

wooden ruler can be relied on not to warp ; and parallel rulers are a delusion.

For a few inches it is permissible to turn right angles with triangles, but for long distances the beam compass should be used ; and parallel lines can be most accurately drawn by erecting a perpendicular near each end of the original line, and laying off on them equal distances. When distances are a little too great for the triangles, and too small for the beam compass, the large ordinary compasses can be used ; but it will be found that they are seldom required. The four-H pencils are to be used for writing dimensions, etc., and the six-H ones for drawing lines. The draughtsman should always have at least one of the latter sharpened to a chisel edge for ruling, and another to a point for sketching. He will find it to be greatly to his advantage to keep his pencils always well sharpened, for an error of the width of a pencil-line will often cause a great deal of inconvenience. A piece of emery paper or a fine file will be found useful for sharpening pencils. The tracing-paper will be convenient in transferring drawings of similar chord heads, etc. : its function is merely the saving of a little time.

It is generally better to have both a long and a short scale. The long one may be divided into feet only, the inches and fractions of inches being taken from a diagonal or other small scale. If the draughtsman be not provided with a suitable scale, he can easily prepare a very fair one for himself on a strip of the roll of paper upon which the drawing is to be made.

The method of projecting one view of a piece from another view will not do for working-drawings, owing to the liability of the triangles to slip. All measurements should be transferred by the dividers ; and, if there be any probability of the points of the dividers having been moved, the distance between them should be tested by laying it off once more upon the original length. There should be no more than a single transference of any one distance, for errors often increase, instead of balancing.

The general arrangement of a working-drawing consists merely in laying out a plan and elevation of one-half of the span, leaving at least a foot of space at each end, and six or