time after the vibrations of the external medium have ceased; as is shown by the sensation of a musical note being the result of the regular succession of aerial undulations, when the impression made by each continues during the whole interval between two consecutive vibrations. Whether light be caused by the emission of material particles, or the undulations of an ethereal fluid, its impulses on the retina are unquestionably consecutive, like those of sound, but being repeated at still shorter intervals, they give rise to a continuous impression. A familiar instance of the same principle occurs in the appearance of an entire luminous circle, from the rapid whirling round of a piece of lighted charcoal; for the part of the retina which receives the brilliant image of the burning charcoal, retains the impression with nearly the same intensity during the entire revolution of the light, when the same impression is renewed. For the same reason a rocket, or a fiery meteor, shooting across the sky in the night, appears to leave behind it a long luminous train. The exact time, during which these impressions continue, after the exciting cause has been withdrawn, has been variously estimated by different experimentalists, and is very much influenced, indeed, by the intensity of the impression.*

* Many curious visual illusions may be traced to the operation of this principle. One of the most remarkable is the curved appearance of the spokes of a carriage wheel rolling on the ground, when viewed through the intervals between vertical parallel bars, such as those of a palisade, or Venetian window-blind. On studying the circumstances of this phenomenon, I found that it was the necessary result of the traces left on the retina by the parts of each spoke which became in succession visible through the apertures, and assumed the curved appearances in question. A paper, in which I gave an account of the details of these observations, and of the theory by which I explained them, was presented to the Royal Society, and published in the Philosophical Transactions, for 1825, p. 131. About three years ago, Mr. Faraday prosecuted the subject with the usual success which attends all his philosophical researches, and devised a great number of interesting experiments on the appearances resulting from combinations of revolving wheels; the details of which are given in a paper contained in the first volume of the Journal of the Royal Institution of Great Britain, p. 205. This again directed my attention to the subject, and led me to the invention of the instrument which has since been introduced into notice under the name of the Phantas-