

regarding the distance,¹ but in support of the view that the space is not great he quotes Seneca, the passage in Esdras pointing to the ocean occupying only a seventh part of the earth's surface,² and the famous voyages to Ophir mentioned in the Bible.³ Bacon's arguments and quotations were copied into the popular book by Petrus Alliacus called *Imago Mundi* published early in the fifteenth century. Columbus's own copy of this work is still to be seen at Seville with his annotations on the margin. Here he first became acquainted with the arguments of the Greek philosophers with reference to the probable extent of the habitable world, and their speculations as to the possibility of crossing the Atlantic to the coasts of India. It is probable that the reading of this book and these extracts from Bacon first suggested to Columbus the idea of a voyage across the Atlantic; it is not likely he had any direct acquaintance with the works of Roger Bacon.

Some interesting information regarding the opinions held during the Middle Ages with regard to the distribution of land and water is to be found in a treatise which is now almost universally admitted to be a genuine work of the poet Dante, who may be regarded as the herald of the Renaissance. Dante refers the elevation of the land above the water to the influence of the stars "by way of attraction as the magnet draws the iron, or by way of impulsion, generating impelling vapours, as in certain mountains." The tides are referred to the action of the moon. The sphericity of the earth and the equality of the level of the sea in different oceans are also discussed.⁴ In the *Inferno* he makes Ulysses urge his companions to venture on a voyage into the great ocean beyond the Pillars of Hercules.⁵

Ristoro d'Arezzo regarded the dry land as occupying only one-tenth of the surface of the globe, and held the opinion that the waters of the ocean were accumulated in the southern hemisphere. We have already noted that this view was current among the Arabs. He states this definitely in his interpretation of the Arabian celestial charts. These celestial spheres only show the stars visible at the horizon of Cairo or Alexandria; no stars are represented at the South Pole. Ristoro supposed, from a consideration of these charts, that the earth was formerly completely covered by the sea, that afterwards, by a providential decree, the stars were all grouped in the northern celestial hemisphere, that the ocean waters had been driven towards the south, and, as a consequence of this retreat of the sea, land appeared in our hemisphere. He also pointed out that should the con-

¹ R. Bacon, *Opus Magnum*, edidit S. Jebb, fol. 184, London, 1733. Roger Bacon gives two figures to illustrate the hypothesis that a narrow sea separates the eastern and western portions of the habitable world.

² See *ante*, p. 2.

³ See *Opus Magnum*, fol. 183; Peschel, *op. cit.*, p. 202. Albertus Magnus had, before Bacon, expressed the idea that the ocean was not so immense as it was believed to be to the west of Spain. He says:—"Inter horizontem habitantium juxta Gades Herculis et Orientem habitantium in India non est in medio, ut dicunt, nisi quoddam mare parvum" (*De Cœlo et Mundo*, lib. ii. tract. iv. cap. 11; tom. ii. fol. 146, Lugd. 1651). Albertus supports his view upon the text of Aristotle relative to elephants, which we have cited (p. 14).

⁴ *La Questione dell' Aqua e della Terra di Dante Alighieri*, Opp. Lat. di Dante, ed. Siuliani, vol. ii.; see also Gardner, *Nature*, vol. xlvi. p. 295.

⁵ Canto xxvi.

DANTE, 1265-
1321 A.D.

SPECULATIONS ON
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