

The method of construction is as follows: A piece of glass tube of suitable and uniform diameter is chosen for the stem, and the cylindrical body attached to it. A paper millimetre scale is inserted into the stem, and mercury poured in until it sinks to the lowermost division in distilled water of 15° C. It is now necessary to calibrate the stem. This is done by immersing the instrument in distilled water of 15° C. and loading the stem by placing known weights on the top of it, and reading the consequent depression. In order that this may be done conveniently, the stem is not sealed up at the top, but slightly widened out to a funnel-shaped opening, on the edges of which decigramme weights rest securely. The value of the scale having been thus determined, the stem is sealed up, and the now finished instrument is very carefully weighed, and its weight *in vacuo* calculated. By immersing it in distilled water of different temperatures, its volume for different temperatures is obtained. The instrument is now finished, so far as determining specific gravities very little above that of distilled water is concerned. In order to extend the range of the instrument, a series of weights is made, such that it shall always be possible to sink the instrument within the limits of this scale in solutions whose specific gravities lie between 1 and 1.034. The lightest of these weights is a small table, capable of being placed securely on the top of the stem, and destined, when greater weight is required, to carry any of the others. These are made of about the calculated weight, after which their true weight is accurately determined. A cheap and ready way of making these weights was found to be, to cut the lightest out of sheet brass of suitable thickness; then, as it is quite sufficient to make the weight of the others as nearly as possible simple multiples of the first, to cut out a number of pieces of brass of the same size as the first; for the second weight solder two of them, for the third, three of them, together, and so on. They are then trimmed with the file and accurately weighed.