

extended into the Atlantic; the coasts of Europe as far as Flanders, the British Islands, and the coasts of Africa as far as Cape Bojador take definite form and are well drawn.

CATALAN
CHART, 1375.

The most remarkable of these compass-charts is known as the Catalan chart, now preserved in the National Library of Paris. It is a map of the world in six sheets, dated 1375, and is at once a planisphere and a marine chart. The author was a pilot of the island of Majorca. It indicates, in particular, the new islands discovered in the Atlantic and the coasts of the Caspian, and shows the greatest progress in the representation of the Indian Seas. It is on this Catalan chart that India appears for the first time as a peninsula, and the Indian Ocean is no longer a Mediterranean as had been previously represented. The coast of Africa is not limited towards the south, as delineated by Ptolemy and the Arabs.¹

These charts are works of positive geography from their exactness, and they surpass in this respect the other like productions of the same time, whether maps of the world, planispheres, or written descriptions. In spite of their correctness, however, these portulani cannot be considered true scientific charts. It may be said that an exact knowledge of the coasts of the sea preceded that of the inland portions of the continents and large islands. Almost all peoples in the infancy of their civilisation possess graphic representations of their coasts, which may be regarded as not differing greatly from those possessed by the sailors of the period now under consideration. From the ancient Mexicans, Cortes received charts which enabled the Spanish navigators to find their way along the Mexican coasts; Parry discovered the Strait of Fury and Hecla by directing his course according to a chart drawn by an Esquimaux woman; Ross and M'Clintock, like Parry, made use of charts furnished them by the Esquimaux. However, the compass-charts added greatly to the knowledge of the forms of seas and oceans; the scientific element wanting in them is compensated for by the scrupulous correctness by which they are distinguished.

THE RENAISSANCE
-MIDDLE OF
FIFTEENTH
CENTURY.

A revolution took place through the Renaissance. Learned Greeks arrived in Italy after the capture of Constantinople in 1453, and the introduction of paper permitted the great geographical works of antiquity to be popularised. From the end of the fifteenth century planispheric representations without graduation were abandoned, and, after a lapse of a thousand years, maps were once more constructed on mathematical principles. The re-appearance of Ptolemy's Geography with its clearly drawn maps produced a profound effect in Western Europe. Nordenskiöld² says that when this great work was imported from the expiring Byzantine Empire in the fifteenth century it had the effect of an important discovery, which seized on men's minds at first with even more force

¹ On one of these maps, made by Andrea Bianco in 1448, H. Yule Oldham thinks America (the Brazil coast) is represented, but this, like all the evidence for pre-Columbian voyages, except the Norse, is extremely unsatisfactory (see *Proc. Roy. Geog. Soc.*, Nov. 1894).

² Nordenskiöld, A. E., *Facsimile-Atlas to the early history of Cartography*, with reproductions of the most important maps printed in the 15th and 16th centuries; translated from the Swedish original by J. A. Ekelöf and C. R. Markham, p. 9, Stockholm, 1889.