

And the oftener the unit is repeated (when it once becomes wearisome), the greater is the difficulty of keeping up the necessary attention, and the greater therefore the amount of error to be feared in each case. To diminish this source of accumulating error (besides the saving of time), it is desirable to diminish the number and increase the nicety of these juxtapositions. Hence the utility and convenience of creating an intermediate unit or set of such units or "Base-measuring bars," and of devising some means of juxtaposing or laying them end to end, without the derangement of one by the small shock arising from the contact (however delicately performed) of its successor. These bars should not be so long as to prevent their being conveniently manageable, yet long enough to diminish greatly the requisite number of *their* repetitions. The bars now actually used for this purpose are miracles of ingenious contrivance and delicate workmanship. They are *self-compensating for changes of temperature*; that is to say, the two fine dots which mark the two extremities of the measure remain exactly at the same distance from each other whatever be the temperature of the bars, which are compound ones of two differently expansible metals combined on a principle devised by the late Lieutenant Drummond. And their repetition is performed, not by driving the end of one against the other, or by laying dot against dot, but by *focussing* a detached microscope on the more advanced dot, removing the bar and bringing the other dot under the microscope to occupy the exact position in the centre of its field (marked by a cross wire) which its predecessor