

forward, from the point of time which we now occupy, many thousands of years into futurity, and predict the state of our system without fear of material error, but such as may arise from causes whose existence at present we have no reason to suppose, or from interference which we have no right to anticipate.

(306.) A correct enumeration and description of the fixed stars in catalogues, and an exact knowledge of their position, supply the only effectual means we can have of ascertaining what changes they are liable to, and what motions, too slow to deprive them of their usual epithet, *fixed*, yet sufficient to produce a sensible change in the lapse of ages, may exist among them. Previous to the invention of the compass, they served as guides to the navigator by night; but for this purpose, a very moderate knowledge of a few of the principal ones sufficed. Hipparchus was the first astronomer, who, excited by the appearance of a new star, conceived the idea of forming a catalogue of the stars, with a view to its use as an astronomical record, "by which," says Pliny, "posterity will be able to discover, not only whether they are born and die, but also whether they change their places, and whether they increase or decrease." His catalogue, containing more than 1000 stars, was constructed about 128 years before Christ. It was in the course of the laborious discussion of his own and former observations of them, undertaken with a view to the formation of this catalogue, that he first recognized the fact of that slow, general advance of all the stars eastward, when compared with the place of the equinox, which is known under the name of the precession of the equinoxes, and which Newton succeeded in referring to a motion in the earth's axis, produced by the attraction of the sun and moon.

(307.) Since Hipparchus, at various periods in the history of astronomy, catalogues of stars have been formed, among which that of Ulugh Begh, comprising about 1000 stars, constructed in 1437, is remarkable as the production of a sovereign prince, working personally in conjunction with his astronomers; and that of Tycho