

from 40 or 50 feet along the northwestern border of the belt, where the thickness is limited by the basement rocks which lie at comparatively shallow depths, to 400 or 500 feet in the southeastern border. It seems probable that at most places where the thickness of the formation amounts to 50 feet or more there will be at some depth between its top and base a sand or gravel bed sufficiently porous to furnish supplies for domestic purposes, and at most places sufficient supplies should be found for boiler, manufacturing, and municipal purposes.

Failures to obtain supplies have been reported, the most notable instances being those at Fayetteville. In several wells over 200 feet of Patuxent ("Cape Fear") beds were penetrated and underlying basement slates entered, but only insignificant supplies were encountered. The failures may have been due to one of two causes: first, the beds here may be locally too compact to permit of sufficiently active circulation of waters; or, second, the drillers may have sunk the casing too rapidly, thus passing by good water horizons without detecting them. Should the latter be the true cause of failure, it remains only for some careful and thoroughly competent driller to apply himself to the undertaking in order that these waters be made available for use. Locally, flowing wells have been obtained, as a rule located in valleys below the general level of the surrounding region. Elsewhere, force and suction pumps are employed to bring the water to the surface.

In general, within the limits indicated the Patuxent ("Cape Fear") waters are potable. Those from the region nearest the Piedmont are usually very soft and low in mineral content. Coastward they become somewhat more highly charged with mineral matter, although, as a rule, not excessively so. Locally, the content of iron is high, as at Red Springs in Robeson County, and in many places sodium bicarbonate is present in greater or lesser amount.

The water conditions in the separate counties within this area are treated in detail elsewhere in this report.

*Black Creek formation.*—The area of surface outcrop of this formation extends with increasing width from Tar River in Pitt County, where it is only a few miles wide, to the South Carolina line, where its width is 30 or more miles. (See geologic map, Plate XVII, in pocket.) The formation rests unconformably upon the eroded surface of the Patuxent ("Cape Fear") formation. The beds have in general a gentle dip to the southeast. They pass conformably beneath the marine beds of the Peedee ("Burches Ferry") formation, reaching greater and greater depths in the direction of the coast. The depth of the upper surface of the formation beneath the surface has been determined