

duced. In the disruption of one chemical combination, and the constitution of another, a movement of mutual approach, more or less direct, is communicated to the uniting molecules, which, under the influence of enormous coercive powers, is converted into a series of tremulous, vibratory, or circulating movements communicated from them to the luminiferous ether, and so dispersed through space. Incandescence without combustion (as in a piece of red-hot iron) must be looked upon, from this point of view, as a result of the continuance of this vibratory movement after the primary exciting cause has ceased, and of its gradual decay by communication to the surrounding ether; as a musical string continues to sound after the blow which set it in motion, till gradually brought to rest by the surrounding air.

(99.) This may perhaps appear a digression from our subject. But it will be recollected that our object in these lectures is not to produce a treatise on optics, but to fix attention on the immensity of the forces in action, and the minuteness and delicacy of the mechanism which they animate in the most ordinary operations of Nature, and which the phænomena of light have been the means of revealing to us. We have no means, indeed, of measuring the *actual* intensity of the "coercive forces" so called into action in the excitement of a luminous vibration, but that we are fully justified in applying to them the epithet "enormous," the following consideration will suffice to show. Whatever be the extreme distance of excursion to which a vibrating molecule is