

made to determine their forms and orbits. Mankind now first attained to the possession of the "celestial sphere" of the Cosmos. Sufficient foundation for a seventh section of the history of the contemplation of the universe seemed to be afforded by the importance of the acquisition of this celestial knowledge, and of the unity of the efforts called forth by the use of the telescope. If we compare another great invention, and one of recent date, the voltaic pile, with the discovery of this optical instrument, and reflect on the influence which it has exercised on the ingenious electro-chemical theory; on the production of the metals; of the earths and alkalies; and on the long-desired discovery of electro-magnetism, we are brought to the consideration of a series of phenomena called forth at will, and which, by many different paths, lead to a profound knowledge of the rule of natural forces, but which constitute rather a section in the history of physical science than a direct portion of the history of cosmical contemplation. It is this multiplied connection between the various departments of modern knowledge that imparts such difficulty to the description and limitation of its separate branches. We have very recently seen that electro-magnetism, acting on the direction of the polarized ray of light, produces modifications like chemical mixtures. Where, by the intellectual labors of the age, all knowledge appears to be progressing, it is as dangerous to attempt to describe the intellectual process, and to depict that which is constantly advancing as already at the goal of its efforts, as it is difficult, with the consciousness of one's own deficiencies, to decide on the relative importance of the meritorious efforts of the living and of the recently departed.

In the historical considerations I have almost every where, in describing the early germs of natural knowledge, designated the degree of development to which it has attained in recent times. The third and last portion of my work will, for the better elucidation of the general picture of nature, set forth those results of observation on which the present condition of scientific opinions is principally based. Much that, according to other views than mine, regarding the composition of a book of nature, may have appeared wanting, will there find its place. Excited by the brilliant manifestation of new discoveries, and nourishing hopes, the fallacy of which often continues long undetected, each age dreams that it has approximated closely to the culminating point of the recognition and comprehension of nature. I doubt whether, on serious reflec-