

earth's shadow always extends far beyond the moon, as its length is three times and a half her distance, and its diameter, at the moon, is nearly equal to three of hers: These things being premised.

21. The eclipses of the sun and moon are produced in a similar way: An eclipse of the moon is caused by the earth's falling in between the moon and sun; and thereby intercepting his light; or in other words, an eclipse of the moon is caused by the moon's falling into the earth's shadow. An eclipse of the sun is produced by the moon's passing between the earth and the sun, or what is the same thing, by the moon's shadow striking the earth. In eclipses of the moon, that luminary absolutely loses its light; but in those of the sun he does not lose his light, the moon only intercepting it from the earth for that time; and hence solar eclipses are properly eclipses of the earth. There is another difference between lunar and solar eclipses; which is, that the moon may be totally darkened for near two hours; but no more than a few miles of the earth's surface can be totally deprived of the sun's rays, for about two minutes.

22. Jupiter's moons, like ours, are eclipsed every time they pass through his shadow; these eclipses happen very frequently, and are of special use in determining the longitudes of places on our earth; but the brevity of our plan prevents us from entering into the nature and utility of these curious phenomena.—The word eclipse is derived from the Greek, ΕΚΛΙΠΟ, to faint, or swoon away; and consequently in respect to the moon, the term is very well applied; but in respect of the sun, it does not answer so well; for he never faints away, or loses his light, as was said before.

23. The moon's face seems to assume various forms to the earth; for, from the new-moon to the full, which is about fourteen days and eighteen hours, it gradually increases, then from the full moon to the new, it gradually decreases; and hence is said, the moon's Crescent and Decrease. In the crescent, the moon first appears FALCATED (crooked), next BISECTED (halved, or half full), afterwards GIBBOUS (round backed), then FULL; in the decrease, first GIBBOUS, next BISECTED, again FALCATED, then DARK. These different appearances are called her Phases or Faces, from the greek word PHASES, an appearance. The reason whereof