

laws of structure competent to apply to this or that phænomenon. I will, however, mention one or two facts in acoustics which appear to me strongly illustrative of corresponding phænomena in the propagation of light. The first of these is the impeded propagation of sound in a mixture of gases differing much in elasticity as compared with their density. The late Sir J. Leslie's experiments on the transmission of sound through mixtures of hydrogen with atmospheric air sufficiently establish this remarkable effect. It would be desirable to prosecute those experiments in larger detail, but hitherto I am not aware of anybody having ever repeated them. It would be interesting, for instance, to inquire whether the impediment offered by such a mixture of gases be the same for all *pitches* of a musical note, or not ; and how far this phænomenon might be imitated by mixing actual *dust* of a uniform size of particle, such as the dust of Lycoperdon, &c. ; or aqueous fog, and how far such mixture would affect unequally sounds of different pitches.

(19.) The other fact in the science of acoustics which I would notice as illustrative of a corresponding phænomenon in photology, is one observed by Mr Wheatstone, which I have his permission to mention. In attempting to propagate vibrations along wires, rods, &c., to great distances, he was led to remark a very great difference in respect of facility of propagation between vibrations longitudinal and transverse to the general direction of propagation. The former were readily conveyed with almost undiminished intensity to any distance ; the latter were carried off so rapidly by the air, as to be incap-