

that innumerable cilia or miniature lamellæ clothe the surfaces of their tentacula, and by their rapid vibrations drive a constant equable stream of water along one side, which returns along the other in an opposite direction : and by this means the purposes of respiration are effected, and the nutrient fluid fitted for assimilation with the body. The cilia, to adopt the language of Professor Grant, "are disposed and moved in such a manner as that the streams which they produce in the surrounding water are driven along the one side of the tentaculum from the mouth of the polypus, and on the other side of the tentaculum always towards the mouth of the polypus. And we never find that direction of their motion reversed, or that direction of the currents changed, by which their respiration is effected and their food obtained. They are vibratile on the arms of most of the lower zoophytes, as sertulariæ, plumulariæ, serialariæ, cellariæ, flustræ, alcyonia, which keep their arms stiffly out in a regular campanulate form, while the currents flow to their mouth. When we watch the sides of the tentacula of these animals with attention, and by the aid of powerful glasses, we see the extreme rapidity of the movements, and the remarkable regularity of the form, disposition, and motions, of those singular vibratile bodies. From the number of them, exceeding sometimes 400,000,000 in a single animal, it is not probable that their extraordinary movements are the result of any spontaneous efforts of the animal, or are accompanied with any kind of perception or consciousness in these animals, which have never been found to present a single nerve in their bodies. The independent nature of the motion of those minute respiratory organs is observed when we cut off the tentacula altogether ; and observe, that

expiration in the Infusoria and the Mollusca. The difference, then, between the density of the water expired and that of the surrounding water, proceeds from a difference of temperature." P. 297.—Raspail has defended this explanation of the phenomena at great length in the Mem. de la Soc. d'Hist. Nat. de Paris, Tome iv. p. 131—142.—Dr Mayer also denies the existence of cilia, and concludes that the motion is produced by a peculiar substance named by him "vibratory matter," which adheres to the surfaces on which the phenomenon shows itself. Brit. and Foreign Med. Rev. Vol. iii. p. 467. The explanation of Raspail, and the foolish hypothesis of Mayer, are completely disproved by the observations of Professor Grant on the Berœe ; (Trans. Zool. Soc. i. p. 11.) and of Dr Sharpey on numerous animals.—Edin. New Phil. Journ. July 1835.