

times that of Uranus, while α Centauri is 11,000, and 61 Cygni 31,000 times that of Uranus, according to Bessel's determinations.

Having considered the greatest distances of comets from the central body, it now remains for us to notice instances of the greatest proximity hitherto measured. Lexell and Burckhardt's comet of 1770, so celebrated on account of the disturbances it experienced from Jupiter, has approached the Earth within a smaller distance than any other comet. On the 28th of June, 1770, its distance from the Earth was only six times that of the Moon. The same comet passed twice, viz., in 1769 and 1779, through the system of Jupiter's four satellites without producing the slightest notable change in the well-known orbits of these bodies. The great comet of 1680 approached at its perihelion eight or nine times nearer to the surface of the Sun than Lexell's comet did to that of our Earth, being on the 17th of December a sixth part of the Sun's diameter, or seven tenths of the distance of the Moon from that luminary. Perihelia occurring beyond the orbit of Mars can seldom be observed by the inhabitants of the Earth, owing to the faintness of the light of distant comets; and among those already calculated, the comet of 1729 is the only one which has its perihelion between the orbits of Pallas and Jupiter; it was even observed beyond the latter.

Since scientific knowledge, although frequently blended with vague and superficial views, has been more extensively diffused through wider circles of social life, apprehensions of the possible evils threatened by comets have acquired more weight as their direction has become more definite. The certainty that there are within the known planetary orbits comets which revisit our regions of space at short intervals—that great disturbances have been produced by Jupiter and Saturn in their orbits, by which such as were apparently harmless have been converted into dangerous bodies—the intersection of the Earth's orbit by Biela's comet—the cosmical vapor, which, acting as a resisting and impeding medium, tends to contract all orbits—the individual difference of comets, which would seem to indicate considerable decreasing gradations in the quantity of the mass of the nucleus, are all considerations more than equivalent, both as to number and variety, to the vague fears entertained in early ages of the general conflagration of the world by *flaming swords*, and stars with *fiery streaming hair*. As the consolatory considerations which may be derived from the calculus of probabilities address themselves to reason and to