

sciences. According to my idea, the historical recognition of the gradual extension of natural science in the two spheres of terrestrial and celestial knowledge (geography and astronomy) is associated with certain periods and certain active intellectual events, which impart a peculiar character and coloring to those epochs. Such, for instance, were the undertakings which led Europeans into the Euxine, and permitted them to conjecture the existence of another sea-shore beyond the Phasis; the expeditions to tropical lands rich in gold and incense; the passage through the Western Straits, or the opening of that great maritime route on which were discovered, at long intervals of time, Cerne and the Hesperides, the northern tin and amber lands, the volcanic islands of the Azores, and the New Continent of Columbus, south of the ancient settlement of the Scandinavians. To the consideration of the movements which emanated from the basin of the Mediterranean, and the most northern part of the neighboring Arabian Gulf, and of the expeditions on the Euxine and to Ophir, succeed, in my historical delineation, the campaigns of the Macedonian conqueror, and his attempts to fuse together the west and the east; the influence exercised by Indian maritime trade and by the Alexandrian Institute under the Ptolemies; the universal dominion of the Romans under the Cæsars; and, lastly, the taste evinced by the Arabs for the study of nature and of natural forces, especially with reference to astronomy, mathematics, and practical chemistry, a taste that exercised so important and beneficial an influence. According to my view, the series of events which suddenly enlarged the sphere of ideas, excited a taste for the investigation of physical laws, and animated the efforts of men to arrive at the ultimate comprehension of the universe as a whole, terminated with the acquisition of an entire hemisphere which had till then lain concealed, and which constituted the greatest geographical discovery ever made. Since this period, as we have already remarked, the human mind has brought forth great and noble fruits without the incitement of external occurrences, and, as the effect of its own inherent power, developed simultaneously in all directions.

Among the instruments which man formed for himself, like new organs, as it were, to heighten his powers of sensuous perception, there was one which exercised an influence similar to that of some great and sudden event. By the power of penetrating space possessed by the telescope, considerable portions of the heavens were almost at once explored, the number of known heavenly bodies was increased, and attempts