

The second law, "*The intensity of sound increases with the amplitude of the vibrations of the sonorous body,*" is readily observed by means of vibrating strings. If these strings are sufficiently long the oscillations are perceptible, and the sound is feebler as the amplitude of the oscillations decreases. The third law, "*The intensity of sound depends on the density of the air in the place in which it is produced,*" has been already illustrated by the ringing of the alarm clock placed in vacuo. Until the air was exhausted, the tinkling of the bell could be heard, but as the air became more rarefied it got weaker, and the nearer the approach to a perfect vacuum the less distinct was the sound. With intensity are closely allied reflection and refraction, and though we have treated them as distinct qualities of sound, they are perhaps, merely subdivisions of the first mentioned.

"So long as sound waves are not obstructed in their motion they are propagated in the form of concentric spheres; but when they meet with an obstacle they follow the general law of elastic bodies, that is, they return upon themselves, forming new concentric waves, which seem to emanate from a second centre on the other side of the obstacle. This phenomenon constitutes the reflection of sound. To illustrate: Two concave discs, A and B, are placed 25 feet apart; a watch is laid immediately in front of B. Now as I proceed toward A, the ticking is distinctly heard at the focus point of the other disc. When I move from that particular spot no sound is perceptible. If any point of the reflecting surface A, be joined to the centre from which the sound issued, and if a perpendicular be let fall, the angle formed is called the angle of incidence, and this angle, as the ticking of the watch proves, equals the angle of reflection." It will therefore be seen that the same laws govern the reflection of sound as do reflection of light. "Sound, like light," says Tyndall, "may be reflected several times in succession, and as the reflected light under these circumstances become gradually feebler to the eye, so the successive echoes become gradually feebler to the ear." We have all heard of Killarney and the famous echo in the Gap of Dunloe. A trumpet sounded at a certain point in the Gap, the same tone, though less intense, repeats itself on the adjacent cliffs until it dies away in sweetest cadence.