2nd. When the yard is adopted as the unit of length, the scale is marked out by white target lines 0.004 yards wide at each hundredth and each half a hundreth of a yard, which are connected in the centre by a white bead $\circ \partial 01$ yd, wide; the whole handredth lines being left the full width of the scale strip, but the half handredth lines only one-half this width. The direction in which the readings are increasing is moreover shown by four heavy black lines of gradually increasing lengths, put in opposite the first, second and third quarters of each tenth and at the upper end of the same.

The figures denoting the feet or yards are painted red, while those indicating the tenths are painted black and a little smaller than the former; each figure invariably having its centre opposite the centre of the corresponding division. On the rol divided into yards, the number of whole yards cut off by the cross wire above 0 is also indicated in the centre of each tenth of a yard, by a corresponding number of dots painted red.

A rod with a scale of yards and decimals has the advantage of being less charged with figures than a self-reading rod subdivided into feet, tenths and handredths, but a rod divided into feet, such as shown on plates II and III in pocket, is perhaps better adapted, on the whole, to the requirements of the engineering profession. With a view of facilitating the precise determination of rod intervals at short range, supplementary division lines, one-half hundredth of a foot centre to centre, have been drawn in black along the whole length of the foot scale, so as to interfere as little as practicable with the clearness of the main white target lines.

The indiscriminate use of one and the same target line or stripe or series of target lines of the same width, for very short as well as for comparatively long sights, does not appear to me to permit of the observer making uniformly accurate pointings throughout, or of the eye estimating with a uniform degree of precision the space that intervenes between the apparent line of intersection of the horizontal wire with the rod and the nearest division work of the rod scale.

In operating with the self-reading telemeter or tacheometer rods at present in use, so far as I am aware, it is apparently taken for granted that the subdivision by the eye of, say one contimeter or any other standard interval, into decimal or other alignot parts, leads to the same relative degree of accuracy in the results whether it is effected at a distance of say 5 or 6 meters, or at 100 or 200 meters, and in all cases where no micrometer measurements are made the smallest subdivisions read off and recorded are usually either thousandths of a meter or thousandths of a foot, whether the rod is put up very close to the instrument or very far from it. Yet, it must be admitted we can, in general, no more determine the elevation of a level line of sight with the same degree of accuracy, by locating it with the eye within the limits of a centimeter division of a rod only 5 or 6 meters off, as by locating it within the same rod division, at a distance of from 100 to 200 meters-than we can lay off an angle of a given number of degrees and minutes with a 3-inch protractor as accurately as with a 3-foot circle; an error made at 5 meters is, in comparison to the distance, evidently much greater than the same error in the reading made at a 100 or 200 meters from the instrument.

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