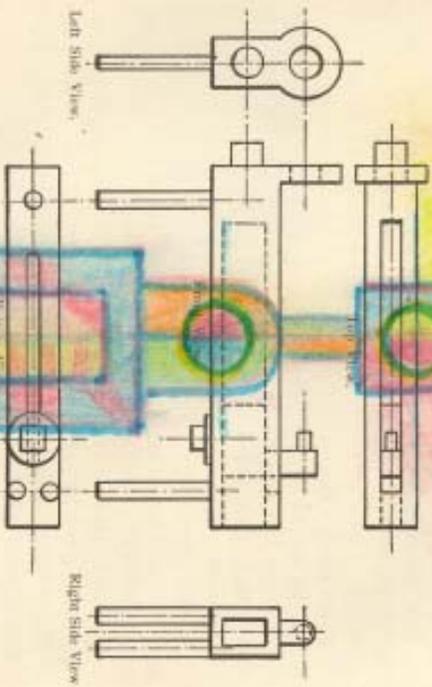


so on. Not only will it take longer to make the drawings, but the inaccuracies of drawing boards and T-squares will cause the drawings to be less exact than those whose arrangement is due to the use of the planes placed in front of the object.

The views due to the use of the first angle are not so easy to read as those due to the use of the third angle. For the third angle, places the different views of the same object as far apart as possible to each other, while the first angle places them as far apart as possible. These considerations make the use of the third angle desirable for all prac-



tical working drawings; and whenever this arrangement is adopted throughout this book.

105. In the study of projection with advanced classes the choice of angle is of little importance. The objects may be placed in either of the angles, and there will be little difference in the case (or perhaps, difficulty) with which the students understand the subject. A point in favor of the first angle for use in the study of projection is that books on the subject of projection generally use this angle; another point is that when the third angle is used, and glass planes and expensive models to place behind them are not provided, the

they are generally solved, may be reduced to the simple problem of finding the intersection of a line and a plane, or of a line and a curved surface.

INTERSECTIONS OF A LINE AND A PLANE SURFACE.

171. Drawing *A* represents a cube pierced by an inclined line which enters the left side at *a* and leaves the top of the cube at *b*. The front view determines both *a* and *b*, for it represents both the left and the top surfaces by straight lines. The top view determines only one point (*d*), for in it the top of the cube appears a surface, and when a plane appears a surface its intersection by a line cannot be determined by means of this view alone. Point *b* must be obtained in the top view by projecting from the front view.

NOTE. — The positions of the intersecting lines in all the problems are assumed.

172. Drawing *B* represents a cube and a line *l* which is in the same plane, as the right and left vertical edges of the cube, and therefore intersects these edges. Line *x* is in front of the right and left vertical edges; its intersections with the faces of the cube are seen in the top view, and may be projected from this view to the front view.

173. Drawing *C* represents a cube intersected by a line which enters the left visible vertical surface, and leaves at the top of the cube. The front view represents the top of the cube by a horizontal line, and in this view the intersection *a'* of the line with the top is seen.

The intersection *a* of the line with the left vertical surface of the cube is seen in the top view. The points determined by each view can be projected to the other view, and in this way each view completes the other.

