Jupiter himself; occasionally, however, as shown by recent observations, they appear like gray spots on the planet. The rays or tails, which to our eyes appear to radiate from the planets and fixed stars, and which were used, since the earliest ages of mankind, and especially among the Egyptians, as pictorial representations to indicate the shining orbs of heaven, are at least from five to six minutes in length. (These lines are regarded by Hassenfratz as caustics on the crystalline lens: *intersections des deux caustiques*.)

"The image of the star which we see with the naked eye is magnified by diverging rays, in consequence of which it occupies a larger space on the retina than if it were concen-

As a remakable instance of acute vision, and of the great sensibility of the retina in some individuals who are able to see Jupiter's satellites with the naked eye, I may instance the case of a master tailor, named Schön, who died at Breslau in 1837, and with reference to whom I have received some interesting communications from the learned and active director of the Breslau Observatory, Von Boguslawski. "After having (since 1820) convinced ourselves, by several rigid tests, that in serene moonless nights Schön was able correctly to indicate the position of several of Jupiter's satellites at the same time, we spoke to him of the emanations and tails which appeared to prevent others from seeing so clearly as he did, when he expressed his astonishment at these obstructing radiations. From the animated discussions between himself and the by-standers regarding the difficulty of seeing the satellites with the naked eye, the conclusion was obvious, that the planet and fixed stars must always appear to Schön like luminous points having no rays. He saw the third satellite the best, and the first very plainly when it was at the greatest digression, but he never saw the second and the fourth alone. When the air was not in a very favorable condition, the satellites appeared to him like faint streaks of light. He never mistook small fixed stars for satellites, probably on account of the scintillating and less constant light of the former. Some years before his death Schön complained to me that his failing eye could no longer distinguish Jupiter's satellites, whose position was only indicated, even in clear weather, by light faint streaks." These circumstances entirely coincide with what has been long known regarding the relative luster of Jupiter's satellites, for the brightness and quality of the light probably exert a greater influence than mere distance from the main planet on persons of such great perfection and sensibility of vision. Schön never saw the second nor the fourth satellite. The former is the smallest of all; the latter, although the largest after the third and the most remote, is periodically obscured by a dark color, and is generally the faintest of all the satellites. Of the third and the first, which were best and most frequently seen by the naked eye, the former, which is the largest of all, is usually the brightest, and of a very decided yellow color; the latter occasionally exceeds in the intensity of its clear yellow light the luster of the third, which is also much larger. (Mädler, *Astr.*, 1846, s. 231–234, and 439.) Sturm and Airy, in the *Comptes Rendus*, t. xx., p. 764–6, show how, under proper conditions of refraction in the organ of vision, remote luminous points may appear as light streaks.