CARDBOARD WORK.

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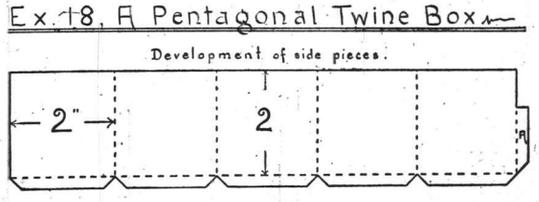
EXERCISE 18. A Twine Box.

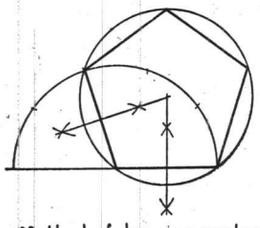
This model serves as an introduction to the pentagon and also introduces a common method suitable for constructing cardboard boxes with movable covers.

The method of drawing the pentagon, shewn in



the diagram, was given in an earlier exercise on the hexagon. It depends upon the fact that the exterior angles of all polygons are equal to four right angles. At this stage of the work, with the pupils' experience of plane figures, and their knowledge of angles gained from earlier exercises, the teacher should be able to deduce this rule quite easily. Then by describing a semicircle on a given base and dividing it into the same number of equal parts that the polygon has sides, *two* of the divisions will always give the exterior angle.

This method depends upon the division of the semi-circle by trial, and is therefore only an approximate one. If ordinary care be taken, however, the result will be exact enough for almost any purpose.


Method of drawing pentagon.

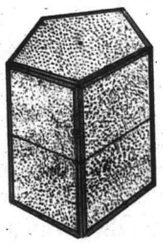
In addition to the pentagon for the top and bottom, a drawing should be made of the development of the sides. One drawing will suffice, as the upper and lower portions are exactly alike.

The practical work should be commenced by cutting out two pieces as shewn in the development and gluing them up on the edges A. The two pentagonal pieces for the top and bottom should then be cut out and glued into position. Nothing new is involved in this and no difficulty should be experienced if the measurements have been carefully made. Next cut out a strip 1½ inches wide and half cut it so that it will fit exactly inside the lower half of the box. This piece should then be glued into position so as to stand up ¾ inch above the lower portion of the box, so as to fit into the upper portion and hold it in place.

For finishing the outside of this model, a new method is suggested. That is, to bind the corners first and afterwards to cover each face with a piece of fancy paper cut small enough to shew a very narrow margin of binding all round its edges. This gives an exceedingly neat finish and also allows of the use of quite common cardboard for the model.

In putting on the binding and fancy paper the box should have the cover on. After the binding and fancy paper are quite dry, a sharp knife should be used to cut through the paper and separate the two portions of the box.

Of course a hole will be required in the centre of the top for the twine to be drawn out through.

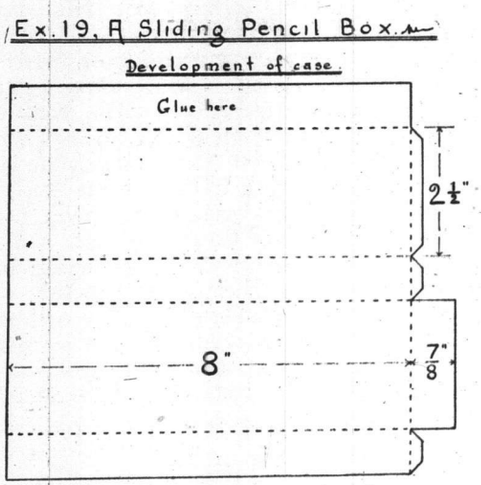

Perspective view.

It may be well, also, to remind teachers that a ball of twine should be used from the *inside* of the ball, where a loose end may always be found. Neglect of this will cause loss of time, twine and temper from commencing to use a ball of twine from the outside.

EXERCISE 19. A Sliding Pencil Box.

This model calls for very careful work, as the inner portion must slide easily, and yet fit neatly, within the outer case.

Two drawings are required, and it will be noted that the dimensions of the drawer piece are 1-16



inch smaller each way. As the drawings are rather large, they may well be made to scale, say, half size. Note that the glue flap is the full width of the side pieces. In gluing up this flap it is not possible to reach into the inside of the box to press the surfaces