

bining purpose which must arise, on finding that an agent, possessing these very peculiar chemical properties, is employed to produce also those effects of illumination, vision, &c., which form the most obvious portion of the properties of light.

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## CHAPTER XIV.

### *Sound.*

BESIDES the function which air discharges as the great agent in the changes of meteorology and vegetation, it has another office, also of great and extensive importance, as the vehicle of sound.

1. The communication of sound through the air takes place by means of a process altogether different from anything of which we have yet spoken: namely, by the propagation of minute *vibrations* of the particles from one part of the fluid mass to another, without any local motion of the fluid itself.

Perhaps we may most distinctly conceive the kind of effect here spoken of, by comparing it to the motion produced by the wind in a field of standing corn; grassy waves travel visibly over the field, in the direction in which the wind blows, but this appearance of an object moving is delusive. The only real motion is that of the ears of grain, of which each goes and returns, as the stalk stoops and recovers itself. This motion affects *successively* a line of ears in the direction of the wind, and affects *simultaneously* all those ears of which the elevation or depression forms one visible wave. The elevations and depressions are propagated in a constant direction, while the parts with which the space is filled only vibrate to and fro. Of exactly such a nature is the propagation of sound through the air. The particles of air go and return through very minute