centre of vision, it will be represented by a line; and that as it is removed away from this plane it will appear to become wider, as shown in figs. 1, 2, and 3. These illustrations need no explanation. After the lessons in perspective given in book number three of this series, the student will understand them.

Fig. 1. shows a square in various positions when its plane is vertical and perpendicular to the picture plane.

Fig. 2 shows a square in a number of positions when its plane is horizontal, and Fig. 3 shows a square in several positions when its plane is perpendicular to the picture plane but at different angles with the ground plane. In all of these squares two sides are represented as being parallel to the picture plane.

A very little observation and thought will serve to impress these facts of appearance upon the mind so that when the position of a square is given it can be drawn without any hesitation.

If, instead of a square, an oblong be required, it can be drawn by using a square as a basis and lengthening two opposite sides in the same direction and joining their extremities by a line drawn

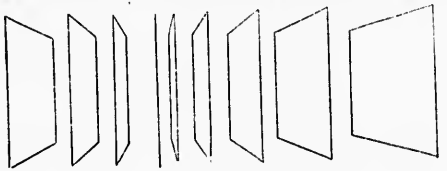

FIG. 1.

towards the vanishing point of the other sides. This is shown in Fig. 4, where *a b c d* represents a square in different positions, and *a b e f* an oblong.

Sometimes it may be required to draw an oblong the length of which is twice its width. In this case draw a square, as *a b c d* Fig. 5, draw its diagonals to find the centre, and through the centre draw a line towards the vanishing point of either pair of sides according to circumstances. Then the oblong *a b e f* will be the one required. An oblong of any proportions may be obtained by drawing a square with its diagonals, drawing a horizontal line through the centre, dividing this horizontal line into the proper number of parts, and drawing lines through the points of division towards the vanishing point of the sides cut by the horizontal line. Thus if an oblong be required its sides to bear the ratio of 4 to 5, construct a square the sides of which will represent 5, divide the horizontal line into five equal parts and draw a line through the fourth division as shown in Fig. 6, where *a b c d* is the oblong required. Fig. 6 shows also an oblong the

sides of which bear the ratio of 3 to 7. In case the long sides of the oblong are required to be parallel to the picture plane, proceed as before, and through the point (*e*) where the line corresponding to *b c*, Fig. 6, intersects the diagonal of the square, draw a line towards the vanishing point of the sides cut by *b c*.

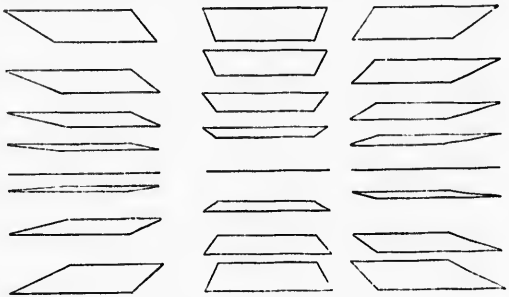

FIG. 2.

The square may be used as the basis of the equilateral and other triangles, and several of the polygons, so that the pupil will do well to make himself perfectly familiar with the manner of representing it. For the present, however, it will be necessary to leave the representation of the square when none of its sides are parallel to the picture plane, as the student would not understand it thoroughly until after the perspective appearance of the circle is understood.

FIG. 3.

The perspective appearance of the circle follows the same rule as the appearance of the square, that is, when in a plane perpendicular to the picture plane and which contains the centre of vision, it is represented by a line, and its apparent width varies according