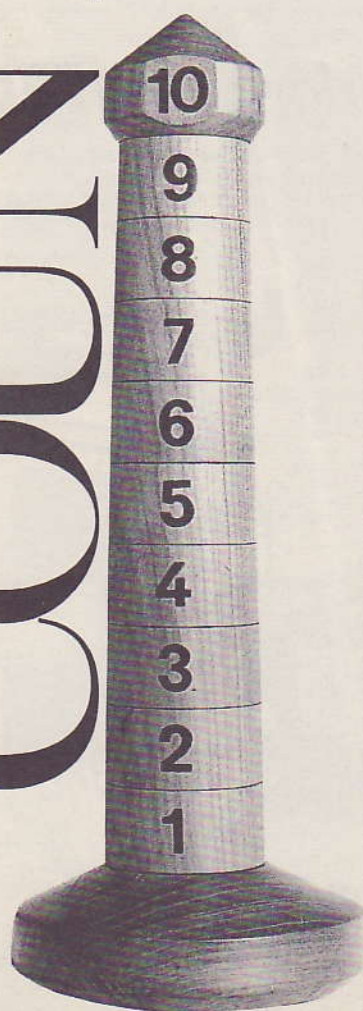


COUNTING TOWER

As an entry in our 1989 Design a Toy Competition sponsored by Stanley Tools, Ian Parry's counting tower toy was highly commended by the judges for its fun and educational value



ALL youngsters enjoy putting things together and sometimes, perhaps infuriatingly, taking them apart afterwards. However if you take advantage of their natural curiosity and combine the elements of building blocks and a jigsaw you can create a highly educational toy. With this counting tower the sequence of numbers is the key to the puzzle as the turned discs cannot be assembled in any order other than the correct numerical one. Recognition of the correct number sequence is thus the shortcut to any trial and error method that would otherwise be adopted.

The toy is durable, safe and educational and involves manipulative and intelligence skills in assembling the building block type components. Although the main stimulus is to form the lighthouse tower, it is also of such a shape that sections of the tower can be used in other play.

Materials

Because there is a certain degree of

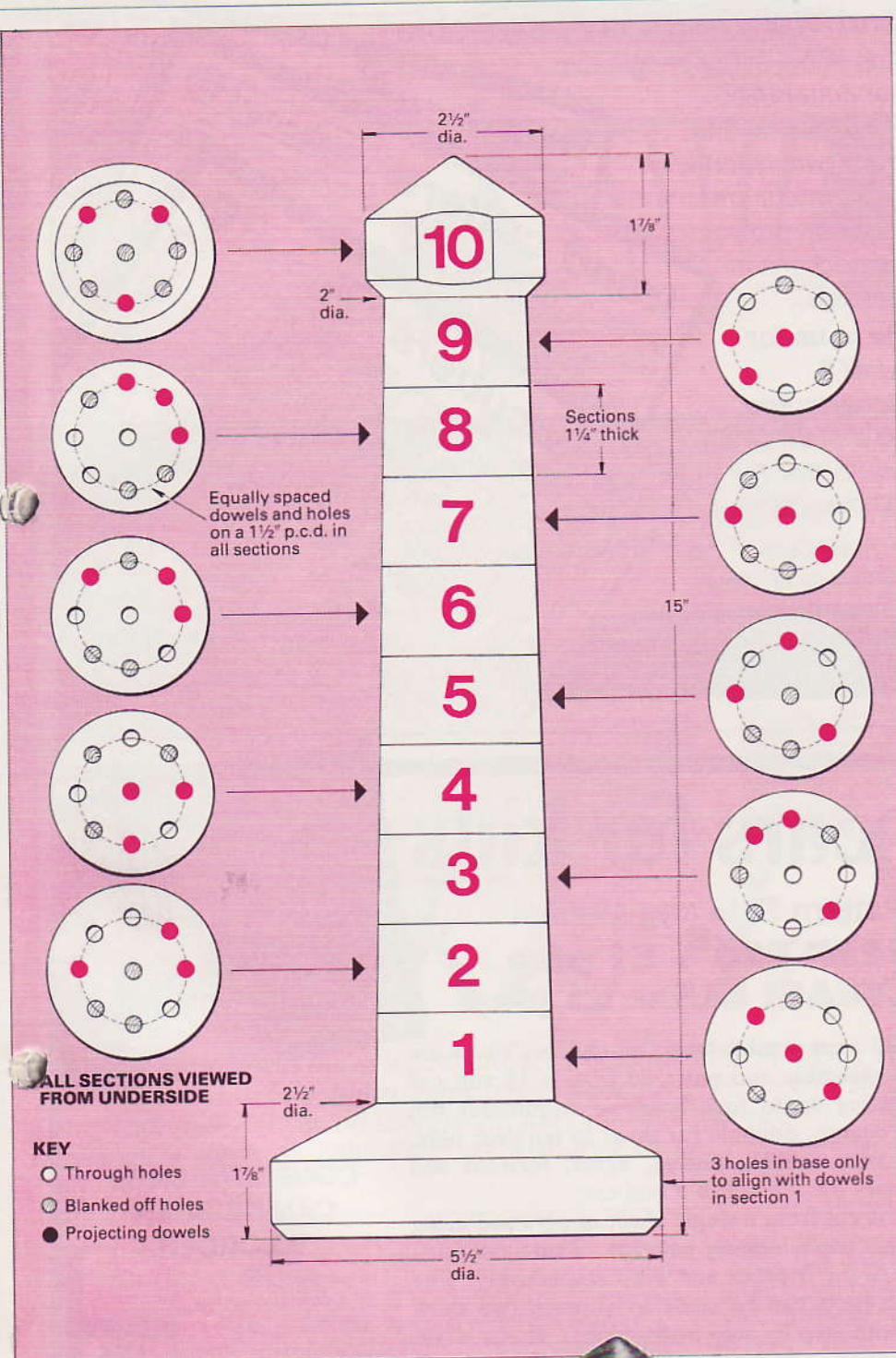
'wood engineering' involved in the drilling of the hole matrices, a hardwood is really essential for this project and one of the following would be suitable – oak, beech, sycamore, yew or cherry. Ordinary dowels can be used for the matrix locating pegs.

Making the tower

In this instance cherry was the wood chosen for the project, with two blocks planed and thickened for the tower and base. The base is a piece 6 by 6 by 2½in. which can be simply turned up on a faceplate, removing any sharp edges. In this case a shallow recess was formed so that the base could be gripped in an expanding collet chuck for the ultimate truing up of the base and tower together.

The main tower block was formed from a piece 16 by 3 by 3in. which was cut into ten segments – nine at 1¼in. thick and one at 1⅞in. for the top capping piece.

The centres were accurately found on each of the discs and through holes drilled using a pillar drill. However to



working out the matrices for the different positions of the dowels and fitting the three locating dowels to each block and blanking off the holes which do not serve as the sockets for the dowels in the block above.

With all the dowels fitted and lubricated with dry soap, the tower can be assembled with discs one to nine forming a rough cylinder which can then be mounted between centres for truing up.

This operation is followed by adding the top and base, holding the base in an expanding collet chuck so that the shapes can be happily married together. The complete tower can then be sanded and polished as a whole taking care to use non-toxic materials.

Numbers are of course all important and these can be painted on or burnt on using pyrography equipment, or perhaps for the simplest and best effect you can use dry rub-down lettering, protecting the transfers with a coat or two of varnish.

The tower in use

Having tested out the toy on a number of children as well as in an infants school, the parents and teachers all agreed that the toy worked very well, perhaps surpassing my expectations. The children enjoyed the fun of it whilst becoming very quickly aware of the importance of the number sequence.



ensure accuracy when drilling the other eight holes to form the matrix, a metal templet was made up in hardened steel to act as a guide. Two reference points are needed when using this; one is provided by the centre hole and the other must be aligned with a point on the edge of the discs to ensure continuity of grain pattern when the blocks are assembled.

At this stage it is a question of