

to its distance from this plane. But one new fact in connection with the circle is, that the transverse axis of the ellipse representing it is *always* perpendicular to the apparent direction of the axis of the circle, that is a line passing through the centre perpendicular to its plane. Hence when the plane of a circle is horizontal, in which position the axis is represented by a vertical line, the transverse axis of the ellipse representing it is horizontal.

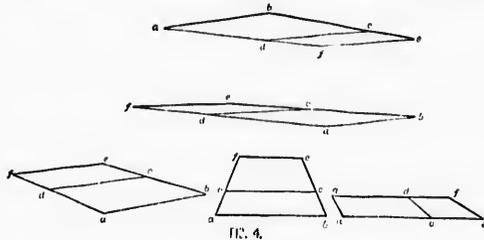


FIG. 4.

This appears to be a contradiction of the results obtained in some of the problems and exercises in the book on Linear Perspective of this series, and to a certain extent it is. In illustration Fig. 32, Book 3, the transverse axis of the ellipse representing a circle having its plane horizontal, is not horizontal, and the student may with some show of reason say that either the principles of perspective as laid down and explained are incorrect, or that the statement made in the last paragraph is false.

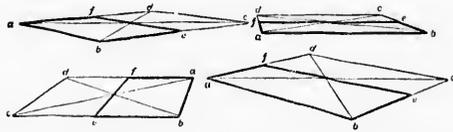


FIG. 5.

If the student refers back to the book on Linear Perspective and reads the fourth paragraph of page 3, he may perhaps be able to account for the apparent discrepancy. When any one is making a drawing of an object, his eye is fixed upon different parts of it as his work proceeds, and as the direction of his gaze is represented by the line of direction, the line of direction is being constantly changed, as is also the picture plane which is always perpendicular to the line of direction. From this it is

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evident that the only rays of light which render objects visible for the purposes of drawing correspond to the line of direction. A rule to be deduced from this is that *all visual rays must pass through the picture plane at right angles to it*, hence a drawing of an object will require the use of perhaps a dozen or more picture planes, each one of which will contain the representation of some particular part of the object.

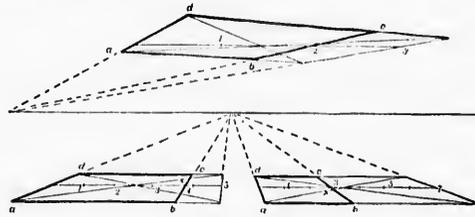


FIG. 6.

Strict attention to this fact, however, would complicate most terribly a perspective problem, and for this reason it is assumed that there is only one picture plane, that the centre of vision is fixed, and that any object lying within the field of vision can be seen distinctly and be properly depicted upon the picture plane.

About the only way out of the difficulty is to consider the picture plane to be a curved surface, that is, the interior surface of

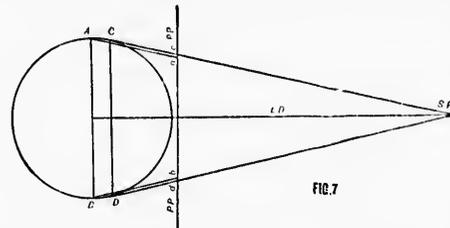


FIG. 7.

a sphere the centre of which is the spectator's eye, and the radius of which is equal to the length of the line of direction.

In model or object drawing, in order to prevent distortion, the object drawn is supposed to be always directly in front of the spectator, and if it is not in this position, he is supposed to, if he

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