

Without attempting to assign to every important advance its author, I shall briefly exemplify each of the modes of contributing to descriptive geology which I have just enumerated.

The study of organic fossils was first pursued with connexion and system in Italy. The hills which on each side skirt the mountain-range of the Apennines are singularly rich in remains of marine animals. When these remarkable objects drew the attention of thoughtful men, controversies soon arose whether they really were the remains of living creatures, or the productions of some capricious or mysterious power by which the forms of such creatures were mimicked; and again, if the shells were really the spoils of the sea, whether they had been carried to the hills by the deluge of which the Scripture speaks, or whether they indicated revolutions of the earth of a different kind. The earlier works which contain the descriptions of the phenomena have, in almost all instances, by far the greater part of their pages occupied with these speculations; indeed, the facts could not be studied without leading to such inferences, and would not have been collected but for the interest which such reasonings possessed. As one of the first persons who applied a sound and vigorous intellect to these subjects, we may notice the celebrated painter Leonardo da Vinci, whom we have already had to refer to as one of the founders of the modern mechanical sciences. He strenuously asserts the contents of the rocks to be real shells, and maintains the reality of the changes of the domain of land and sea which these spoils of the ocean imply. "You will tell me," he says, "that nature and the influence of the stars have formed these shelly forms in the mountains; then show me a place in the mountains where the stars at the present day make shelly forms of different ages, and of different species in the same place. And how, with that, will you explain the gravel which is hardened in stages at different heights in the mountains?" He then mentions several other particulars respecting these evidences that the existing mountains were formerly in the bed of the sea. Leonardo died in 1519. At present we refer to geological essays like his, only so far as they are descriptive. Going onwards with this view, we may notice Fracastoro, who wrote concerning the petrifications which were brought to light in the mountains of Verona, when, in 1517, they were excavated for the purpose of repairing the city. Little was done in the way of collection of facts for some time after this. In 1669, Steno, a Dane resident in Italy, put forth his treatise, *De Solido intra Solidum naturaliter contento*; and the fol-