

PREFACES TO THE FIRST AND SECOND EDITIONS,

ABRIDGED.

IN tracing the progress of knowledge, we may frequently observe that the cultivation of particular branches of science, at certain periods, was determined by causes which had little connection with their intrinsic utility. Fashion, caprice, and the authority of eminent names, govern mankind in philosophy, as well as on all other subjects. But, independently of accidental causes, there are leading objects in the universe, which, as nations advance in civilization, seem naturally to direct their attention to certain sciences in succession. The brilliancy of the sun, moon, and planets, their various motions, and connection with the changing seasons, would first arrest the attention of the rude philosopher; nor need we wonder that he soon began to regard them as endowed with life and intelligence, and attributed to them a mysterious power over human affairs: thus the heavenly orbs became the objects of religious adoration; and curiosity, hope, and fear, lent their aid to the early cultivation of astronomy.

Mathematics and mechanical philosophy are so intimately connected with astronomy and the most useful arts, that they naturally claimed the second place among the early sciences.

The branches of philosophy which comprise a knowledge of the physical qualities of matter, or such as are perceptible by the senses, follow next; and at a later period, chemical philosophy, or that science which endeavours to ascertain the elementary substances, of which all material objects are composed. In the order of succession, mineralogy and geology are the last of the natural sciences; for though an acquaintance with the earth is more important to man, than a knowledge of the distant parts of the universe, yet, previously to the cultivation of the other sciences, and of chemistry in particular, our knowledge of the mineral kingdom could not extend much beyond that of the rudest periods. Thus we find, that notwithstanding the precious metals, and many of the mineral treasures which the earth contains, have been the objects of insatiable cupidity in every age, yet, till the present day, almost all that was known of mineralogy was confined to uneducated working miners.

In looking over the pages of history we may observe, that the most polished nations of antiquity had scarcely advanced beyond a limited acquaintance with astronomy, geometry, and mechanical philosophy. In modern Europe, all the natural sciences, geology and mineralogy excepted, have been successfully cultivated, and their progress has been astonishingly rapid; but till about the middle of the last century, the structure of the earth had scarcely engaged the attention of philosophers. Near that time, Lehman, the German, first observed that there are certain rocks which occupy the lowest relative situation in different countries, and that these rocks contain no organic remains: hence he gave them the name of primary, and established a division between them and the rocks by which they are