

are found in them, and are often numerous distributed throughout their strata.

Geology is therefore in itself a science admitting of a high degree of perfection. All the objects it recognises are capable of being submitted to that beautiful degree of order and harmony, which is so manifest in all the works of nature. It is the study of that great system of wonders the earth itself presents, and which, next to astronomy, exhibits those unerring laws that govern the whole universe. Viewed as mere chemical or mechanical deposits, the rocks display a beauty and harmony of arrangement truly wonderful; and although the fractured condition of the surface of the globe, at many places, shews the effects of terrific earthquakes, and the outpouring of lava from volcanoes is every where manifest; still, even in these operations, the causes may be seen, and the order of the whole system remains undisturbed. Although these violent operations have evidently been active, from the earliest date in the earth's history, all the different kinds of rocks, from the lowest ever discovered, up to such as are now forming on the surface, have been arranged in distinct classes, having been produced under different circumstances, they exhibit, in their composition and structure, the clearest evidences of the different conditions of such parts of the globe where they are found, and the changes which have taken place in the earth's physical features during the lapse of vast periods of time. The results of these changes have a degree of uniformity, at once the most striking and obvious; and whatever the climate may be where they are now seen, they offer one unvarying and almost endless system of inquiry. Baron Humboldt, in referring to this harmony, remarks, that "when travelling to distant countries, the first feeling that strikes the mind is change. The temperature becomes warmer or colder; the aspect of the country and vegetation itself assume a different character; and, by and by, the very stars themselves become altered; but while change thus pervades every thing, if we look beneath our feet, our old acquaintances, the rocks, are still with us. The granite and the coal are found in precisely the same situations in the hills of Scotland, as in the Andes, the Alps, or the mountain ranges of Australia."

There appear to have been two grand causes to which the production of all the rocks may be assigned, namely, heat and water. The rocks produced by the former are unstratified, and, for the greater part, they are readily distinguished by their crystalline structure, and other characters