" whose action differed considerably from gravitation or the ordinary attracting force of the sun ; since those portions of the comet which constitute the tail are *acted upon by a repulsive force proceeding from the body of the sun.*"* The splendid comet of 1744, which was described by Heinsius, led my deceased friend to similar conjectures.

The actions of radiating heat in the regions of space are regarded as less problematical than electro-magnetic phenomena. According to Fourier and Poisson, the temperature of the regions of space is the result of radiation of heat from the sun and *all* astral bodies, minus the quantity lost by absorption in traversing the regions of space filled with ether.† Frequent mention is made in antiquity by the Greek and Roman‡ writers of this *stellar heat ;* not only because, from a universally prevalent assumption, the stars appertained to the region of the fiery ether, but because they were supposed to be themselves of a fiery nature§—the fixed stars and the sun being, according to the doctrine of Aristarchus of Samos, of one and the same nature. In recent times, the observations of the above-mentioned eminent French mathematicians, Fourier and Poisson, have been the means of directing attention to the average determination of the temperature of the regions of space ; and the more strongly since the importance of such determinations on account of the radia tion of heat from the earth's surface toward the vault of heaven has at length been appreciated in their relation to all thermal conditions, and to the very habitability of our planet. According to Fourier's *Analytic Theory of Heat,* the temperature of celestial space (*des espaces planétaires ou célestes*) is rather below the mean temperature of the poles, or even, perhaps, below the lowest degree of cold hitherto observed in the polar regions. Fourier estimates it at from —58° to —76° (from —40° to —48° Reaum.). The icy pole (*pôle glacial*), or the point of the greatest cold, no more

* Bessel, *op. cit.*, s. 186–192, 229.

† Fourier, *Théorie Analytique de la Chaleur*, 1822, p. ix. (*Annales de Chimie et de Physique*, tom. iii., 1816, p. 350; tom. iv., 1817, p. 128; tom. vi., 1817, p. 259; tom. xiii., 1820, p. 418.) Poisson, in his *Théorie Mathématique de la Chaleur* (§ 196, p. 436, § 200, p. 447, and § 228, p. 521), attempts to give the numerical estimates of the stellar heat (*chaleur stellaire*) lost by absorption in the ether of the regions of space.

‡ On the heating power of the stars, see Aristot., *De Meteor.*, 1, 3, p. 340, lin. 28 ; and on the elevation of the atmospheric strata at which heat is at the minimum, consult Seneca, in *Nat. Quæst.*, ii., 10: ' Superiora enim aëris calorem vicinorum siderum sentiunt."

§ Plut., *De plac. Philos.*, ii , 13.