

within the period alluded to, was very unequal. In the course of the interval between E 1 and E 2, strata of micaceous shale and sandstone of the system D, more than 3,000 feet thick, were deposited; and during the accumulation of this immense mass of rock some species disappeared, while many survived and are common to *d* 4 and *d* 5; other fossils being peculiar to each of those subdivisions respectively.

Trap rocks accompany the "Colonial beds" E 1, and are decidedly of contemporaneous origin. Occasionally an orthoceras may be seen involved in the greenstone, while pebbles and angular fragments of trap are intermixed with the fossils of the colony.

Again, there are other intrusions of similar igneous rocks at the base of E 2, and M. Barrande with good reason appeals to these volcanic appearances as lending support to his hypothesis of former changes of level, by which a barrier of land may have been lowered for a time so as to allow currents of salt-water flowing from the northeast to introduce the fauna E 1 into the region previously occupied by D; and a recurrence, he remarks, of similar oscillations may afterwards have caused the retreat of the colonists, as well as the subsequent return of most of them when the fauna E 2 obtained its permanent footing in Bohemia. Warm currents, like the Gulf Stream, pouring into a colder sea, might carry with them a whole assemblage of species fitted for a more elevated temperature, and capable of superseding the natives of a colder sea, while colder currents invading a warmer sea might give rise to analogous phenomena. In each case along the edges of the space thus colonized, some members of the old native fauna might maintain their ground against the new-comers; and this may explain why, when the deposit E 1 thins out to a few inches, some species of D are intermingled with those of E 1.

It may be useful to add that in E 2 (a calcareous formation only 500 feet in thickness), no less than 900 species of fossil invertebrata have been found by M. Barrande. This set of strata passes upwards into F, and this again into G, and G into H, each having, at the point of contact, so many species in common, that M. Barrande has thought it necessary to regard the whole as one system; yet such is the aggregate result of continual changes, that when the two extremes of the series are contrasted, there is only 1 per cent. common to E 2 and H.

Many important conclusions will follow if we admit the accuracy of the facts and reasonings above set forth. M. Barrande has himself remarked, that, before his discoveries were made, a geologist, finding in some part of Europe to the northeast of Prague, rocks characterized by the fossils of E 1, would certainly have regarded them as Upper Silurian, instead of assigning them to their true era, viz. that of D or the Lower Silurian. On the other hand, if the fauna D, after it was locally exterminated in the region of Prague, still continued to flourish elsewhere under a slightly modified form which might, in accordance with M. Barrande's nomenclature, be styled *d* 6—such a fauna might certainly be mistaken for one of Lower Silurian date, although, in truth,