

and discoveries of many others in his own and later ages. His corpuscular theory suffered serious attacks, and broke down by the weight of experimental evidence in the early years of the last century, when it was displaced by the wave theory, which states, that light is propagated by undulations set in operation by a luminous body in the ether. The corpuscular theory, which teaches that luminous bodies emit extremely small corpuscles, which can freely pass through transparent substances, and produce the sensation of light by their impact upon the retina of the eye, received its final blow when J. B. L. Foucault proved by direct experiment that the velocity of light in water is not greater than in air as it should be according to the corpuscular theory, but less, as is required by the wave theory.

Newton also invented a reflecting telescope, which differs from the Gregorian, the Cassegrain and the Herschellian, and is the form most frequently used in ordinary present day reflectors, although the Cassegrain plan is used for the great Melbourne telescope, and for the 60-inch reflector of the Mount Wilson Solar Observatory. The Newton reflector consists of a large concave mirror, which reflects the image on a small plane mirror placed at an angle of 45° and thence to the eye piece, which is placed at the side of the instrument.

My principal object in this paper is to give an account of Newton's investigations and discoveries as to the theory of gravitation, which has made his name most celebrated.

When he turned his mind to this great subject he found that his way had, to a great extent, been prepared by the labors of other astronomers. A great alliance of distinguished men from the days when the worshipping astronomer Job was perplexed with questions,—“Whereupon are the foundations of the earth fastened? Who laid the corner stone thereof? When did the morning stars sing together and all the sons of God shout for joy?”—had long struggled to lighten up the labyrinths, and many a strong haud had grasped the barriers that held the secrets of nature, and had shaken but not opened them. Newton was the great leader of that phalanx, and it was reserved for