

present existing on the same coast ; and lastly, over all these strata, indiscriminately, there is spread a covering of gravel (seemingly formed by the action of a deluge which has detached and rounded by attrition fragments of the rocks over which it swept) containing the remains of numerous land quadrupeds, many of them of unknown genera or species (the mastodon and the fossil species of elephant or mammoth, bear, rhinoceros, and elk) mingled with others equally strangers to the climates where they are now found (hyænas, &c.), yet associated with many at present occupying the same countries.*

The lists of organic remains given in the present work, may, it is hoped, promote this important branch of geological enquiry ; which, notwithstanding the rapid advances lately made in it, can as yet only be considered in a state of progressive improvement ; indeed, when it is remembered that it requires all the resources of a perfect acquaintance with many departments of Zoology, and those especially which are as yet least understood (namely, the history of invertebral animals), we have rather reason to be surprised that so much has been accomplished, rather than that much still remains to be done ; and enough has been said to demonstrate that it is a subject which can be treated with advantage only by those who bring to it a matured and precise knowledge of the branches of natural history with which it is connected, a remark extorted by the flippant manner in which some writers have treated con-

* The general laws of the distribution of organic remains which have been above stated, are chiefly derived from the structure of England, the only country which has been accurately examined in this respect. Von Schlotheim's materials as to Germany are greatly deficient in the precision which is so essentially requisite both as to zoological and geological details ; indeed that ingenious author can only consider them as an hasty sketch. Smith has published a useful stratigraphical arrangement of English fossils, in the preface to which he pointedly observes, that the various species of fossil shells may be found with nearly as much readiness and certainty in the natural strata, as in the drawers of a well arranged cabinet.

It is to be regretted that we have as yet no means of ascertaining whether a similar succession of secondary beds takes place in very distant countries (*America for instance*), and whether these are characterised by similar families of organic remains. As the recent animals of these countries are widely different, one would naturally suppose that the fossils would be different also ; yet in some instances we have reason to believe that this, in the earlier of the secondary strata at least, is not the case, for the most extensively diffused assemblage of organic remains with which the present author is acquainted, is that which characterises the transition limestone ; namely, the chain coral, the alveolaria, some peculiar encrinites, several species of terebratula and spirifer, the orthoceratite, and the trilobite ; all of these, except the latter, he has seen from the Canadian lakes, many from Melville island ; and all, including the trilobite, from Sweden and the islands of Gothland and Oceland ; the identity of remains in the chalk in very distant points has been already noticed.