

The timbre or quality of sound is that peculiar property of a note which distinguishes the same notes on different instruments. To illustrate; *do* is sounded on the clarionet and flute; they have the same pitch, being produced by an equal number of vibrations, and yet the two notes have very distinct qualities; that is, their timbre is different. All bodies employed for producing musical sounds emit, besides their fundamental tones, tones due to higher vibration. Such tones Tyndall calls overtones. It was the addition of these to fundamental tones of the same pitch which enabled us to distinguish the clarionet from the flute. Were it possible to detach the pure fundamental tones of the two instruments, they would be undistinguishable from each other; but the mingling of overtones renders their timbre different and hence distinguishable. Instruments are then divided into two great classes; namely, stringed instruments, the most common being the violin, harp, piano; and wind instruments, of which the flute and clarionet are best known to us.

St. Thomas, considering the age in which he lived, had a thorough knowledge of Physics. Treating sound he says; "Sound may also be affected by the density of the air, because when the air is dense and put into motion with more difficulty, its reaction is greater, consequently sound becomes louder". "We are now considering intensity. Intensity depends principally on the mechanical impulse given the sounding body, the amplitude of the vibrations, the density of the medium through which the sound must pass, and the presence of resonant bodies; and these give rise to various laws regarding this quality of sound, the first of which is, that, "*The intensity varies inversely as the square distance of the sounding body from the ear.*" Ganot's proof of this law is as follows: Let us suppose several sounds of equal intensity—for instance bells of the same kind, struck by a hammer of the same weight, falling from equal heights. If four of these bells are placed at a distance of 20 yards from the ear, and one at a distance of 10 yards, it is found that the single bell produces a sound of the same intensity as the four bells struck simultaneously. Consequently, for double the distance, the intensity of the sound is only one fourth.