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th and ance of and the miles. ground es long must be supposed to be all brought into one plane without altering the relative positions of the centre of vision, horizontal line and ground line, and of the centre of vision, line of direction and station point. The manner of doing this is shown in fig. 2. The picture plane is supposed to be rotated upon the ground line, and the spectator to be rotated in the same direction upon the point where he stands until the horizontal line, centre of vision, line of direction and station point occupy positions in the horizontal or ground plane. The lines and points mentioned will then appear as hown in fig. 3.

In all probability every one who reads this has, at some time, stood between the rails of a railway and noticed how they appear to approach one another in the distance, and finally meet in the horizon. The same apparent convergence of lines can be seen in any room, or in the street where the sidewalks, the lines of windows and doors, the tops of houses, etc., all appear to approach one another. The different points where these lines would, if produced, ultimately meet are called Vanishing Points (V.P.),



Fig. 4.

and experiment will satisfy any one that all parallel retiring lines appear to meet in the same point, and that all parallel horizontal retiring lines appear to meet in the horizon.

In the illustration of the railway track (fig. 4) where the spectator is supposed to be standing on one of the rails, the rails appear to meet in one point in the horizon, and this point is the point towards which the gaze is directed (C.V.). The rails in this case are parallel to the line of direction, and their vanishing point is where they disappear on account of the rotundity of the earth. This can be proved by standing upon each of the rails in succession, where there are several parallel to each other.

If the spectator turns either to the right or left until he looks in a direction at an angle of 45° with the tracks, their vanishing



point will not be changed, but will occupy a new position with regard to the spectator and his line of direction; that is, what was his centre of vision and the vanishing point of the rails, will still be their vanishing point when they form an angle of 45° or any other angle with the line of direction.

From this it is evident that if any horizontal line be followed until it cuts the horizon, it will find there its own vanishing point.

Suppose that the circumference of the circle in fig. 5 represents the complete horizon visible to a spectator stationed at SP. When looking towards A his centre of vision will be the point A, but when looking towards B his centre of vision will be the point B. The direction of his line of direction, and consequently of his picture plane, which is always perpendicular to the line of direction, changes with every change of his position, and what was