scientific method of discussion, which has above all things contributed to erect the edifice of modern science.

Arab Speculations on Rise and Fall of the Tides.

If, however, on certain points, like those just referred to, the Arabs were on a level with what was taught by the ancient Greeks, in regard to other matters concerning the ocean their imagination carried them away from the truth. For example, the interpretations they gave of the cause of the rise and fall of the tide were widely removed from the more correct ideas held by the ancients. In the chapter where Mas'ūdī recapitulates the various explanations of tidal phenomena we find one hypothesis only more improbable than another.[1]

Schems' ed-Dîn-Mohammed of Damascus (El Dimishki)[2] advanced a theory in vogue in geological speculations; according to him, when the sun is in the signs of the zodiac in the south, as it is nearer to the earth, it exercises upon that hemisphere a much greater attraction, and, for that reason, the liquid particles are collected in that region. He thus vaguely foreshadowed the existence of the great ocean which is situated in that part of the globe.[3]

Arab Translations from the Greek translated into Latin.

The influence of the Arabs on the scientific knowledge of the later Middle Ages was considerable. This was due to the additions which their learned men made to the knowledge of nature, and, less directly, by the introduction, through their translations, of the works of Greek authors. In fact, it was from the translations from Arabic into Latin that the schoolmen became acquainted with ancient writings, chiefly those of Aristotle and Ptolemy, which played so important a part in the Middle Ages.

Views of the Schoolmen.

The schoolmen gave an impetus to the study of ancient literature, and, although they contributed but little to positive science, it is none the less true that they initiated a knowledge of Arabic and Greek authors, and thus powerfully helped forward the progress of science at the time immediately preceding the great geographical discoveries of the fifteenth century. The ideas of Hipparchus prevailed in the scholastic Middle Ages. The earth was a sphere; the schoolmen did not attempt to measure it as the ancients and Arabs had done, but accepted the calculations of Eratosthenes, and especially those of Ptolemy. In the Iberian peninsula the views of Mela, which were opposed to those of Hipparchus and Ptolemy, were very popular, and had much influence in leading up to the voyages of the Portuguese during the fifteenth century.

Roger Bacon.

Roger Bacon[4] adopted Aristotle's view that there was no great distance between Spain and India opposite to the habitable world. He makes no definite statement

[1] Mas'ūdī, *op. cit.*, vol. i. ch. xi. One story is the following:—"The angel to whose care the seas are confided immerges the heel of his foot into the sea at the extremity of China, and, as the sea is swelled, the flow takes place. Then he raises his foot from the sea, and the water returns into its former place, and this is the ebb. They demonstrate this by an example: if a vessel is only half full of water, and you put your hand into it, the water will fill the whole vessel, and when you take out the hand the water will be as before. Some think that the angel puts only the great toe of his right foot into the water, and that this is the cause of the tide" (p. 295).

[2] Died in 1327.

[3] Schems' ed-Dîn de Damas, Cosmographie, trad. par M. A. F. Mehren, p. 4, Copenhagen, 1874.

[4] 1214 to 1294 A.D.