ground, check the balance of the blades. This is important. If it fails to climb, but hovers at launch height, hold the rotor arms between the fingers and gently bend the root end of the blades to give a little more upward angle. Then try another flight.
 The whole secret of successful flight, assuming the rotor blades are in balance, is getting the correct upward angle of

the rotor blades. You can only find the best possible angle for a really good climb by trial and error, so do not be disappointed if your Ascenda does not shoot vertically upwards on its very first flight. Finally, you can increase the turns on your rubber motor to 140.

Components list

- 2 in. square piece of $\frac{1}{8}$ in. plywood.
- 1 small piece of $\frac{1}{8}$ in. plywood.
- 1 sheet 24 by 3 by $\frac{1}{16}$ in. balsawood (medium grade).
- 1 strip $\frac{1}{8}$ by $\frac{1}{8}$ by $8\frac{1}{2}$ in. balsawood (hard grade).
- 1 small piece $\frac{1}{8}$ in. sheet balsawood (medium grade).
- 12 by $\frac{1}{8}$ in. wide thin tape or silk.
- 18 in. length, 20 s.w.g. wire.
- 2 20 s.w.g. cup washers.
- 24 in. linen thread.
- 4 by 4 in. piece of thin cartridge paper.
- 42 in. $\frac{1}{8}$ in. strip rubber.
- 1 small tube of cement.
- 1 small tube of rubber lubricant.

Left: Rotor ready for assembly. Centre: Rotor balanced and fitted to motor stick. Right: Completed model with hand decorations

