

Raritan formation there bears evidence. The deposits everywhere, however, rest unconformably on the underlying Lower Cretaceous beds. With the progress of the epoch the Magothy and Matawan formations were laid down in the north, the Black Creek formation in the Carolinas and much of the Tuscaloosa, the Eutaw and evidently certain beds regarded as lower Ripley in the Gulf.

The materials were deposited during the earlier portion of the epoch under conditions very similar to those which had prevailed during the Lower Cretaceous. Shallow inland basins or sounds removed from the open sea bordered the coast. Throughout portions of the district coarse sediments were transported and deposited, although on the whole, and especially during the later portions of this epoch, the materials were finer and gave less evidence of shallow-water deposition. The submergence at this time probably did not extend as far inland as during the Lower Cretaceous or, if it did, the resulting deposits were afterwards removed. The land was probably not as high as it had been earlier, the streams were less swift and evidently bore large amounts of vegetable matter to the sea, as the trunks, twigs, leaves, and comminuted particles of land plants clearly show. With the upland species of plant life were also commingled the shore forms of the time, as has been already pointed out in an earlier chapter.

As the period advanced, important physical changes took place, resulting in deposits which in their nature were prophetic of the coming conditions favorable to the production of purely marine sediments. In the upper Black Creek beds glauconite is present in the sand laminae and lenses and in places true greensand beds with a marine fauna are present, interstratified with the more typical laminated Black Creek beds, still containing a land flora. If the assumption of a land barrier be correct, the most simple explanation for these changes would seem to be that the barrier began to go down, perhaps with oscillations, so that for a while marine and land-locked conditions alternated, until, finally becoming entirely submerged, widespread marine conditions prevailed.

The conditions during this epoch differed somewhat in other portions of the Coastal Plain both to the north and south of North Carolina. To the north in New Jersey the marine conditions began earlier in Upper Cretaceous time, a few marine forms having already been found in the Raritan. With the coming of Magothy deposition, however, alternating marine beds become frequent, while in the Matawan only marine sediments have been found. Farther to the southward in South Jersey, Delaware, and Maryland the Raritan and the Magothy afford no marine fossils, the latter first appearing in the Matawan. The similarity of the Magothy and Matawan faunas in the northern region with those of