

The laccoliths of the Henry Mountains in southern Utah (page 301), according to Gilbert's descriptions, are other products of this time of disturbance; and so also, as remarked by Hills, those of the Spanish Peaks in southern Colorado.

Other eruptions of the epoch contributed to the making of some of the remarkable silver and lead mines of the Rocky Mountain region. S. F. Emmons, in his excellent Report on the famous Leadville region (page 340), briefly considers the question of the age of the veins. He points out the fact that some of the largest eruptions preceded the Laramie upturning, while others attended the upturning; but he leaves the question as to the precise time of vein-making undecided. Emmons also considers it probable that a large part of the eruptive rocks of Colorado are of the same Laramide epoch.

According to Iddings, the igneous eruptions in Wyoming and Montana and the adjoining Yellowstone Park went on near, and at, the close of the Cretaceous. The rocks are largely andesytes of various kinds, much like those of Colorado. They occur as dikes, intrusive sheets, and laccoliths; and later in the epoch of eruption, probably in the early Tertiary, volcanic cones were thrown up. In Montana similar eruptive conditions, of the same epoch, have been observed by J. E. Wolff (1892) in the Crazy Mountains, producing intrusive sheets; and among the rocks occur elæolite syenite, and varieties containing nephelite and sodalite. Similar rocks occur, according to Lindgren (1890, 1893), in the Highwood Mountains, farther north.

The occurrence of *dikes of sandstone*, as described by Cross (1894), in the granite of the region of Pike's Peak, evidently filling fissures in the granite, may be mentioned here, although their time of origin is uncertain. They occur on the west side of the Manitou Park. They are narrower below, and sometimes branch downward. The width varies from 300 yards to a few inches and even a thin film. The rock is an even-grained quartzose sandstone, usually as hard as quartzite, with some limonite among the grains as cement.

In India the eruption of the "Deccan traps," the most enormous on record, took place probably, according to Blanford, at or near the close of the Cretaceous. The facts are mentioned on page 299, under the subject of non-volcanic igneous eruptions. The eruptions at the close of Mesozoic time mark the commencement of an eruptive period in the earth's history, which had its maximum effects during the following Tertiary period.

*Disappearance of species.* — The disappearance of species at the close of Mesozoic time was one of the two most noted in all geological history. Probably not a tenth part of the animal species of the world disappeared at the time, and far less of the vegetable life and terrestrial Invertebrates; yet the change was so comprehensive that no Cretaceous species of Vertebrate is yet known to occur in the rocks of the American Tertiary, and not even a *marine* Invertebrate. The only species in North America known to have continued on into the Tertiary are plants, some of which existed still in the Miocene, and a few differ little from existing species. Here ended not only the living species of Dinosaurs, of Mosasaurs, and Pterosaurs, but these tribes of Reptiles. This was true also of the Belemnites, so far as