

of stars when viewed through telescopes of great magnifying power, and with apertures either of the usual circular form, or of forms otherwise varied for this express purpose. And though last in our order of enumeration, by far the most important and instructive as elucidatory of the principle of explanation, applicable to all the phænomena of this class;—the coloured fringes seen to follow the outlines of shadows when thrown by a light emanating from an extremely small but intensely luminous point. With these, therefore, we shall begin.

(102.) It was objected to the undulatory theory of light by Newton himself, that sound, to which that theory assimilates it, spreads from an aperture through which it is transmitted, or round the edge of an intercepting screen of any kind, equally in all directions; and thus, were the analogy exact, there could be no shadows. The objection is founded partly on an imperfect statement of the fact, and partly on omitting to allow for possible differences in the natures of the conveying media, and in the modes of vibratory motion conveyed. Every one is familiar with the sudden outbreak of sound from a railway train heard at a great distance when it emerges from a cutting, or turns the corner of a wall or of a hill. Sound is propagated through water with greater sharpness, velocity, and distinctness, than through air. But an obstacle interposed under water, as a projecting pier, or a rock, cuts off the *rays of sound*, as appears from direct experiment, with much greater definiteness than in air, and casts, so to speak, an evident acoustic shadow. Nor will it appear at all surprising that an effect of this