## APPENDIX.

minerals, of the breadth and depth of Niagara, and of a deep gory red, falling in one emblazoned sheet, one raging torrent, into the occan! The scene, as described by eyewitnesses, was terribly sublime. Two mighty agencies in collision! Two antagonist and gigantic forces in contact, and producing effects on a scale inconceivably grand! The atmosphere in all directions was filled with ashes, spray, gases, &c. ; while the burning lava, as it fell into the water, was shivered into millions of minute particles, and, being thrown back into the air, fell in showers of sand on all the surrounding country. The coast was extended into the sca for a quarter of a mile, and a pretty sand-beach and a new cape were formed. Three hills of scoria and sand were also formed in the sca, the lowest about two hundred and the highest about three hundred feet.

"For three weeks this terrific river disgorged itself into the sea with little abatement. Multitudes of fishes were killed, and the waters of the ocean were heated for twenty miles along the coast. The breadth of the stream, where it fell into the sea, is about half a mile, but inland it varies from one to four or five miles in width, conforming itself, like a river, to the face of the country over which it flowed. Indeed, if you can imagine the Mississippi, converted into liquid fire, of the consistency of fused iron, and moving onward, sometimes rapidly, sometimes sluggishly—now widening into a sea, and anon rushing through a narrow defile, winding its way through mighty forests and ancient solitudes, you will get some idea of the spectacle here exhibited. The depth of the stream will probably vary from ten to two hundred feet, according to the inequalities of the surface over which it passed. During the flow, night was converted into day on all eastern Hawaii. The light rose and spread like the morning upon the mountains, and its glare was seen on the opposite side of the island. It was also distinctly visible for more than one hundred miles at sea; and at the distance of forty miles fine print could be read at midnight. The brilliancy of the light was like a blazing firmament, and the scene is said to have been one of unrivalled sublimity.

"The whole course of the stream from Kilauea to the sea is about forty miles. Its mouth is about twenty-five miles from Hilo station. The ground over which it flowed descends at the rate of one hundred feet to the mile. The crust is now cooled, and may be traversed with care, though scalding steam, pungent gases, and smoke are still emitted in many places.

"In pursuing my way for nearly two days over this mighty smouldering mass, I was more and more impressed at every step with the wonderful scene. Hills had been melted down like wax; ravines and deep valleys had been filled; and majestic foress had disappeared like a feather in the flames. In some places the molten stream parted and flowed in separate channels for a considerable distance, and then re-uniting, formed islands of various sizes, from one to fifty acres, with trees still standing, but seared and blighted by the intense heat. On the outer edges of the lava, where the stream was more shallow and the heat less vehement, and where of course the liquid mass cooled soonest, the trees were mowed down like grass before the seythe, and left charred, crisped, smouldering, and only half consumed. As the lava flowed around the trunks of large trees on the outskirts of the stream, the melted mass stiffened and consolidated before the trunk was consumed; and when this was effected, the top of the tree fell, and lay unconsumed on the crust, while the hole which marked the place of the trunk remains almost as smooth and perfect as the caliber of a cannon. These holes are innumerable, and I found them to measure from ten to forty feet deep; but, as I remarked before, they are in the more shallow parts of the lava, the trees being entirely consumed where it was deeper. During the flow of this eruption, the great crater of Kilauea sank about three hundred feet, and her fires became nearly

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