astronomer must know lie within the limits of chance and probability. It may hurry our globe towards the sun, or drag it to the outer regions of the planitary system, or give it a new axis of revolution—and the effect which I shall simply announce without explaining it, would be to change the place of the ocean, and bring another mighty flood upon our islands and continents." All this might certainly occur were comets composed of the same solid matter as the planets, amongst which they so frequently disport themselves. Their advent in that case might well be regarded with dread; but it is now almost a settled fact that, constituted as comets are, no such effects, in the case of a collision, could take place. Many of our readers may remember the great comet of 1858—Donati's—which flourished a tail extending at one time to 51 millions of miles, yet so attenuated that the stars could be seen through its mass. It is doubtful if any of the comets are self-luminous. The general impression amongst astronomers is, that all of them derive, like the planets, their light from the sun. It is almost certain that the earth was enveloped in the tail of the comet of 1861 at a distance of about two-thirds of its length from the nucleus. Mr. Hind calculated that the earth encountered the tail on the 30th of June. On that day there were atmospheric peculiarities which attracted attention. Mr. Lowe of Highfield House in England, without being aware that the earth was supposed to be shrouded in the comet, made the following observation in his diary—"a singular yellow phosphorescent glare, very like diffused Aurora Borealis. Not being daylight, such Aurora would scarcely be noticeable." He further adds that in the parish church, the Vicar had the pulpit candles lighted at 7 o'clock, which proves that a sensation of darkness was felt even while the sun was shining.

The remarkable relations known to exist between Jupiter and his satellites, as well as the long continued regularity of the earth's revolution round the sun, prove that the planets have not been perceptibly affected by the proximity of comets. Indeed, the comet of 1770 got entangled among the satellites of Jupiter, remaining near them for four months without affecting their motions or distance from their primary in the least degree, whilst the comet itself was, by the combined action of Jupiter and his satellites, drawn from its orbit, which required for a complete revolution only 5½ years, and was never again recognized in the new path which was thus prescribed for it. Comets are no longer regarded as the harbingers of calamity: nor does all that is known respecting their constitution, as we have indicated, warrant us in dreading the possible effect of the earth coming in collision with these gigantic but extremely attenuated bodies.

Previous to the time of Newton, comets were regarded as wandering stars subject to no law, but the sagacity of Newton conjectured their subjection to the great law of gravitation. The truth of his theory was soon confirmed by a calculation of the orbit of the comet of 1680. This remarkable body passing very near the sun, swept round it at the amazing rate of a million miles an hour—its period of revolution being set down at nearly six hundred years.

Two years afterwards, another comet appeared, the elements of whose orbit Halley calculated with great care. It was found that the period of its revolution was about 75 years. That great astronomer was therefore able to trace this comet back to a period before the birth of Christ. Halley, on the assumption that his calculations were correct, could thus, for the first time in the history of astronomical science, predict the time of its return to our system. He could not live to see the event, yet he died in the firm belief that his prediction would be found true. Seventy-five years had now elapsed since Halley's comet had been seen, and as the period of its predicted return—1758—approached, the deepest interest was excited amongst astronomers. Knowing that its progress would be affected by the planets near which it must pass, Clairaut and Lalande undertook the formidable work of computing its perturbations for a period of two revolutions. "During six months," says Lalande, "we calculated from morning to night, sometimes even at meals—the consequence of which was that I contracted an illness which changed my constitution