NOTES OF A VISIT TO THE "HOT SPRING," NEAR SOUTHPORT, IN 1877.

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[*Read 9th July*, 1878.]

About the middle of July, 1877, I had an opportunity of paying a visit to the thermal spring, near Southport, discovered not very many years ago by some splitters who were at work in the neighbourhood. Mr. Graves, who accompanied me, and who had kindly made all necessary arrangements for the expedition, had once previously visited the spot; and his general local knowledge was of great service in enabling us to find it without much difficulty.

The most direct *route* from Southport is by boat up the Lune, as far as the tidal water extends. Landing on the right or western bank of the river, a track is followed for a mile or more, until a convenient crossing can be effected by means of a fallen tree. The country here, as far as one can see, is quite level, and thickly wooded, with much fine timber and tolerably dense scrub, the open spaces being usually wet button-grass marshes. There was no time available in those short days of winter for any geological examination of the immediate neighbourhood, and no rock was seen *in situ*, but the ground was thickly covered in places with large rounded boulders of greenstone, and waterworn pebbles of quartzite. After going a little astray, we at last came upon a small stream, the water in which rapidly sent my thermometer up from 45° to 72°; and following up this clue for some 200 or 300 yards through the scrub, we arrived at a spot where the heated water was briskly bubbling up in the bed of the stream. At the surface the temperature proved to be 82°, and at the bottom, a foot lower, 83° 5′; and though this is, perhaps, hardly high enough to justify the name of "Hot Spring," it must be remembered that the temperature of the air in the shade at the time was 45°, and that there was ice nearly half an inch thick on some of the shallow pools in the bush track, not a mile distant. The water of the spring is evidently cooled rapidly by the water of the stream in which it rises; and it would be impossible either to ascertain the maximum temperature, or to obtain a sample sufficiently pure for analysis, without putting down a tube to the depth of a few feet, or adopting some other means for keeping it apart.

It is not easy to give satisfactory explanation of this phenomenon; and until I know more of the underlying formation I can only suggest that it is probably caused by the decomposition of pyrites, or other metalliferous products, in

the rocks through which the water makes its way to the surface. It is almost unnecessary to say that there are no traces of recent volcanic action anywhere in the district. Of the sedimentary rocks of the neighbourhood, none are older than the Upper Palæozoic, and the volcanic rocks associated with them belong, probably, to an epoch immediately succeeding the carboniferous period.