

Appendix
(V.)

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of calcium, is so well marked that their presence ought not to be disregarded in estimating the therapeutic value of a mineral water; the distinction here drawn is therefore one to which I would call the attention of the medical profession.

SPRINGS OF SABREVOIS.

Having received a specimen of mineral water from a spring at Alburgh, Vermont, which was interesting as being a very alkaline sulphurous water, I was led to suppose that the springs which occur at Pike River in the Seigniorship of Sabrevois, but a few miles distant from Alburgh, and in the same geological position, might be similar in character. I accordingly visited them early in the month of February, and collected the waters for examination.

The springs are situated about a mile from the village of Pike River. There are several of them which rise within a few rods of each other; but with the exception of two principal ones they were frozen and covered up with the deep snow. The one nearer to the road, and on the right side of the path or bush road which leads through the wood in which they are found, is designated the "Sulphur Spring," and the other, a few rods beyond, although equally sulphurous, is more saline to the taste, and is known as the "Saline Spring." The temperature of the first was 38° F., and although the air had been for several days at or below 0°, and was that morning, February 8th, 10° F., there was only a film of ice over it. The other was rather more frozen, and had a temperature of 37°.

I have as yet only been able to submit these waters to a qualitative analysis; they are both but feebly impregnated with mineral ingredients. The Sulphur Spring, as it is called, contains sufficient sulphuretted hydrogen to give it a flavour when recent, but the quantity is very small; it is slightly saline, and when evaporated deposits earthy carbonates, while the residue contains alkaline and earthy chlorids, with a small portion of sulphates, and slight traces of bromine and iodine. These elements may be so combined as to give chlorid of sodium with a little chlorid of potassium, sulphate of lime, chlorid of magnesium, with traces of bromid and iodid of that base, besides carbonates of lime and magnesia.

The amount of sulphuretted hydrogen in the second spring is likewise very small, but the water is much more saline. It contains no sulphates, but gives on the addition of sulphate of lime, a precipitate indicating baryta and perhaps strontia. It contains both alkaline and earthy chlorids, and small portions of bromids and iodids, besides carbonates of lime and magnesia, and a trace of iron. From these we may deduce the following as the mineral ingredients of the water:—Chlorid of sodium with a trace of potassium, chlorids of calcium, magnesium and barium, or strontium, with small portions of iodid and bromid of magnesium, besides carbonates of lime and magnesia, and a trace of iron.

While in this vicinity, I visited a sulphurous spring on the land of David Miller, about two miles south of Henryville. The spring was frozen over and covered with deep snow, while a severe storm which was raging at the same time precluded the possibility of making an accurate examination. A portion of the water was however brought away, and the amount of sulphuretted hydrogen determined.

The water resembles that of Alburgh; it is quite sulphurous, and has a somewhat sweetish saline

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taste. It is strongly alkaline in its reactions with tests, and when evaporated to one-tenth is distinctly so to the taste. In addition to carbonate of soda, it contains a considerable amount of chlorids and a feeble trace of iodid of sodium. During evaporation it deposits abundance of carbonates of lime and magnesia. The amount of sulphuretted hydrogen corresponds to 1.6 cubic inches in 100 of the water. This spring is deserving of farther examination.

SALINE SPRING OF ST. BENOIT.

Having been informed by the Honorable A. N. Morin, of a saline spring at the village of St. Benoit, I proceeded, after my return from Sabrevois, to examine it.

The spring, which is situated directly opposite to the ruins of the burned church, issues from a tertiary clay which here overlies the Potsdam sandstone, and has been excavated to the depth of twelve feet. The supply of the water is copious; it rises in a tube or box which surrounds it, fully three feet above the level of the earth, and would probably rise much higher if properly enclosed. The temperature of the spring on the 22nd of February, was 41°; the air being 22°.

The specific gravity of the water at 60° F. is 1004.32; it is saline to the taste, though not strongly so; when boiled it deposits an insignificant quantity of earthy carbonates. The liquid contains chlorids of sodium, calcium and magnesium, with a considerable quantity of sulphate of lime, besides portions of bromid and iodid of magnesium, although in less quantities than in many of our saline waters. It has not yet been submitted to a quantitative analysis.

ST. JOHN'S SPRING, QUEBEC.

Last fall, at the request of some gentlemen of that city, I visited Quebec, to examine a sulphurous spring which occurs in St. John's suburb, on the property of Joseph Hamel, Esq.

The specimen obtained was much diluted with surface water, which at that season it was impossible to exclude; this, however, did not prevent a qualitative analysis, which shews it to be an alkaline sulphurous water, like the "Sulphur Spring" at Caledonia, and that of Henryville, described above. It contains sulphate and chlorid of sodium, with a small quantity of carbonate of soda, besides a considerable amount of carbonates of lime and magnesia held in solution by carbonic acid; no bromine or iodine were detected in it. The spring is of an interesting class, and is worthy of notice; the mixture of rain water at the time deterred me from attempting a quantitative analysis of it.

MINERALS AND METALLIC ORES.

Lake Huron.

The examinations at the Bruce Mines developed no minerals of interest other than the ordinary ores of copper: the chemical analysis of the various samples of ore, embracing upwards of fifty assays, have been already published in your Report upon the Mines.

The nickel ore from the Wallace Mine on the White Fish River, referred to in Mr. Murray's Report, has been submitted to a partial examination. The specimen was a mixture of a steel gray arseniuret, the species of which I have not yet determined, with white iron pyrites, and probably some arsenical sulphuret of iron. As the immediate object of the analysis was to determine the propor-