

teaching distinctly that the law of refraction was to be applied, not to the beam of light in general, but to the colors in particular.

When Newton produced a bright spot on the wall of his chamber, by admitting the sun's light through a small hole in his window-shutter, and making it pass through a prism, he expected the image to be round; which, of course, it would have been, if the colors had been produced by an equal dispersion in all directions; but to his surprise he saw the image, or *spectrum*, five times as long as it was broad. He found that no consideration of the different thickness of the glass, the possible unevenness of its surface, or the different angles of rays proceeding from the two sides of the sun, could be the cause of this shape. He found, also, that the rays did not go from the prism to the image in curves; he was then convinced that the different colors were refracted separately, and at different angles; and he confirmed this opinion by transmitting and refracting the rays of each color separately.

The experiments are so easy and common, and Newton's interpretation of them so simple and evident, that we might have expected it to receive general assent; indeed, as we have shown, Descartes had already been led very near the same point. In fact, Newton's opinions were not long in obtaining general acceptance; but they met with enough of cavil and misapprehension to annoy extremely the discoverer, whose clear views and quiet temper made him impatient alike of stupidity and of contentiousness.

We need not dwell long on the early objections which were made to Newton's doctrine. A Jesuit, of the name of Ignatius Pardies, professor at Clermont, at first attempted to account for the elongation of the image by the difference of the angles made by the rays from the two edges of the sun, which would produce a difference in the amount of refraction of the two borders; but when Newton pointed out the calculations which showed the insufficiency of this explanation, he withdrew his opposition. Another more pertinacious opponent appeared in Francis Linus, a physician of Liege; who maintained, that having tried the experiment, he found the sun's image, when the sky was clear, to be round and not oblong; and he ascribed the elongation noticed by Newton, to the effect of clouds. Newton for some time refused to reply to this contradiction of his assertions, though obstinately persisted in; and his answer was at last sent, just about the time of Linus's death, in 1675. But Gascoigne, a friend of Linus, still maintained that he and others had seen what the Dutch physician had described; and Newton, who was pleased with the candor of Gas-