

series of simple but ingenious apparatus by which these partial notes could be analysed, isolated, and made specially audible, or by which the ground tone could be purified, and thus led up to his conception of the human ear—the different parts of which he analysed anatomically and acoustically—as a most delicate resonator which separately absorbed the different elementary periodic movements that constitute musical sounds, the different nerve-fibres carrying them separately to the central organ of perception.¹ On the bases of these distinctions, Helmholtz succeeded in giving an accurate definition² of that property of musical notes termed “timbre” by the French, “Klangfarbe” by the Germans—that peculiar colouring or texture which characterises the same note³ if produced by different instruments. He

15.
“Timbre”
defined.

¹ See ‘Die Lehre von den Tonempfindungen,’ 1st ed., 1863, pp. 92, 95, 97. “The main result of our description of the ear can be thus stated, that we have found that everywhere the ends of the auditory nerve are connected with special auxiliary apparatus, partly elastic, partly solid, which under the influence of external vibrations are made to vibrate correspondingly and then probably affect and agitate the nerve-substance” (p. 212).

² Helmholtz was the first to give a positive definition of “timbre.” As he himself says (p. 114), before him it meant all the peculiarities of a musical sound which are not defined by its intensity or its position in the scale—*i.e.*, its “pitch.” Of these he eliminates all such as are connected with the beginning, rising, and dying away of sounds, and deals only with sounds which are uniformly maintained (p. 116).

³ The terminology of acoustics

and of music has been considerably changed, especially in this country, through scientific literature, in which the work of Helmholtz forms a kind of epoch. According to Lord Rayleigh (‘Sound,’ vol. i. § 22, 1st ed.), the word “tone” in the English language has been adopted by Tyndall to denote a musical sound which cannot be further resolved. The word was used before, but in a general sense, not limited only to sounds, and where now “tone” is used in works on acoustics, the word “note” was more usually employed. Sir John Herschel (‘Encyclop. Metrop.,’ article “Sound,” 1845) does not consistently use the word “tone” as an equivalent for the German “Ton,” but makes use of “sound” or “note” or “tone” promiscuously. Still more uncertain was the terminology by which to express the quality of a musical sound other than loudness and