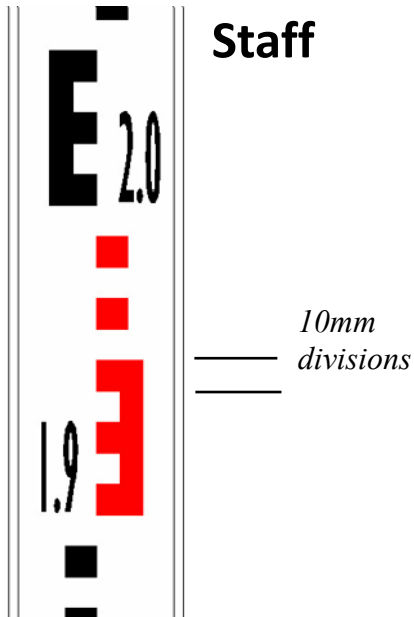
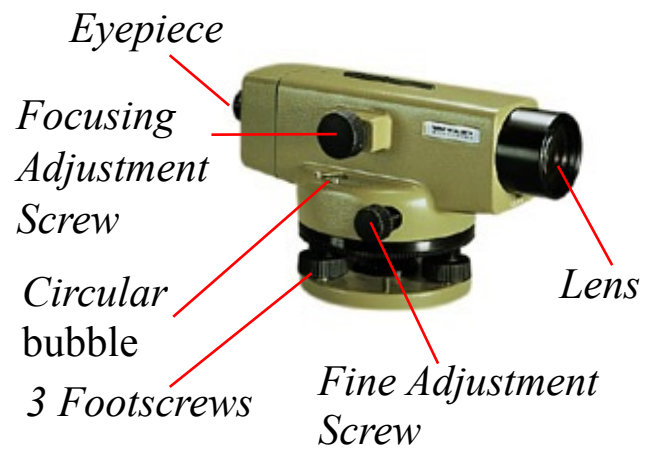


LEVELLING

Conventional Staff



Automatic Level



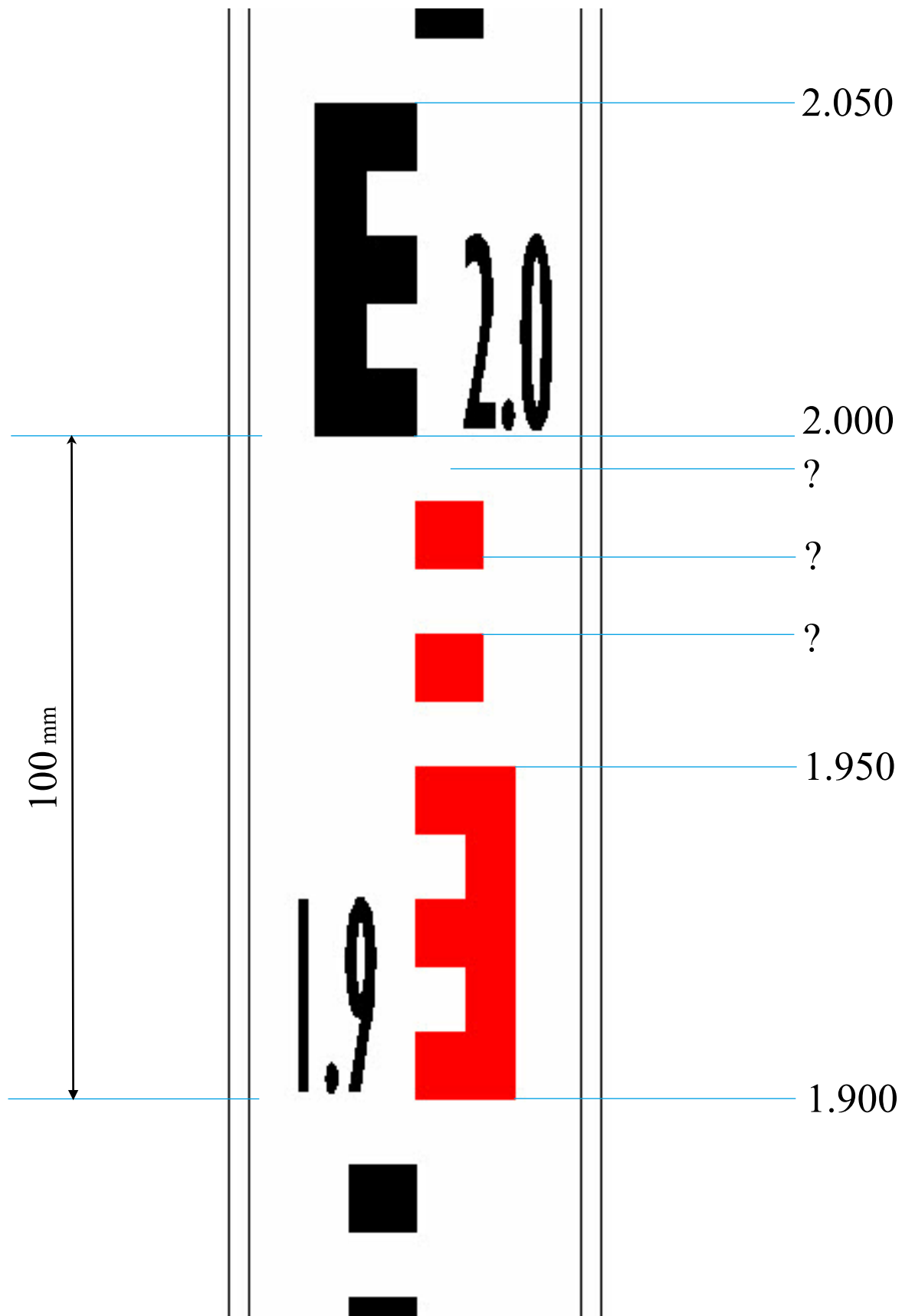
Digital Level



Digital Staff (Barcode)



Conventional Metric Levelling Staff



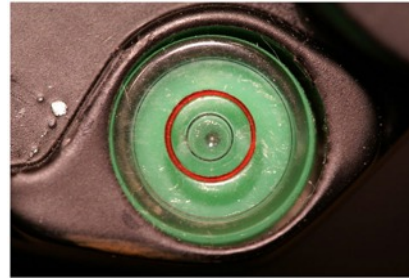
Principles of Levelling

Levelling is the method of obtaining the difference in height (the vertical distance) between a minimum of two points.

The example in Fig. 2 below shows the instrument (the level) set up between two points A and B. The instrument is temporarily adjusted (known as *temporary adjustment* i.e. *It is levelled so that the spirit bubble is either in the middle of the graduations or, if it is a circular bubble type, in the middle of its circle, Fig. 1*).



Longitudinal Bubble



Pond or Bull's Eye bubble type

Figure 1. Types of bubbles

The staff is placed at Point A. The reading on the staff is taken as 2.280. The staff is then placed at point B and the reading is taken as 1.460.

The difference in height between Point A and Point B is therefore $2.280 - 1.460 = 0.820$.

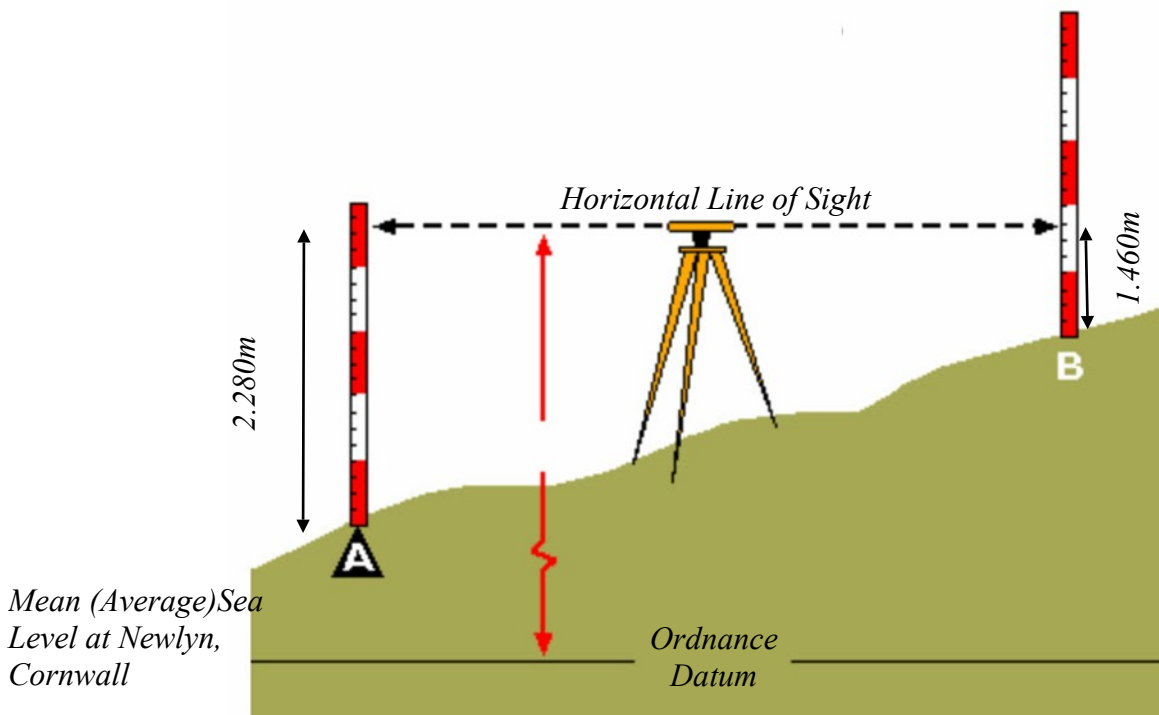


Figure 2. The difference in height between 2 points, A and B

Datum

A datum is the level of a horizontal reference plane.

Ordinance Datum

This is the mean (average) sea level at Newlyn, Cornwall measured by the Ordnance Survey Tidal Observatory for 6 years from 1915 to 1921.

Ordinance Bench Marks (OSBM's)

These give the height of points above Ordnance Datum. The marks are chiseled into the faces of features in the landscape which are considered to be fairly permanent such as buildings, walls etc. Figure 3 shows two types of benchmark, Primary and Secondary.



Primary



Secondary

Figure 3. Primary and Secondary benchmarks