kept near the shore, unless they had to cross the sea, and for such limited navigation there was no great difficulty in knowing approximately at any moment the place where the ship was.

In those times the distances on land or water lying between two places were imperfectly known. Among the maps and charts made from the time of Ptolemy down to the end of the fifteenth century, few deserve such a name, for most of them do not give any idea at all of the form of the world as known in those days; the best of all were, perhaps, the maps left by Ptolemy, yet in these the Mediterranean Sea, with its coasts, is so stretched eastwards that the Nile's Delta is drawn at 20 degrees too much to the east, and Sicily is represented as being situated where Cyprus ought to have been marked. After the discoveries made by Marco Polo and other travellers, China was supposed to be at but 130 degrees west of Spain (instead of 230 degrees.)!

The compass, which came into use in Europe in the fourteenth century, was no help in determining the latitude and longitude of a ship or place on the globe. The latitude, which can easily be obtained by observing the height or altitude of the sun or a star, had been already found out with tolerable accuracy in the fifteenth century, thanks to the Portuguese king John II., who in 1485 had tables of the sun's declination calculated for the use of navigators. We also see Columbus in his four American voyages steering nearly always to and from the same places.

But how could he be able to get the longitude? The present method of calculating it was discovered only a hundred years ago, tolerably exact chronometers were not to be had before the end of the eighteenth century; accurate tables of the sun and moon are the result of recent studies; the astronomical and nautical instruments were formerly so defective that, three hundred years ago, an error of half a degree could not be avoided. Now, without these indis-