

GEOLOGY
OF
NEW-YORK.

PART IV.

COMPRISING THE

SURVEY OF THE FOURTH GEOLOGICAL DISTRICT.

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ALBANY:
CARROLL AND COOK, PRINTERS TO THE ASSEMBLY.

.....
1843.

CHAPTER X.

Mineral and Gas Springs rising from the Rocks of the New-York System in the Fourth District.

The general phenomena of springs have been noticed under each rock or group, where there existed any circumstances to modify their production, or otherwise affect their frequency or copiousness. The origin of all the springs of pure water, or that of ordinary purity, is simple and readily understood; in other instances, there seems more obscurity attendant upon them.

In this district the only mineral springs of interest are the salines, the sulphur springs, the inflammable gas springs, and the springs of Canoga, yielding nitrogen.

1. NITROGEN SPRINGS.

The only springs in the district which are known to yield nitrogen, are at Canoga in Seneca county. One only is very copious, and, therefore, the only one usually noticed. It is situated at the base of a gentle slope, and near the southern termination of the Corniferous limestone. The basin is not over six feet in diameter, but the water rises, in less quantity, over a space of twenty feet. The sand and gravel are kept in continual agitation, rising in little cones, and again falling away and appearing at another point. The water, in its ascent, is accompanied by nitrogen gas, which rises to the surface in large quantities. The force of the water and the escape of the gas give the spring the appearance of a boiling vat. The water is perfectly limpid, and leaves no sediment of any kind; it first spreads over a bottom of gravel and boulders, from which the finer parts have been removed for several rods, and then flows quietly through a narrow channel towards the lake. The outlet of this spring is joined by a similar smaller one, which flows in from the northeast. There are also several points in a swamp near this, where the same gas issues.

These springs have all the characters, except temperature, of the thermal springs along the eastern border of the State, the gas from which is known to be chiefly nitrogen. The springs of Canoga, with several in Franklin county, N. Y., are the only ones I have seen yielding nitrogen, which were not above the ordinary temperature of the place. The temperature of these springs is about 40°, Fahrenheit's scale.

From the facts before noticed, under the description of Corniferous limestone, there is scarcely a doubt but these springs have their origin along a line of fault or fracture in the strata. Those on the eastern side of the Cayuga lake at Springport have, probably, the same origin; and it is interesting to observe that those in the eastern part of New-York are in similar situations, but much nearer to strata of igneous or hypogene origin. I am also informed by Mr. Vanuxem, that many which he has examined in Virginia, and at the south, are in similar situations.* Those of Chateaugay are near the junction of the granite and Potsdam sandstone, and in the Calciferous sandrock.

2. SPRINGS EVOLVING CARBURETTED HYDROGEN AND PETROLEUM (*Burning Springs*).

Springs of this character are numerous in the Fourth District. Sometimes the gas alone is the only product; and in others it is accompanied by petroleum, or liquid bitumen, which spreads over the surface of the water, and can be collected in considerable quantities. These are the "burning springs," which in our younger days were such a marvel as a part of geographical knowledge.

These springs are chiefly confined to the higher rocks, though there are a few places where they occur in the lower beds. The lowest situation in the Fourth District is at Gasport in Niagara county: this has already been noticed in the description of the Medina sandstone.

Along the outlet of Crooked lake, there are several places where this gas is seen to rise from the canal, and streams of water. The principal point is where there is an undulation in the strata.

A mile south of the village of Rushville, in Yates county, there are one or two springs which emit a considerable quantity of this gas; and when ignited, it continues to burn as it rises to the surface of the water. It was formerly conducted to a house near by, and used for lighting and warming the apartments. It is a popular belief, that wherever this gas rises, coal exists beneath the surface; and accordingly an excavation was commenced at this place, which of course resulted in disappointment. The geological situation is in shales of the Portage group.

In the town of Bristol, Ontario county, there are several springs from which this gas issues. The quantity is often large, and might be turned to some economical purpose.

The "Oil spring," as it is termed, is situated on the dividing line of Allegany and Cattaraugus counties. "It is a dirty circular pool, about eighteen feet in diameter, filled nearly to its margin with foul water, having, at the time we saw it, a small quantity of petroleum in clots floating upon its surface."†

This description of the famed oil spring corresponds with its appearance when subsequently visited. There was a small quantity of the gas issuing at intervals through the viscid film

* Prof. W. B. Rogers has since published an elaborate paper on the "Connection of Thermal Springs in Virginia with Axes and Faults." (Transactions of the Association of American Geologists and Naturalists.)

† VANUXEM. Annual Report of 1837.