water, the "wave-length," or "length of an entire undulation," is the linear distance between two consecutive *crests* or two consecutive *troughs*. This is its simplest conception, and it will suffice for our immediate purpose. The waves being equal and similar will all run on with the same velocity, which may be ascertained by noticing how long any one takes to run over a measured distance on the surface, or the distance run over in a determinable time, suppose a second. And if at the same time we note the number of waves whose crests pass a fixed point (a float, for instance) in the surface, in a second of time the interval between two consecutive crests will of course become known. And *vice versâ*, if this interval be known, and the velocity of the waves; the number of undulations passing the float per second is easily calculated. Now *this number is necessarily identical with that of the periodically reciprocating movements or vibrations of the first mover* (whatever it be) *by which the waves are originally excited.* This continuing the same, the same number of waves will pass the float in the same time, whatever be their velocity of propagation. Of these three things—the velocity of propagation, the number of alternating movements, waves, or pulses per second, and the linear interval between two consecutive ones—any two being given, the third is easily calculated. For example, a string sounding a certain note C in the musical scale makes 256 *complete* oscillations to and fro, per second. As each of these sends forward an air-wave consisting of a semi-wave of *compression* by which the particles of air advance, and