

grounds of her preference. What is there, it is asked, to determine the magnitude of the whole force at any fixed distance? We cannot tell; yet the force is of a certain definite intensity and no other.

Finally, Clairault observes, that we have, in cohesion, capillary attraction, and various other cases, examples of forces varying according to other laws than the inverse square; and that therefore this cannot be the only possible law.

The discrepancy between observation and theory which gave rise to this controversy was removed, as has been already stated, by a more exact calculation: and thus, as Laplace observes, in this case the metaphysician turned out to be right and the mathematician to be wrong. But most persons, probably, who are familiar with such trains of speculation, will allow, that Clairault had the best of the argument, and that the attempts to show the law of gravitation to be necessarily what it is, are fallacious and unsound.

8. We may observe, however, that the law of gravitation according to the inverse square of the distance, which thus regulates the motions of the solar system, is not confined to that province of the universe, as has been shown by recent researches. It appears by the observations and calculations of Sir John Herschel, that several of the stars, called *double stars*, consist of a pair of luminous bodies which revolve about each other in ellipses, in such a manner as to show that the force, by which they are attracted to each other, varies according to the law of the inverse square. We thus learn a remarkable fact concerning bodies which seemed so far removed that no effort of our science could reach them; and we find that the same law of mutual attraction which we have before traced to the farthest bounds of the solar system, prevails also in spaces at a distance compared with which the orbit of Saturn shrinks into a point. The establishment of such a truth certainly suggests, as highly probable, the prevalence of this law among