hear the next report, not when it is fired, that is at one o'clock, but rather a few seconds, or if he has travelled rapidly enough, many seconds after that hour. In other words, the sound occupied a certain time in traversing the distance separating him from the gun. By increasing the distance still more, the next discharge will be heard as many seconds more after two o'clock. Continuing onward, he will find that the gun is continually losing time, as it were. In Romer's experiment, the signal gun was the occultation of the satellite with an interval of forty-two hours, twenty-six minutes and thirty-six seconds instead of one hour. The station of observation was the earth itself, which at the time of the experiment was receding from Jupiter in its revolution around the sun. Now Romer found that at each return of the occultation there was a loss of a fractional part of a second which, gradually accumulating, amounted to a difference of sixteen minutes and thirty-six seconds between the position of the earth when nearest Jupiter and when farthest away, that is, the position on the opposite side of its orbit. This, Romer rightly attributed to the time occupied by light in travelling across the earth's orbit. Knowing this distance, he found the velocity of light to be one hundred and ninety thousand miles a second. So great is the velocity, that the time occupied by light in going from one point to another on the earth is altogether unappreciable to ordinary observation; in fact it would traverse the entire distance around the globe in less than one tenth of a second. In spite of this, Foucalt and Fizeau have devised methods by which it has been accurately determined. The results obtained agree very closely with those obtained by Romer, but a description of the experiments would be perpaps out of place here. They suppose a knowledge of optical instruments outside of our question. Foucault's experiment is of great importance, as it furnishes a means of determining the rate at which light travels through liquids and gases. The results obtained by all these scientists were the first to cast a shadow over the probability of the corpuscular theory. In the first place, how these minute and imponderable bodies called corpuscles, could be projected with such velocity, cannot be physically explained. In the second place, Foucault revealed the hitherto unknown fact that light travels in water, less quickly than in air. Now, a ray of light in passing from air into water is refracted, that is, its direction is altered, but in such a manner that to be satisfactorily explained by the corpuscular theory, necessitates the supposition that it would travel more rapidly in water. In spite of these facts the old theory was strongly adhered to by many scientific men.

Newton, especially, who is regarded as the leading physicist and mathematician of modern times and one of the greatest minds the world has yet seen, supported it so strongly that his authority prevailed. He was so convinced of the truth, that he went to a great trouble to answer the objections, but in an obscure and unsatisfactory manner. In the meantime, Hygeus brought forward a new difficulty, in the form of double refraction; a peculiar phenomenon, then noticed in the crystals of Iceland spar, and shortly afterwards he proposed the undulatory theory, now universally accepted.

According to this theory, the sensation of light is produced, not by