as the elucidation of some of the most obscure and interesting points in the doctrine of heat.

(267.) From what has been said, it is clear that if we look upon solid bodies as collections of particles or atoms, held together and kept in their places by the perpetual action of attractive and repulsive forces, we cannot suppose these forces, at least in crystallized substances, to act alike in all directions. Hence arises the conception of *polarity*, of which we see an instance, on a great scale, in the magnetic needle, but which, under modified forms, there is nothing to prevent us from conceiving to act among the ultimate atoms of solid or even fluid bodies, and to produce all the phenomena which they exhibit in their crystallized state, either when acting on each other, or on light, heat, &c. It is not difficult, if we give the reins to imagination, to conceive how attractive and repulsive atoms, bound together by some unknown tie, may form little machines or compound particles, which shall have many of the properties which we refer to polarity; and accordingly many ingenious suppositions have been made to that effect: but in the actual state of science it is certainly safest to wave these hypotheses, without however absolutely rejecting them, and regard the *polarity of matter* as one of the ultimate phenomena to which the analysis of nature leads us, and of which it is our business fully to investigate the laws, before we endeavor to ascertain its causes, or trace the mechanism by which it is produced.

(268.) The mutual attractions and repulsions of the particles of matter, then, and their polarity, whether regarded as an original or a derivative property, are the forces which, acting with great energy, and within very confined limits, we must look to as the principles on which the intimate constitution of all bodies and many of their mutual actions depend. These are what are understood by the general term of *molecular forces*. Molecular attraction has been attempted to be confounded by some with the general attraction of gravity, which all matter exerts on all other matter; but this idea is refuted by the plainest facts.