

with a pipe leading down into the earth. Through this the lava rises into the cavity. When the strains have sufficiently accumulated, the lava is forced above its usual level—sometimes overflowing the lips of the crater; sometimes bursting the walls of the mountain, thinned by melting from within. Sometimes, also, the walls by internal fusion become so much weakened that the whole summit falls in, leaving an enormous open chasm. Over this a solid crust forms by exposure. Then, in subsequent ages, this is pierced by a new rupture, around which a new, and smaller, cone is built up, with the broken margin of the older one still more or less perfectly preserved. So, during the eruption of 79, the crater of Vesuvius collapsed, and the present crater has since grown up, leaving still on the north a vast rampart, Somma, showing where the line of rupture of the ancient cone was traced.

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## XVI. FROZEN SEAS OF LAVA.

### ANCIENT LAVAS.

THE spectacle of a volcano in a state of active eruption is a terrific demonstration of the forces of fire imprisoned within the earth, and escaping to our view only when their accumulated strength exceeds that of the restraints in which they are held. These are activities of the present ages of the world, and proofs of intense heat now existing within the cool exterior. Geology brings to our notice the records of still vaster and more terrific operations of intense heat. Vast as are the volumes of modern eruptions, they are slight compared with eruptions of former geologic ages. The limited amount of matter poured forth in modern times cools near the place of escape, and seldom flows to the distance of ten miles. It accumulates, therefore, around the vent, and builds up a volcanic cone. In earlier times the molten lava issued in such quantity as to retain its liquid state sufficiently long to flow away sometimes a hundred miles or more, and overspread with a sea of fire regions as broad as States. The modern