

fere with the aid which the sensation confined to one ear affords us, as to the direction of external sounds.

The sounds of which we have been treating as differently affecting the two ears, according to the intensity with which they are respectively communicated are of the same character, though differing in intensity. It is sounds of the same character only which exhibit the phenomenon of restriction in virtue of moderately different intensity. The sounds must emanate from the same sounding body, or from bodies sounding similarly. A little difference in *character* will cause the experiment of restriction to fail.

Thus if two bells, differing considerably in character, be rung respectively in the two ears, one louder and graver than the other, the louder and graver sound does not render the other ear insensible to the weaker sound of the weaker bell. Both ears hear perfectly, but the loud, grave sound is heard in one ear, and the weak sound is heard in the other.

If, instead of one watch, we place two together, having sounds of different character, as for instance one low and grave, the other loud and sharp, and the two arms of the stethophone be placed over them respectively, the sounds of both watches are heard, but the sound of one is heard in one ear, and the sound of the other is heard in the other ear. The loudness of the sound in one ear does not increase the weakness of the sound in the other; or, in other words, the intensity of the sensation produced by the weak watch in the one ear, is not reduced by the sensation produced by the loud watch in the other ear.

The sound of a watch ticking continues to be heard in one ear, although a large sized bell is made to ring at the other; and I have not perceived that the sensation produced by the watch is at all impaired by the bell. A whistling, lung-sound heard in one ear, is not rendered less obvious by a loud, blowing lung-sound in the other. A hissing murmur at the apex of the heart conveyed into one ear, and a rasping sound at the base conveyed into the other, are both heard without alteration in the ears to which they are respectively conveyed.

By virtue of these two laws, 1st, That sounds of the same character are restricted to that ear into which they are conveyed in greater intensity, and 2nd, That sounds differing in character may be heard at the same time in the two ears respectively, even if they be made to reach the ears in different degrees of intensity; it is possible to analyse a compound sound, or one composed of two sounds, and to divide it into its component parts. In order to effect a division of a compound sound, it is only necessary that the two sounds of which it is composed may respectively be heard at certain points, in greater or lesser intensity, and that the respective cups of the stethophone be placed at these points. The ear connected with the cup, placed where one half of the sound is in greater intensity, hears that half sound only, and the ear connected with the cup placed where the other half of the sound is in greater intensity, hears that half sound only. The sound is divided into two parts, the one is heard in one ear, and the other part in the other ear. For example, the compound sound composed of the two sounds of the two watches placed together upon a table, with the unassisted ear is distinctly heard in its compound state, and cannot be divided into its two constituent parts. With the stethophone this is readily done. One cup is placed