

miles is absolutely too little to measure it by—is in fact, contained within it so many times, that the number cannot at present be counted! On the other hand, we shall presently find, that the molecules of matter of which the objects we see around us are composed, are so minute, that a measure scarcely appreciable by the unassisted sight—the thousandth part of an inch, for example—is vastly too large to compare them with, and may in fact comprise millions of them!

*Experience*, the great and ultimate source of all the knowledge we possess of those portions of nature, to which our senses, and faculties, are limited, may be acquired in two ways; by simple observation, and by experiment; that is to say, either “by noticing facts as they occur, without any attempt to influence the frequency of their occurrence, or to vary the circumstances under which they occur;” or, “by putting in action causes and agents over which we have control, and purposely varying these combinations, and noticing what effects take place.”\* Now in all the higher departments of knowledge, the objects of which are principally matter, and its motions in the aggregate; the information we can acquire by one or both these means is so complete, and at the same

\* Herschel's Discourse on the Study of Natural Philosophy, p. 76.