

alteration has been produced during the whole of that period in which the heavenly bodies have been astronomically considered.

We are accustomed to judge of distances and magnitudes by the organ of sight, but it entirely fails us when used in relation to the heavenly bodies. An ingenious and shrewd observer may, however, deduce from appearances, without instruments, many important facts concerning their motion and relations, and he may also gather some information concerning their magnitudes and distance, though it will be by no means satisfactory, nor approximate to a systematic knowledge. He may, for instance, discover that the clouds are nearer to the earth than the celestial bodies, for they often spread themselves like a veil over the entire surface of the heavens; and upon the principles already explained, he may prove that they are but a few miles high, as they are only seen under particular forms over a very limited district. But the moon is at a very great distance, for she is seen over one half of the earth at the same moment, yet she is not so distant as the sun, for she sometimes comes between the earth and that body, producing a solar eclipse. He may also happen, by the observation of a transit, to discover that Mercury is sometimes nearer to us than the sun; but all the information that can be thus attained will be disjointed and imperfect, and it is only by very accurate observations with the aid of instruments, that any valuable or correct information can be ascertained. To trace the methods by which our knowledge has been acquired, would be inappropriate in this place; such a general outline of results as may be sufficient to acquaint the reader with the relations of the earth to the wandering bodies and the sun, is all that will be attempted.

The earth is an individual and almost unimportant member, of a system of bodies of which the sun is the centre. The solar system, as it is called, consists of eleven planets, which revolve round the sun in orbits nearly circular, some of them being attended by satellites that have orbits of nearly the same form. These motions are produced by the attractions of the central bodies; that of the sun prevents the planets from flying off into space, and that of the planets supports the satellites. All these bodies have therefore an influence on one another at a distance, each one assisting in