INVASION OF THE ARABS.—INTELLECTUAL APTITUDE OF THIS BRANCH OF THE SEMITIC RACES.—INFLUENCE OF FOREIGN ELEMENTS ON THE DEVELOPMENT OF EUROPEAN CULTURE.—THE INDIVIDUALITY OF THE NATIONAL CHARACTER OF THE ARABS.—TENDENCY TO A COMMUNION WITH NATURE AND PHYSICAL FORCES.—MEDICINE AND CHEMISTRY.—EXTENSION OF PHYSICAL GEOGRAPHY.—ASTRONOMY AND MATHEMATICAL SCIENCES IN THE INTERIOR OF CONTINENTS

In the preceding sketch of the history of the physical contemplation of the universe we have already considered four principal momenta in the gradual development of the recognition of the unity of nature, viz.:

1. The attempts made to penetrate from the basin of the Mediterranean eastward to the Euxine and Phasis; southward to Ophir and the tropical gold lands; and westward, through the Pillars of Hercules, into the "all-encircling ocean."
2. The Macedonian campaign under Alexander the Great.
3. The age of the Ptolemies.
4. The universal dominion of the Romans.

We now, therefore, proceed to consider the important influence exercised on the general advancement of the physical and mathematical sciences, first, by the admixture of the foreign elements of Arabian culture with European civilization, and, six or seven centuries later, by the maritime discoveries of the Portuguese and Spaniards; and likewise their influence on the knowledge of the earth and the regions of space, with respect to form and measurement, and to the heterogeneous nature of matter, and the forces inherent in it. The discovery and exploration of the New Continent, through the range of its volcanic Cordilleras and its elevated plateaux, where climates are ranged in strata, as it were, above one another, and the development of vegetation within 120 degrees of latitude, undoubtedly indicates the period which has presented, in the shortest period of time, the greatest abundance of new physical observations to the human mind.

From this period, the extension of cosmical knowledge ceased to be associated with separate and locally-defined political occurrences. Great inventions now first emanated from spontaneous intellectual power, and were no longer solely excited by the influence of separate external causes. The human mind, acting simultaneously in several directions, created, by new combinations of thought, new organs, by which the human eye could alike scrutinize the remote re-