

It is my purpose to examine this Linganore copper region in Frederick county, with all the care that its importance demands, and endeavor to propose some system by which this buried wealth may be made available.

We have also abundant traces of copper in the red shales (No. 20) in the n. e. part of Frederick, and the n. w. part of Carroll county, and so there are in the same formations in other states. They give, however, so little promise of profitable mines, that I would not advise the expenditure of money in digging for the ore. Much has been spent in searching for copper ore in those shales without useful results.

We have another metalliferous region, embracing the Catoctin mountain and Middletown valley, about which little is yet known. Fine specimens of pure native or metallic copper have frequently been found in the mountain, as well as stains of carbonate of copper upon the slates both in the mountain and the valley. A citizen of Frederick county also informed me of the existence of calamine, (an ore of zinc) in the mountain, but I have not seen even a specimen of it.

This metalliferous range also deserves to be most carefully investigated.

ARTESIAN WELLS.

Many years ago, I was fully satisfied that Artesian wells were suited to a large portion of our state. In the year 1823, I prepared an article upon the subject for the American farmer, at the request of the late John S. Skinner, its first editor. It was illustrated by a diagram to aid in explaining the cause of the rise of water in these wells. The object was, to call the attention of our people to this means of obtaining water in districts where there are few or no springs affording good water, and where it could not be obtained from wells of the ordinary kind and depth.

The subject was neglected in a great measure, owing to the fact that we were without operators to sink wells of that kind, until about seven years ago the business was commenced here by Mr. J. N. Bolles. Subsequently other parties also engaged in it. They all, I understand, use the patent flush pipe invented by Mr. Bolles, which avoids the difficulties in sinking formerly experienced.

I am informed that about 100 Artesian wells have been sunk in Maryland, nearly all of which are in Baltimore and its vicinity. Of these, it is stated, that about 90 have proved completely successful in bringing good water above or near the surface.

It was my intention to have added to the present report a full account of Artesian wells, accompanied with the proper drawings, but the delay in the preparation of the report from the causes before stated, makes it necessary that I should touch very briefly upon this subject.

There is no time to prepare the drawings and get them engraved and I do not feel justified in delaying the printer. I must defer a full account for another occasion.

The rise of water in Artesian wells to or near the surface, depends altogether upon the geological structure of the district in which they are sunk.

They succeed best where there are alternations in strata of clays and sands or gravel, or where they consist of porous sandstones and slates.

In intrusive rocks, such as from one to four, they so very rarely succeed that I would advise against attempting them in any case.

In metamorphic rocks (5, 6 and 7) it is a very rare case, indeed, that as much water can be obtained from an Artesian well of considerable depth as from the ordinary wells of the country.

In boring deep into limestones there is a great uncertainty as to the supply of water, owing to the caverns or seams in this kind of rock.

The disposition of the strata is to be carefully considered. If it be basin or trough-shaped and the well be sunk through stratified rocks, the water will rise to or above the surface. If the strata for many miles on each side of the well dip in the same direction success is very uncertain. Upon an anticlinal axis it is still more hazardous.