older tuffs of Vesuvius have yielded many remains of the shrubs and trees which at successive periods have clothed the flanks of the mountain. Fragments of coniferous wood, which once grew on the tuff-cones of Carboniferous age in central Scotland, are abundant in the "necks" of that region, while the minute structure of some of the lepidodendroid plants has also been admirably preserved there in tuff.[26]

§ 2. Volcanic Action

Volcanic action many be either constant or periodic. Stromboli, in the Mediterranean, so far as we know, has been uninterruptedly emitting hot stones and steam, from a basin of molten lava, since the earliest period of history.[27] Among the Moluccas, the volcano Sioa, and in the Friendly Islands, that of Tofua, have never ceased to be in eruption since their first discovery. The lofty cone of Sangay, among the Andes of Quito, is always giving off hot vapors; Cotopaxi, too, is ever constantly active.[28] But, though examples of unceasing action may thus be cited from widely different quarters of the globe, they are nevertheless exceptional. The general rule is that a volcano breaks out from time to time with varying vigor, and after longer or shorter intervals of quiescence.

Active, Dormant, and Extinct Phases.—It is usual to class volcanoes as *active*, *dormant*, and *extinct*. This arrangement, however, often presents considerable difficulty in its application. An active volcano cannot of course be mistaken, for even when not in eruption, it shows by its discharge of

---

[26] Trans. Roy. Soc. Edin. xxix. p. 470; postea, Book IV. Part VII. Sect. ii. § 2.

[27] For accounts of Stromboli see Spallanzani's "Voyages dans les deux Siciles." Scrope's "Volcanoes." Judd, Geol. Mag. 1875., Mercalli's "Vulcani," etc. p. 135; and his papers in Atti Soc. Ital. Sci. Nat. xxii., xxiv., xxvii., xxix., xxxi. L. W. Fulcher, Geol. Mag. 1890, p. 347.

[28] For descriptions of Cotopaxi, see Wolf, Neues Jahrb. 1878; Whymper, Nature, xxiii. p. 323; "Travels amongst the Great Andes," chap. vi.