THE NATIONAL DRAWING MASTER.

point **N** as the he E.L.D.

er-end W.R. 60, ling with above-0 denoting one, diagonal to the s intersects base f plan point **N**. [--**F**, extending t of said recess sective converg-Ng. 117.

v ruler contacts, *W.R.* measure

earer-end W.R. R. 60, Fig. 117. line touches the plan recess line ove the horizon; rizon, being the

ins of finding on respectively be-

so as to contact, said W.R., plan

the represented mark off to 20'; (v) of said base viously produced at **F**; whilst the an line **N**—**F**. as **F**—**F**', lying)—v., extending

ther find on the D.; then, where ne V.P. line, exon; and, where ng from F to v, from M to F

it contacts with and, along said at the E.L.D. earcr-end W.R. , D. to 7', W.R. , and, therefore, from distances the V.P. line, point \mathbf{M} ; and the perspective ne, 7'--v' run-

d V.P., may be esponding with 6. The perspective convergence of a line, however, may be produced without representing its V.P. For, supposing, for instance, it were requisite, without enlarging the paper of Fig. 117, to draw, thereupon, a line, the V.P. of which, if used, would have to be placed two actual feet from the point of sight s.; then, the convergence of the line could be produced by merely representing one end of the line's W.R. and P.S. diagonal, intersecting each other; and the other end's W.R. and P.S. diagonal, also intersecting one another; and by drawing the converging line between the two intersections—that is, should the line be a ground line.

Should it lie above the ground :—raise perpendiculars from each W.R. that each end of the line is to be represented as lying above, and of a proper height according to the scale of said W.R.; then run a converging line from the summit of one to the summit of the other perpendicular. See Lesson VII. again.

7. The side and perspectively converging lines of doorways, windows, or of any other form, may be easily represented, as must now be obvious to the student, either by means of first producing whatever W.R.,—P.S. diagonal,—or V.P., may belong to each end of every line; or, by means of producing only the W.R. and P.S. diagonal of each. Refer again to the first seven paragraphs of the previous lesson.

again to the first seven paragraphs of the previous lesson. 8. To produce the W.R. of any previously represented point, as of point M or N. Fig. 117:—run a horizontal line through the point and across the drawing.

N.B. See the last paragraph of previous lesson again.

9. To find the perspective centre of any represented space, when required quickly and its top and bottom lines converge to a common V.P. and also are connected by two perpendiculars representing, one the same height as the other. Run diagonal lines from the diagonally opposite ends of the perpendiculars,—a perpendicular line drawn through the intersection of the diagonals will be the perspective central line of the space. See

Fig. 114, diagonals 18-6', and 15-6', and centre line c.

10. To represent a circle in perspective :—enclose it in a square, and run lines through its centre, as shown in Fig. 118; then, make a plan of it with an E.L.D., and find the



W.R. and P.S. diagonal of each point of revealed that the circle makes with the accessory lines shown in the diagram. Next represent the perspective position of each point of contact, and connect the represented points with a circular line running from one to the other, taking care that it flows with freedom and does not bulge out with an unnaturalness of appearance in any one part.

11. To make one line at a right angle with another :---draw one line; then open a pair Fig. 119. of compasses and place one of its legs where the right-angle line is



of compasses and place one of its legs where the right-angle line is to run from, or, as at a, Fig. 119:—mark off on each side of a an equal space, as b, c; then open compasses a little wider and from b and cmake intersections above and below a; next place a ruler, along aand the two intersections, and draw a line upwards or downwards as required; the line so drawn will be a perfect right-angle line if the operation has been carefully performed.

On using the compasses see that they are sharp pointed, and do not allow their points to indent the paper.

12. A plan of an object is generally accompanied with an elevation of the object. To make a perspective drawing of the elevation, make an E.L.D. upon it, corresponding in position with that of the plan's E.L.D., for the purpose of ascertaining the distance of points of the elevation, from the E.L.D. Also, whatever level has been employed, for the apparent level of the horizon above the carth's surface, in the perspective drawing of the plan, it will be found convenient to draw an horizon line across the elevation to represent a level corresponding with the level denoted by said perspective drawing's horizon line.

The limits of this work do not admit of further directions being afforded with reference to ordinary perspective. Nor are they requisite in fact, this system of perspective being a proof that the science may be practically acquired through merely knowing a few leading principles. For it is simply the result of a knowledge of the three main principles of perspective—namely, that apparent contraction increases exactly as distance from us increases; that, consequently, parallel lines, under certain circumstances converge out of their true directions towards a common V.P.; and that we ought not to represent a line as existing nearer to us than a certain distance regulated by the length of the line though the system has been carefully tested before being advanced in this work.