

of skill. If the object of the players be to throw the pellet along the surface of the basin, so that after describing its curved path it shall pass through a small hole in a barrier at some distance from the starting point, it will easily be understood that some nicety in the regulation of the force and direction with which the ball is thrown will be necessary for success. In order to obtain a better image of the solar system, we must suppose the basin to be very large and the pellet very small. And it will easily be understood that as many pellets as there are planets might run round the bowl at the same time with different velocities. Such a contrivance might form a *planetarium* in which the mimic planets would be regulated by the laws of motion as the real planets are; instead of being carried by wires and wheels, as is done in such machines of the common construction: and in this planetarium the tendency of the planets to the sun is replaced by the tendency of the representative pellets to run down the slope of the bowl. We shall refer again to this basin, thus representing the solar system with its loose planetary balls.

CHAPTER II.

The Circular Orbits of the Planets round the Sun.

THE orbit which the earth describes round the sun is very nearly a circle: the sun is about one thirtieth nearer to us in winter than in summer. This nearly circular form of the orbit, on a little consideration, will appear to be a remarkable circumstance.

Supposing the attraction of a planet towards the sun to exist, if the planet were put in motion in any part of the solar system, it would describe about the sun an orbit *of some kind*; it might be a long oval, or