boulders of the beach, cemented together by the coral which has been thrown over them by the sea.

4. ON THE ERA OF ERUPTION IN UPOLU AND SUBSEQUENT CHANGES IN THE FEATURES OF THE ISLAND.

Era of Eruptions.—One of the most remarkable features in the geological structure of Upolu, is the great number of large craters, and their linear arrangement. In consequence of this peculiarity, the island is a long and narrow strip of land. It has been shown that in the islands of these seas, we may often discover that they originated in the action of one or two large volcanoes, with lateral or subordinate points of eruption. The Sandwich Islands were mostly thus formed; so also the adjoining island of Savaii. But on Upolu there has been a crowded line of large and nearly equal vents: the majority of the craters in both the eastern and western districts are within three or four miles of one another. We do not speak of the linear arrangement as in itself singular, for this is usual; but that so short a line should contain so many distinct vents instead of a large or parent cone, with its subordinate craters. We may safely conclude that the longer axis of the island was originally the course of an extensive fissure, along which, after an eruption of lava, a number of active vents remained open.

We have remarked upon the greater age of the central portion of this island, (more especially the northern side,) and the more broken character of the mountains, and have contrasted with these rocks, the twisted scoria of Sangana and other portions of the western district. Shall we conclude that after the ejection of the central rocks, there was a long interval without eruptions, in which the older mountains were nearly dismantled by denudation and disruptive forces? It is quite as probable that active vents continued open, from the earliest eruption in Central Upolu, through all subsequent periods till the latest fires were extinguished. The greater extent of the western district and its more recent appearances of volcanic action, show that the fires were longer in action in this part than in the eastern district. The declivities in the western district are most broken near the central district, that is, back of Apia and farther to the eastward, and we may therefore infer that here the eruptions of the western district first declined, and the surface was earliest left to