

minor areas of radiation may have temporarily existed on smaller elevations : that this was followed by a period of more equal level, in which parts of the low grounds were clothed with a temperate flora, the "Interglacial period" so called, succeeded by a second great depression, in which the high level boulders of the second boulder drift were wafted to great distances by floating ice.

The late Prof. Alexander Winchell, a man who did not hesitate to express his convictions, thus bears similar testimony :—"There has been no continental glacier. There has been no uniform southerly movement of glacier masses. There has been no persistent declivity as a *sine qua non*, down which glacier movements have taken place. The continuity of the supposed continental glacier was interrupted in the regions of the dry and treeless plains of the west ; and in the interior and Pacific belts of the continent within the United States, ancient glaciation was restricted to the elevated slopes."<sup>1</sup> He might have added that the St. Lawrence valley was submerged and received the ends of Appalachian and Adirondack glaciers on the south-east, and those of Laurentide glaciers on the north-west.

My friend Prof. Claypole, who, however, has some hesitation, fearing, I presume, to be cast out of the synagogue for heresy, ventures to say,<sup>2</sup> "We deduce from the facts and arguments stated above, that all the observations of glacial action in the northern hemisphere are explicable by assuming the existence of enormous and confluent<sup>3</sup> glacier-systems in and about the high lands of Europe, Asia, and America, which high lands became, therefore, glacial radiants, and shed their load of ice in all directions over the lower adjacent ground, along the lines of

<sup>1</sup> Nov., 1890.

<sup>2</sup> *American Geologist*, Feb., 1889.

<sup>3</sup> The term "confluent" is not necessary here. The glaciers of all mountain chains may be said to be more or less confluent in the *nevé*, from which individual glaciers radiate.