

## MIOCENE SERIES

## GENERAL FEATURES

Miocene time is divisible into three parts, each of which was ushered in by an expansion of the sea upon the land. The early Miocene is represented in Florida and Georgia by the Tampa limestone, which lies on the eroded surface of the late Oligocene Suwannee limestone and Flint River formation, and in North Carolina by the Trent marl, which lies on late Eocene or Upper Cretaceous formations. Early Miocene deposits have not certainly been identified elsewhere in the Atlantic States, though the Calvert formation of Maryland and Virginia and the Kirkwood formation of New Jersey are here tentatively referred to that part of the epoch. The Catahoula sandstone of the Gulf States west of Florida is supposed to be contemporaneous with the Tampa limestone.

In middle Miocene time the sea spread out over all of the Floridian plateau, which had been partly above sea level during the preceding epoch, and covered a larger part of Georgia and extended into South Carolina. In this eastern region the Hawthorn formation was deposited. Farther west in Florida the Chipola formation was laid down and on it the Shoal River formation. The Choptank and St. Marys formations of Maryland are probably contemporaneous with these. The equivalent in Mississippi is probably the Hattiesburg clay. Then the sea withdrew presumably beyond the present shore line.

In late Miocene time the sea again invaded the land south of New Jersey and deposited the Yorktown formation in Virginia and northern North Carolina and the Duplin marl as far south as Florida, part of which may have remained above sea level as an island. These relationships are recapitulated in the correlation table.

The essential contemporaneity of the upper fossiliferous bed at Alum Bluff (Duplin marl of this report) with the Yorktown formation of Virginia was early recognized (Dall in Dall and Harris, 1892, p. 124), for the faunas include many similar or identical species. But the relation of the Miocene beds older than the Duplin to the classic Miocene (Chesapeake group) of Maryland and Virginia has proved more difficult to