Conditions Preceding Eruption.

During the late Jurassic, Lower Cretaceous, and early Upper Cretaceous periods, this area was the scene of sedimentation of an extensive scale, forming part of the great Rocky Mountain geosynclinal prism. Immediately preceding the volcanic out-burst, 2,500 feet of Dakota measures had been accumulated. In general, they were laid down in relatively shallow water, and the red beds, ripple marks, and mud-cracks near the top of the formation indicate terrestrial and probably fresh-water conditions at the time immediately preceding the volcanic eruptions. The occurrence of thin tuff beds within the Dakota formation shows that the approach of the main period of vulcanism was heralded by minor out-bursts at an earlier date.

Probable Magnitude of Eruptions.

It has been shown that volcanic ejecta accumulated to a maximum depth of at least 1,000 feet and occupied an area of 700 square miles, and it is interesting to compare the scale of this out-burst with some of those in historic times.

Martin,[1] in his description of the eruption of Mount Katmai, Alaska, gives some facts regarding modern volcanic explosions. He states that dust from Krakatoa fell to a depth of eighteen inches in twenty-four hours at a distance of sixty-six miles, and the depth of ash from Katmai was about twelve inches at a distance of 100 miles. Tomboro, on the island of Sumbawa, east of Java, caused the accumulation of over two feet of ash more than 850 miles from the scene of eruption. These distances are all greater than the total length of the area over which the Crowsnest volcano distributed material, supposing it to occur at one end of the volcanic area, which it very probably did not. On the other hand, the sizes of the material at present composing the Crowsnest volcanics are generally larger than "ash" or "dust." Fragments up to two feet in diameter have been seen and larger probably occur. In this connexion it may

[1]Martin, G. C. The Recent Eruption of Katmai Volcano in Alaska, National Geographic Magazine, vol. 24, 1913, pp. 131–181.