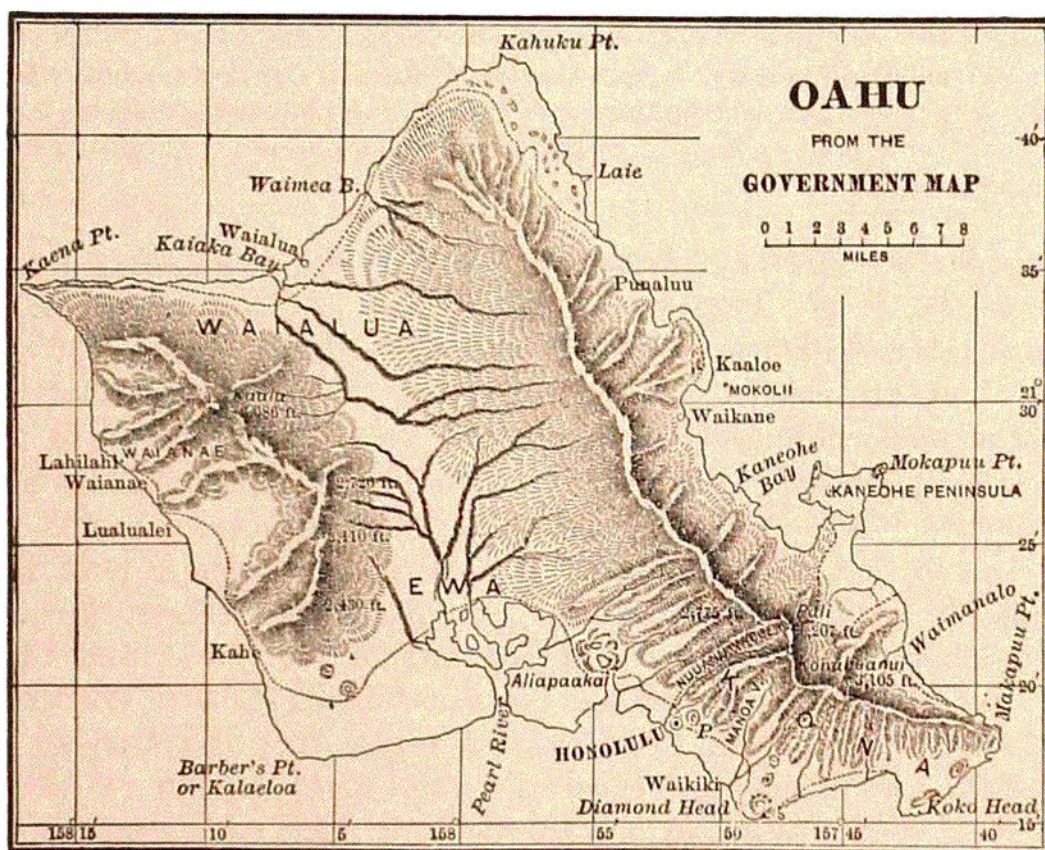


origin is sometimes proved by the crystalline structure and minerals of the rocks. It is probable that other islands of the Hawaiian group have suffered from still greater explosions; for, as the accompanying map (Fig. 257) shows, Oahu consists of portions of two mountain-cones. The larger part of the eastern cone — the one of most recent extinction — must have been broken off and sunk. A vertical wall over 20 miles long marks the course of the fracture. Its highest point is over 3000 feet high after long exposure to denudation. Molokai bears evidence of like catastrophic experience.

The conglomerates made by volcanic ejections contain *angular* fragments, and never consist chiefly of rounded pebbles or stones.

257.



Explosive eruptions of another kind, which might be styled *semi-volcanic*, are included among described volcanic phenomena. In such eruptions water in large volumes gains sudden access to the heated depths beneath an extinct or nearly extinct volcanic mountain through fractures or movements along planes of weakness, as in other cases; but the heated depths are not hot enough for fused rocks. The consequences are earth-shakings; explosions from the suddenly generated steam; the rending of rocks in the deep-seated region of the explosions; projectile action throwing the stones and great rock-masses so made, and the dust from abrasion, into the air and over the adjoining region, attended by vast and violent effusions of steam, making darkness and terrific storms about the mountain; — and not outflows of lava nor the projection of volcanic ashes and scoria from cooled lavas.