

GEOLOGIC OCCURRENCE AND CHARACTER OF THE UNDERGROUND WATERS.

BASEMENT ROCKS.

The rocks which form the basement on which the deposits of the Coastal Plain rest consist in the main of ancient crystallines and metamorphics of early Paleozoic or Proterozoic age. They are the eastward continuation of rocks of similar kind which form the greater part of the surface throughout the Piedmont Plateau province. Along the northwestern edge of the Coastal Plain the upper surface of these rocks is very uneven, but in general it dips to the southeast and passes gradually deeper and deeper until along the immediate coast it lies at depths of 1,200 to perhaps 2,500 feet beneath the present surface. It is only along the northwestern border of the Coastal Plain province in a belt some 25 or 30 miles in width, where their buried surface lies at less than 300 or 350 feet below the present surface, that these basement rocks form an important source of water supply. (See map, Plate XXXI.) The artesian conditions which they present, except as slightly modified by the overlying sedimentary beds, are identical with those presented by the rocks of the Piedmont province proper farther to the west. Their treatment here may perhaps be regarded as inappropriate, but since they lie within the area under consideration, a brief statement of their importance as water bearers may not be out of order.

In the belt indicated a large number of wells have been drilled through the overlying deposits of the Coastal Plain into these basement rocks. Many of them furnish an abundance of good water sufficient for use as municipal supplies and for steaming purposes in boilers. Others yield smaller amounts sufficient for the domestic use of one or more families; while some have been failures. From the nature of the rocks it is in most places impossible to predict the outcome of attempts to obtain water from this source. In the case of crystalline rocks which show neither bedding planes nor schistosity the underground circulation depends upon the presence of fissures and the connection of these channels either with the surface or with other water-bearing formations, and obviously the striking of such fissures is more or less a matter of chance. In the case of metamorphosed sediments in which the bedding planes have not been obliterated, or in the case of rocks possessing well-developed schistosity, a regular system of water horizons may exist. If the structure of these rocks can be made out it becomes possible to predict with some confidence where such horizons will be encountered. But in a region such as the one