

pelled the liquefied rocks, or by one similar to it in intensity and character ; but, when filled from above, the aperture may have been produced by an aqueous as well as by an igneous cause, and hence it is that in these instances we sometimes find that the beds which surround the basalt or trap vein give no evidence of having suffered under a disturbing force. We are taught the cause of ancient phenomena by studying those agents which are now active.

The observations and statements which have been made are sufficient to show the activity and agency of the volcanic force, when its effects are exhibited on islands and continents. But we have spoken of subaqueous volcanoes ; and in order to compare the variety of effects produced by the two classes of active cones, it may be necessary to state a few examples of subaqueous eruption.

We have not authentic records of many subaqueous volcanoes. When it is considered that much the greater portion of the surface of the globe is covered by water, this fact may appear to intimate a much less active condition of the volcanic agent beneath the level of the sea than on dry land ; but the elevation of the volcanic cones above the water is the real cause of this ascertained result. An eruption of any considerable violence must, of necessity, form an elevation that will come under the class of aerial volcanoes, and hence it is that so many active cones are situated in islands.

There is much difficulty in obtaining detailed information concerning the phenomena resulting from the activity of subaqueous volcanoes. That the eruptions are as numerous as from aerial craters, there can be no doubt ; but there is less probability of their being observed. It is a singular fact, that we are acquainted with scarcely an instance of subaqueous eruption that has not produced an island ; and yet it may be reasonably supposed that many do occur which have not sufficient energy to elevate the mineral masses above the level of the sea. This fact may be accounted for in two ways : the volcanic vent may be superposed by so great a depth of water, that no effect is produced on the surface by the eruption ; or the energy which is exerted may be sufficient to occasion many phenomena on the surface of the water, though no observer is present ; and therefore, in this instance, as well as in the former, we are prevented from gaining any information concerning the appearances exhibited