

Having laid down these few principles, I shall ask the reader to cast his eye upon the left hand side of the map and the lowest section in the "Illustrations," whilst I point out the characteristics of each district as we pass on to the right or eastward.

First is the Youghiogheny coal *basin* in which the water in the Artesian wells will doubtless rise to the surface and as a general rule the nearer the axis the higher it will rise. The same may be said of the other two coal basins, but in the intervening Old Red sandstones and shales there would be little chance for water rising to the surface because of their stratification being anticlinal (the reverse of basin or trough-shaped.) And so it is with Wills' Mount; but in the trough-shaped strata between that and Evitt's Mount, a little east of Cumberland, we have another favorable district for our purpose. From thence to Tonoloway Hill the strata are somewhat disturbed and have not yet been sufficiently explored to enable me to point out with certainty all the favorable districts for these wells. It is most likely they would answer between Evitt's and Martin's Mountains and probably between Town Hill and Sideling Hill.

Between Tonoloway Hill and the North Mountain we have a wide district, whose trough-shaped strata are highly favorable for Artesian wells, especially towards the middle of it.

As the great valley of Washington county, between the North and South Mountains, is principally underlaid by limestone, the details of whose stratification have not yet been made out, it is not possible to form correct opinions relative to the success of such wells. The survey proposed in chapter VIII, for the purpose of determining the position and qualities of the limestones best suited for agricultural lime, will also throw much light upon the adaptation of these strata to Artesian wells.

There is some uncertainty as to Wells in Middletown Valley, and besides the boring would be very costly because of the Trap and other hard rocks that are to be encountered in many parts of this valley.

The New Red Sandstone formation of the Monocacy Valley it will be observed dips to the West, but there is no doubt that its western edges have been tilted up. So far, however, the strata appear to be concealed by the detritus from the Catoctin Mountain. The trough thus formed presents a favorable district for Artesian Wells. A well of this kind has been sunk in a ravine of the Catoctin to aid in supplying the City of Frederick with water. I have not yet been able to collect the facts relating to it, owing to the absence from that city of the gentleman who had charge of it. I learned, however, that it was sunk in formation No. 8, westward of the New Red Sandstone No. 20. A much larger supply would have been obtained if the well had been located in the latter, but it would have been at too low a level to be conducted by a natural flow to the city.

Within the formations between the Monocacy valley and the tide water districts, or rather between No. 10 and No. 21, the circumstances are unfavorable to sinking artesian wells. The few attempts that I have heard of in this region have been failures, whilst the cost of drilling through the hard rocks was enormous.

It is in the cretaceous clays, No. 21, that by far the larger portion of all the wells of this kind in Maryland have hitherto been sunk. In depth they range from forty to one hundred and eighty-eight feet, but those in the lower parts of Baltimore will average about seventy feet. Many of them reach the gneiss and other rocks, which underline formation 21. Where the water does not flow above the surface it is so near as to be pumped out very readily.

The tube or pipe is usually eight inches in diameter, and as it completely shuts out all the surface and other impure waters from the upper strata, the water from these wells is, in almost every case, equal to the best springs of rock water. The only exception is where the parties finding an abundance of water at certain depths that answered their special purposes, did not wish to incur the expense of going deeper for a purer article.

About seven miles southeast of Baltimore there are three artesian wells. One is at the head of Bear creek, on the north side of the Patapsco, and