

in 1762, described this stratified structure of the earth far more distinctly than his predecessors, and pointed out, as the consequence of it, that "the same kinds of earths, stones, and minerals, will appear at the surface of the earth in long parallel slips, parallel to the long ridges of mountains; and so, in fact, we find them." ⁵

Michell (as appeared by papers of his which were examined after his death) had made himself acquainted with the series of English strata which thus occur from Cambridge to York;—that is, from the chalk to the coal. These relations of position required that geological maps, to complete the information they conveyed, should be accompanied by geological *Sections*, or imaginary representations of the order and mode of superpositions, as well as of the superficial extent of the strata, as in more recent times has usually been done. The strata, as we travel from the higher to the lower, come from under each other into view; and this *out-cropping, bassetting*, or by whatever other term it is described, is an important feature in their description.

It was further noticed that these relations of position were combined with other important facts, which irresistibly suggested the notion of a relation in time. This, indeed, was implied in all theories of the earth; but observations of the facts most require our notice. Steno is asserted by Humboldt⁶ to be the first who (in 1669) distinguished between rocks anterior to the existence of plants and animals upon the globe, containing therefore no organic remains; and rocks super-imposed on these, and full of such remains; "turbidi maris sedimenta sibi invicem imposita."

Rouelle is stated by his pupil Desmarest, to have made some additional and important observations. "He saw," it is said, "that the shells which occur in rocks were not the same in all countries; that certain species occur together, while others do not occur in the same beds; that there is a constant order in the arrangement of these shells, certain species lying in distinct bands." ⁷

Such divisions as these required to be marked by technical names. A distinction was made of *l'ancienne terre* and *la nouvelle terre*, to which Rouelle added a *travaille intermédiaire*. Rouelle died in 1770, having been known by lectures, not by books. Lehman, in 1756, claims for himself the credit of being the first to observe and describe correctly the structure of stratified countries; being ignorant, pro-

⁵ *Phil. Trans.* 1760.

⁶ *Essai Géognastique.*

⁷ *Encycl. Méthod. Geogr. Phys.* tom. i. p. 416, quoted by Fitton as above, p 159.