scale, and the amplitude or height of the wave-motion of which decided its intensity. There was floating about the vague idea that heat also was to be interpreted as a mode of motion; still vaguer were the kinetic notions as to electricity and magnetism; whilst some early attempts to explain gravity, not as an inherent property of matter, but as a consequence of the motion of matter itself, which was possessed merely of inertia, had been half forgotten.

22. Other kinetic theories.

There is no doubt that the successful development of the undulatory theory of light induced many minds to dream of an ultimate kinetic explanation or interpretation of all natural phenomena, when in the course of the third quarter of the century this direction of thought received a great impetus through three independent branches of research of a purely theoretical kind. These have led to a very remarkable development of the kinetic view of nature; in fact it is mainly through them that this view has become possible not only in special departments, but on a universal scale. They have, each in its own way, led to a great extension of our experimental knowledge; one of them has likewise led to many practical applications. What most interests us here is the peculiar direction which they have given to a great volume of mathematical and physical thought of our day.

23. Kinetic theory of gases.

The first of these lines of research was connected with, and grew out of, the atomic hypothesis. It culminated in the kinetic theory of gases, in which the names of Joule, Clausius, and Clerk Maxwell are prominent. Of this I have treated already in the fifth chapter. It rests on a study of the average effect produced by a