Prodigious was the excitement caused by this discovery and the serious advance of astronomical science, rapid though it was, was anticipated and eclipsed by the wild visions of impatient minds in their flights to the new celestial world. Encouraged, however, by the first revelations of the telescope, astronomers undertook a complete study of the lunar surface, and, as the new instrument reached a higher state of perfection, the aspect to the naked eye was transformed in its field, and more definite ideas were established as to the nature of our silent attendant.

On observing the motion of the moon, and its position on successive nights, we find that it changes its situation with respect to the stars, following a direction contrary to the diurnal motion, and completing its circuit of the heavens in about 271/3 days. Hence we know that in that time the moon revolves around the earth, or rather they both revolve around their common centre of gravity, a point about 2,700 miles from the earth's centre. It describes an elliptic orbit of very little eccentricity; its motion, however, is subject to many complications, arising from different causes, such as the disturbing forces of the sun, Venus and the equatorial ring round the Its mean distance from the earth, earth. which we find by a simple calculation, knowing its horizontal parallax, and the length of the earth's radius, is about 237,000 miles, or thirty times the diameter of the earth. We may think this a great distance, but it is as nothing compared to the immense distance separating the planets from each other and from the fixed stars. We may have an idea of its comparative insignificance, when we consider that this distance is only about one-fourth of the diameter of the sun.

We find the moon's mass either from the proportion of the lunar to the solar tide, or from the phenomenon of nutation, due in great measure to its attraction, and in both ways it is found to be about one-seventy-fifth that of the earth. Its volume is about one forty-ninth that of the earth. Its diameter is about 2,160 miles, or more than one-fourth that of the earth, and its total surface is 14,568,000 square miles, or nearly one-thirteenth that of the earth, about the extent of North and South America. But the same side only is ever visible to the earth, owing to the fact that the moon rotates on its axis once

in its revolution round the earth, and thus always presents the same face to us.

In May, 1699, Galileo first used his newly invented telescope in directing it towards the moon, for, on account of the various conflicting opinions as to its nature, a great interest had been awakened concerning it, and this new means was immediately applied to explore its surface, and see if any more definite ideas might be had of its real constitution. At first, on account of the different coloured markings on its surface, it was thought to be diversified with land and sea, and it was not long before maps appeared showing the moon's surface covered with seas, lakes, mountains, &c., among which we still notice as most conspicuous such names as the Sea of Serenity, Lake of Dreams, Marsh of Fogs, Ocean of Tempests, &c. But later research has shown these portions thought to be water to be but plains more level than the rest, and sea, and fog, and tempest are unknown to the moon. Helvetius, who wrote his Selenographia in 1747, made the first chart of the moon, in which he gave the name of Ætna to the crater now called Copernicus. Maps by Riccioli and Cassini soon followed, and later the more reliable one of Tobias Meyer. In late years the chart constructed by Beer and Maedler is the most perfect and correct. In fact, the visible side of the lunar sphere was correctly mapped before the terrestrial map was complete, and even yet the map of the moon is more accurate and perfect than that of portions of our earth.

To the naked eye the moon is a beautiful object, its surface shaded with those darker and lighter markings, which have given rise to so many popular superstition; viewed through a powerful telescope these disappear, and give place to a multitude of smaller details, which under the moon the most beautiful of all telescopic objects, and afford an interesting subject for study. With the best telescopes objects less than a mile in diameter may, render favo.able circumstances be distinguished. The great Lick telescore has brought the moon within one hundred miles for obser vation, in which case, though no signs of life might be distinguished, still forests, lakes, rivers, or large cities might be seen, if any such existed there.

The moon's surface does not resemble that of the earth, but is far more uneven