ART. IX.—ANALYSIS OF A MINERAL WATER SENT FROM GASPÉ.

The water which is the subject of the following analysis, was procured from the North side of the S. W. branch of the Gaspé River, and four miles upwards from its mouth. The springs which afford it are three or four in number, and arise from the bottom of a natural well or basin about three feet in diameter, and situated on the declivity of a hill, about one mile from the bank of the river. At intervals bubbles arise from these springs, and floating on the surface a few seconds explode; a white sediment is observed on the leaves and roots which are under the water, and the same is noticed in the moss and grass through which the water flows. The loose rocks on the hill and on the way to the springs are all composed of a yellow sand stone, sometimes inclining to gray.

Mr. McConnell, of Gaspé, transmitted to the Society some water from a spring at Gaspé, and accompanied it with the following notices :—He states that the spring had been lately discovered ; that it is situated about half a mile from the shore, near to Gaspé Basin, and that it gushes from a bank of sand stone. The sample of water was referred to us for Analysis, and we beg leave to submit the following report upon it :—

The water submitted to us was contained in two wine bottles, well packed, but unfortunately not quite free from the lees of wine.

The water itself was perfectly bright and clear, and did not deposit any sediment on exposure to the atmosphere.

Some gas was discharged in uncorking the bottles; principally, if not wholly sulphuretted hydrogen : of which it had a strong odour. This was not removed by boiling nor by exposure to the atmosphere for several hours.

When the water was heated, and prior to its boiling, more gas was disengaged, but its amount could not be ascertained from the want of a mercurial trough.

Its specific gravity at 53° of temperature was 1.000; snow water, which was the purest water we could obtain, being 1 .000

The water was submitted to the following experiments:—

1. The addition of lime water produced no cloudiness.

2. When Tincture of Galls was added to a portion of the water, no immediate change took place, but after the lapse of forty-eight hours the mixture assumed a blackish tint.

3. Prussiate of Potash was added to another portion without any result, immediately, or twenty-four hours afterwards: until a few drops of Muriatic acid was added, when after standing seventy-two hours, the mixture became of a light blue color.

4. A solution of oxalate of Ammonia produced a copious precipitate.

5. As also did the addition of Nitrate of Silver.

6. But no cloudiness resulted when Nitrate of Baryta was added, either before or after boiling the water: or when it had been exposed for some time to the atmosphere.

7. Thirty-two and half cubic inches, (an imperial pint,) were slowly evaporated in order to collect the bodies held in solution,—a dark coloured sabulous incrustation (A) formed, which when dried in a watch glass over a spirit lamp, became almost black, giving out an empyreumatic odour. It then weighed 7 grs.

8. about 6 gr. of the dried matter (A) were boiled in 8 or 10 times this weight of distilled water; the solution (B) became discoloured. Some insoluble matter (C) remained on the filtre, which when dried weighed about 2 grs.

9. The powder (C) was treated with diluted muriatic acid; when it was almost wholly disssolved with effervescence, leaving, however, a little brown residuum (D.) in neutralizing the excess of acid with aqua Ammonia, a copious precipitate was formed, when oxalate of Ammonia was added.

10. The brown residuum (D) was then exposed to a white heat in a platinum spoon, by which its colour was destroyed, still leaving, however, some particles of solid matter.

11. To half the solution (B) nitrate of silver was added, which occasioned a copious precipitate, weighing 3 grs. when dried ; insoluble in nitric acid.

12. Nitrate of Baryta also now produced the slightest possible diminution of transparency in the solution.

13. While the addition of oxalate of Ammonia occasioned a very copious precipitation.

14. The remaining part of the solution (B), to wit $\frac{1}{4}$ of the whole, was slowly evaporated upon a watch glass, when cubical crystals were left, having a strong tendency to deliquescence. The salt on being washed with alcohol lost somewhat of this tendency. When dry it weighed about 2 grs. before digestion with alcohol; but on redrying after digestion, it was diminished nearly $\frac{1}{2}$ a gr.

15. When Carbonate of Ammonia and Phosphate of Soda were added to the water of the spring, a slight cloudiness resulted.

From the facts now stated, it appears that the water under examination contains the following ingredients,— unfortunately the quantity was too small to justify an attempt even to ascertain their precise proportions :—

From its sensible qualities, as well as from No. 1, it results that the principal gasious body was sulphuretted hydrogen; that carbonic acid at least did not form any notable part of it.

Nos. 2, 5 and 9, imply the presence of iron, in the state either of a carbonate or of a peroxide.

From Nos. 4 and 13 we infer the presence of lime, and from Nos. 2 and 14 that it exists in the form of a carbonate and a muriate.

No. 5 proves the presence of muriatic salts; and from No. 14 that muriate of soda was a principle one.

No. 6 implies the absence of any salts which contain a basis of sulphuric acid.

From No. 7 it appears that it is almost impossible to avoid the introduction of extraneous matter, without a well established laboratory, however carefully the analysis be conducted. Thus the colour and the smell of the residiuum from the presence of some animal and carbonaceous matter. The presence of the latter was confirmed by No. 10.

The solid matter left after the combustion of the charcoal in No. 10, was probably siliceous, since it was not soluble in either of the mineral acids. Its quantity was too small to be tested in any other way.

From Nos. 2, 8, 11 and 14, it is ascertained that muriate of soda formed by far the largest proportion of the saline ingredients, yet we infer from No. 13, and from No. 14 in particular, that muriate of lime exists in a small proportion.

From No. 15 we were led to infer the presence of a minute quantity of magnesia in the water.

The above is the best analysis we can furnish of the water submitted to us, under the unfavourable circumstances of deficient means, both from the smallness of the quantity sent, and from the want of a laboratory duly fitted up.

This water much resembles that of Moffatt in Scotland, and probably possesses the same medicinal virtues. The active ingredients, however, are in such small proportions that we do not conceive it is likely to become of any considerable value as a medical agent.

JOS. SKEY, M. D.

WILLIAM KELLY, M. D.

Quebec, December 21, 1833.