their nodules and veins of flint, have more the character of a chemical production, than of a mere mechanical deposit; and may perhaps owe their origin to precipitation from thermal waters. The shells and crustaceous coverings of the echini are invariably changed into calcareous spar; and in many instances the *terebratulæ* are twisted and contorted in every direction, without the shells exhibiting a single fracture; changes which probably resulted from the influence of a high temperature under considerable pressure.

With the exception of the *pentacrinus*, the teeth of fishes resembling those of the shark, the teeth of crocodiles, and perhaps a few shells,* the organic remains of the chalk differ entirely from all known existing species, as well as from the fossils of other formations. The thickness of the chalk, which is estimated at upwards of 1200 feet, and the immense variety and numbers of its organic remains, evince that the agents which produced it were in full activity through a long period of time.† Although we have no satisfactory evidence to determine whether the chalk were deposited over the entire surface of the Wealden (as seems most probable,) or whether the latter were undergoing elevation during the deposition of the chalk, and were but partially covered by the cretaceous strata, yet there can be no doubt that the chalk originally very much exceeded its present limits. It is true that gravel, and partially rolled flints, occur but rarely on the Wealden, the diluvial covering of the latter chiefly consisting of its own debris; yet this fact may have resulted from the action of the sea during the elevation of the strata, or many other causes, and cannot be admitted as affording conclusive evidence that the Wealden was never wholly covered by the chalk. Our limits will not allow us to examine this interesting question in all its bearings, which will be fully elucidated in the 3d volume of Mr. Lyell's "Principles of Geology," now in the press; and we proceed to the consideration of the next geological era—that in which the older *tertiary* strata were deposited.

The epochs we have already noticed are marked by immense mutations in the relative situation of the land and sea; yet these changes appear to have been effected in such a manner as to have occasioned comparatively but little derangement in the strata, and to have been succeeded by periods of repose of long duration. In the tertiary era, on the contrary, it is manifest that the disturbing forces were in frequent and violent action, and produced elevations and subsidences, and enormous dislocations and fissures, throughout the whole mass of the strata of the south-east of England. In the anticlinal axis of the Forest ridge, from whence the strata diverge to the south-east in Sussex and the north-west in Kent, we have evidence of a force having acted from beneath, in a direction from east to west, by which the Wealden beds have been elevated above the chalk formation, and the

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* Even these few exceptions are very equivocal, and probably the species will hereafter prove to be distinct from their supposed analogues.

‡ The fossils of the chalk of Sussex are enumerated in the Catalogue in the Appendix to this work. In the list of the organic remains of the cretaceous strata of Europe, given by M. De la Beche, there are, of Reptiles, 6 or 8; Fishes, 10 or 12; Crustacea, 15; Mollusca, 225; Conchifera, 285; Annulata, 110; Radiaria, 90; Vegetable remains, 20 species, 16 of which are marine.