

Royal Institution, Albermarle-Street, London.

June 21th, 1827.

SIR,

I have carefully examined the character of the water left with me from you; its most distinguishing feature is the quantity of sulphuretted hydrogen gas dissolved in it; but with this there is also present a large proportion of saline matter, containing, amongst other substances, a small quantity of carbonate of iron. The gases contained in the water, are sulphuretted, hydrogen, and carbonic acid, with a trace of nitrogen. The salts are, first, muriate of soda, then sulphate of soda; these forming by far the largest proportion of the saline matter present. Sulphate of lime is next in abundance; the water appears to be nearly saturated with it, but it is not an abundantly soluble salt. There is also a minute trace of muriate of magnesia, a small quantity of carbonate of lime, a small quantity of carbonate of iron, and a trace of carbonate of soda. There is no free sulphur in the fresh water, but, if it be left exposed to air, sulphur is deposited in it in consequence of the decomposition of the sulphuretted hydrogen by the oxygen of the air. I have not analysed the Harrowgate water myself, and therefore can only speak generally of its similarity with that you sent me. Its resemblance in the most striking ingredient, i. e. sulphuretted hydrogen, is evident on the slightest observation.

(Signed) M. FARADAY.

*To Mr. W. Crupper,
New Baths, Willoughby.*