Appendix (V.) 1st July.

the village of Yamachiche. The river here flows between banks of clay, which are often sixty to eighty feet high, and exceedingly abrupt. The underlying formations are not exposed in the vicinity, but the position is probably near the dividing line between the Trenton limestone and the Potsdam sandstone. The spring rises in the narrow valley that lies at the foot of the hill, and near the river, but a few feet above its ordinary level. The water which is remarkably transparent, rises with great force, accompanied with volumes of carburetted hydrogen gas, which keep it constantly in violent ebullition. The discharge of water is very considerable, probably six or eight gallons per minute; the temperature of the well was found on the 25th of October, to be 49°, that of the air being 44°. The specific gravity of the water at 60° F. is 1010·36; it is strongly saline to the taste, but from the smaller portion of earthy carbonaes, less bitter than that of St. Léon, which it much resembles. Like that it contains in addition to these and the usual alkaline chlorids, portions of bromids and iodids, and a little carbonate of iron. No salts of barium or strontium were detected.

1000 grammes of the water afforded:

Chlorine	7·44689
Bromine	·02956
Iodine	·00355
Soda	6·23900
Potash	·05050
Lime	·14636
Magnesia	·65650
Iron (peroxyd)	·00360
Alumina	·00500
Silica	·04795
Carbonic Acid	1·12600

These may be combined to give the following compounds:

Chlorid of Sodium	11·77500
" of Potassium	·08000
" of Calcium	·05030
" of Magnesium	·37435
Bromid of Magnesium	·03420
Iodid of Magnesium	·00390
Carbonate of Lime	·21600
" of Magnesia	1·05930
" of Iron	·00540
Alumina	·00500
Silica	·04795
Carbonic Acid	·48200
Water	985·86660
	1000·00000

The amount of solid matters in 1000 parts is by calculation 13·6514.

One pound of 7000 grains gives the following contents:

Chlorid of Sodium	82·42500 grains
" of Potassium	·56000 "
" of Calcium	·35210 "
" of Magnesium	2·62045 "
Bromid of Magnesium	·23940 "
Iodid of Magnesium	·02730 "
Carbonate of Lime	1·51200 "
" of Magnesia	7·41510 "
" of Iron	·03780 "
Alumina	·03500 "
Silica	·33565 "
	95·55980 grains.

While in this vicinity, I visited a locality of mineral waters which had attracted some attention among the neighbouring inhabitants. It is near the village of Champlain, and about three leagues from Three Rivers; there are two springs here, but one was so filled with surface water that nothing satisfactory could be determined.

The other was a feebly saline water, containing alkaline and earthy chlorids, with traces of bromids and iodids, but no sulphates. The precipitate on boiling was abundant, and consisted of earthy carbonates with a small portion of iron.

THE PLANTAGENET SPRING.

This mineral spring has been quite recently introduced to the notice of the public as a strongly medicated saline. I have not as yet visited the locality, but in the month of February last, Mr. Chas. La Rocque, the proprietor, placed in my hands several gallons of the water, which I have submitted to a careful analysis.

The water has at 60° F. a specific gravity of 1009·39; its taste is strongly saline, and more bitter than that of the Caxton Spring, just described. Analysis shews the presence of the alkaline and earthy chlorids, with portions of bromine and iodine, besides carbonates of lime and magnesia, with traces of carbonate of iron.

1000 grammes of it gave of

Chlorine	6·96020 grammes
Bromine	·00700 "
Iodine	·00480 "
Soda	6·18414 "
Potash	·05600 "
Lime	·08736 "
Magnesia	·52353 "
Iron, protoxyd	·00540 "
Silica	·07000 "
Carbonic Acid	undetermined

These when combined give the following salts for 1000 parts of the water:

Chlorid of Sodium	11·66600
" of Potassium	·10400
" of Calcium	·13640
" of Magnesium	·24522
Bromid of Magnesium	·00805
Iodid of Magnesium	·00527
Carbonate of Lime	·03300
" of Magnesia	·89043
" of Iron	·00964
Silica	·07000
	13·16801

7000 grains, or one pound avoirdupois, contain

Chlorid of Sodium	81·66200 grains
" of Potassium	·72800 "
" of Calcium	·95480 "
" of Magnesium	1·71654 "
Bromid of Magnesium	·05635 "
Iodid of Magnesium	·03689 "
Carbonate of Lime	·23100 "
" of Magnesia	6·23301 "
" of Iron	·06748 "
Silica	·49000 "
	92·17607 grains.

The similarity between the last three waters is very close both in the nature and the quantity of the ingredients which they contain. It will be observed that that of St. Léon contains, like the sources of Varennes, baryta and strontia, but in much smaller portions; while that of Caxton is distinguished by the large amount of earthy carbonates which it contains. These three springs, with the Intermittent of Caledonia, constitute a well defined class of saline waters, which are contrasted with the other sources of Caledonia, and those of Varennes. In the first class all of the soda and portions of the lime and magnesia exist as chlorids, while in the second the quantity of chlorine is not sufficient for the alkaline bases, and all the lime and magnesia, with a portion of the soda, exist as carbonates. From the presence of the carbonate of soda these waters are alkaline and will possess different medicinal powers from the others, which contain chlorids of calcium and magnesium; the medicinal action of these two salts, and especially of the chlorid