



II. On the presence of iodine, potash, and magnesia, in the bath waters

Mr. Charles Cuff

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even in Europe; but that in Asia, the cradle of the human race, they have never been at all explored. From the absence of human bones in the antediluvian deposits of Europe, the only consequence which can justly be inferred is, that the regions of the earth which we inhabit were not peopled before the Deluge; and this consideration furnishes a strong presumption that no long interval elapsed between that event and the creation.

So that the present state of our knowledge upon this subject presents us with two geological probabilities: first, that there has been since the creation of the present order of animated beings a general deluge, which destroyed a great multitude of those animals and extinguished several species; and secondly, that this deluge followed the creation at no very considerable interval of time, and before mankind had overspread the earth. These are links between natural and civil history which it is of the highest interest to trace; and the confirmation and extension of them is the most important object to which the inquiries of geologists can be directed.

II. *On the Presence of Iodine, Potash, and Magnesia, in the Bath Waters.* By Mr. CHARLES CUFF.

To the Editors of the Philosophical Magazine and Annals.

Gentlemen,

THE annexed detail of experiments upon the Bath waters, I made at the suggestion of Sir G. S. Gibbes, M.D. with a view to ascertain the presence of iodine, bromine, magnesium, or potassium; the two latter bodies having been stated by Mr. Walcker, in his recent analysis, as existing in them*, though unnoticed by other experimentalists except Dr. Bryan Higgins, who assigns twenty-two grains in the gallon of muriate of magnesia. At a more convenient season I purpose renewing this inquiry into the saline contents of these celebrated springs. My present object referring solely to the points stated above, I submit the result of my experiments to the attention of others who may have time or inclination to pursue the investigation. I remain, Gentlemen, yours, &c.

Bath Institution, Nov. 18, 1829.

CHARLES CUFF.

Twenty-four imperial gallons of the water from the King's Bath were evaporated in a *new* tinned iron boiler to about half

* See Phil. Mag. and Annals, N. S. vol. vi. p. 148.

a pint, and the liquid separated from the solid matter which had precipitated during the evaporation.

The solid matter, inferred to be the sulphate of lime (with silic) and iron, known to be the chief proportion of the solid contents of the water, was not examined, as the inquiry related only to the easily soluble salts, which the liquid would necessarily contain. The water on being further reduced in a Wedgewood-ware basin, by cautious evaporation yielded well-formed crystals of chloride of sodium, and a small portion of a finely crystalline substance, which on examination proved to be sulphate of lime.

The taste of the concentrated water had hitherto been purely saline, but when reduced to half an ounce, and separated from the crystals which had formed, it was also bitter.

The mother liquor was tested as follows :

- A. Oxalate of ammonia No change.
- B. Muriate of baryta... Dense precipitate insoluble in nitric acid.
- C. Carbonate of ammonia No change, but yielded a precipitate by boiling, and also by the addition of phosphate of soda.
- D. Muriate of platina.. Yellow precipitate.
- E. Solution of starch... No change, but a very decided violet precipitate on adding a few drops of diluted sulphuric acid.
- F. Nitrate of silver..... Copious precipitate not *wholly* soluble in pure ammonia.
- G. Chlorine gas..... No change.

Experiment A. shows that all the lime had been removed.

B. that sulphuric acid was present.

C. indicated magnesia,

D. potassa,

E. and F. *Iodine*.

G. showed that there was no bromine.

Comparative experiments with a solution of iodine upon the starch test used, render it probable that the proportion of iodine in the whole quantity of water evaporated was much less than a grain.

III. On the General Existence of Iodine in Spring Water.

By R. HENDERSON, M.D.

To the Editors of the *Philosophical Magazine and Annals*.

Gentlemen,

MY attention has of late been directed to the statements of Prof. Daubeny, respecting the existence of bromine and iodine in many of the mineral waters. I beg leave to observe that