

ley the wide U-shaped valley of Chisholm Creek joins it from the north, and thence downwards the whole valley is wider than before, and maintains a U-shaped character. At a place known as the Beaver Pass the main valley swings off to the north, and doubtless the drainage ran for a long time in that direction, but the present stream turns southwestward into a narrow gorge between rocky walls, and continues in it past Wingdam towards its junction with Swift River to form Cottonwood River. Close to Beaver Pass Peters Creek flows into Lightning River from the south, and whether the narrow valley of Lightning Creek below the confluence of these two streams was once the continuation of its valley, or was the valley of a tributary in which the drainage has been reversed, is uncertain, though the latter supposition is probably the correct one. I was not able to learn the depth of bedrock below the surface at Beaver Pass, but it is probably several hundred feet, for according to information received from Mr. M. Bailey, the depth from the surface to bedrock about four miles farther up Lightning Creek is 205 feet, and while the grade of the surface between the two places is very light, the grade of the bedrock is probably much steeper.

This will indicate the conditions of drainage, and the characters of the valleys that had been formed by it at the end of the Pliocene Period, and it will be seen that in pre-Glacial times wide mature valleys had been formed, but stream piracy had been taking place and the streams that formed these valleys were robbed by other streams that flowed in deeper valleys.

*Accumulation of Gold.*—During this time gold was being concentrated into the bottoms of some of these valleys in larger or smaller quantities, according to the abundance of the supply, the excellence of the bedrock for forming riffles, or the length of time through which the concentration was operative. If similar conditions had continued down to the present there would have been several wide valleys in the district with beds of gravel covering their bottom lands, through which paystreaks would run. Deep narrow V-shaped valleys and gulches would discharge into them, sometimes from hanging valleys, while in embayments