

in Europe. They were not washed to the spots where the fossils now occur by a great flood; but lived and died, one generation after another, in the places where they lie buried. Among other arguments in favor of this conclusion may be mentioned the great numbers of the shed antlers of deer discovered in caves and in freshwater strata throughout England.*

Examples also occur of fissures into which animals have fallen from time to time, or have been washed in from above, together with alluvial matter and fragments of rock detached by frost, forming a mass which may be united into a bony breccia by stalagmitic infiltrations. Frequently we discover a long suite of caverns connected by narrow and irregular galleries, which hold a tortuous course through the interior of mountains, and seem to have served as the subterranean channels of springs and engulfed rivers. Many streams in the Morea are now carrying bones, pebbles, and mud into underground passages of this kind. If, at some future period, the form of that country should be wholly altered by subterranean movements and new valleys shaped out by denudation, many portions of the former channels of these engulfed streams may communicate with the surface, and become the dens of wild beasts, or the recesses to which quadrupeds retreat to die. Certain caves of France, Germany, and Belgium, may have passed successively through these different conditions, and in their last state may have remained open to the day for several tertiary periods. It is nevertheless remarkable, that on the continent of Europe, as in England, the fossil remains of mammalia belong almost exclusively to those of the Newer Pliocene and Post-Pliocene periods, and not to the Miocene or Eocene epochs, and when they are accompanied by land or river shells, these agree in great part, or entirely, with recent species.

As the preservation of the fossil bones is due to a slow and constant supply of stalactite, brought into the caverns by water dropping from the roof, the source and origin of this deposit has been a subject of curious inquiry. The following explanation of the phenomenon has been recently suggested by the eminent chemist Liebig. On the surface of Franconia, where the limestone abounds in caverns, is a fertile soil, in which vegetable matter is continually decaying. This mould or humus, being acted on by moisture and air, evolves carbonic acid which is dissolved by rain. The rain-water, thus impregnated, permeates the porous limestone, dissolves a portion of it, and afterwards, when the excess of carbonic acid evaporates in the caverns, parts with the calcareous matter, and forms stalactite. Such facts seem to imply that the date of the emergence of the district was very modern, for stalactite could not begin to form until the emergence of the cavernous rock, and the land shells and land animals are usually imbedded in the lowest part of the stalactite deposit.

Australian cave-breccias.—Ossiferous breccias are not confined to Europe, but occur in all parts of the globe; and those lately discovered in fissures and caverns in Australia correspond closely in character with what has been called the bony breccia of the Mediterranean, in which the

* Owen, Brit. Foss. Mam. xxvi. and Buckland, Rel. Dil. 19, 24.