

formations has been given on an earlier page. At numerous places along the Northeast Cape Fear River the Castle Hayne can be seen resting directly upon the Peedee, while it is in turn overlain, unconformably, by the Miocene or some member of the Pleistocene.

In the city rock quarry at Wilmington small patches of Miocene shell marl occupy pockets of solution in the surface of the eroded Castle Hayne limestone. Thus we have evidence of an uplift of the region forming land and resulting in a period of erosion preceding and following the deposition of the strata constituting the Castle Hayne formation, and causing it to be unconformable with both the underlying and overlying beds.

The Castle Hayne formation, as shown in the detailed sections given on a later page, contains several different kinds of materials. The most common constituent, however, is fossiliferous limestone of varying hardness and purity. At Rocky Point on the Northeast Cape Fear River this limestone is well developed and has given the name to the locality because of its outcropping at that place. It has been quarried there for constructional purposes. At the city rock quarry just north of Wilmington the limestone is firmly cemented in certain parts, while it consists of a loose, calcareous marl in other portions. It contains many holes of solution and pockets of glauconitic sand and clay that have been deposited in solution cavities. The limestone in most places contains many fossils, particularly *Bryozoa* and *Echinodermata*. In certain places the bulk of the rock consists of the remains of *Bryozoa*.

At the base of the formation there is a layer of pebbles and cobbles that is well developed in the rock quarries at Castle Hayne and along Smith Creek. The pebbles are black in color and are rich in calcium phosphate. Associated with them are many water-worn Cretaceous fossils, principally in the form of casts. Sharks' teeth are especially abundant in this layer in the Castle Hayne rock quarry. This pebble layer is firmly cemented in certain places to form a hard conglomerate.

*Thickness.*—The Castle Hayne formation does not attain any considerable thickness at any place where it outcrops. Where it has been penetrated by well borings it has not been possible to determine where the line separating the Castle Hayne and Trent formations comes. So far as we know, the deposits of the former are not so thick as the latter, which we know to be over 70 feet thick and probably somewhat more than 100 feet. If, therefore, we refer 100 feet of the Eocene materials penetrated in the wells at Greenville Sound and Masonboro Sound to the Trent, there remains only 30 to 35 feet of Castle Hayne materials. Though the formation may be somewhat thicker elsewhere, it seems probable that it nowhere exceeds 50 feet.