

and filling up preëxisting hollows, though itself sometimes piled into ridges. Near the Rocky mountains the bottom of the drift consists of gravel not glaciated. This extends to about one hundred miles east of the mountains, and must have been swept by water out of their valleys. The boulder clay resting on this deposit is largely made up of local debris, in so far as its paste is concerned. It contains many glaciated boulders and stones from the Laurentian region to the east, and also smaller pebbles from the Rocky mountains, so that at the time of its formation there must have been driftage of large stones for seven hundred miles or more from the east, and of smaller stones from a less distance on the west. The former kind of material extends to the base of the mountains, and to a height of more than 4,000 feet. One boulder is mentioned as being $42 \times 40 \times 20$ feet in dimensions. The highest Laurentian boulders seen were at an elevation of 4,660 feet on the base of the Rocky mountains. The boulder clay when thick can be seen to be rudely stratified, and at one place includes beds of laminated clay with compressed peat, similar to the forest beds described by Worthen and Andrews in Illinois, and the so-called interglacial beds described by Hinde on Lake Ontario. The leaf beds on the Ottawa river and the drift trunks found in the boulder clay of Manitoba belong to the same category, and indicate that throughout the glacial period there were many forest oases far to the north. In the valleys of the Rocky mountains opening on these plains there are evidences of large local glaciers now extinct, and similar evidences exist on the Laurentian highlands on the east.

Perhaps the most remarkable feature of the region is that immense series of ridges of drift piled against an escarpment of Laramie and Cretaceous rocks, at an elevation of about 2,500 feet, and known as the "Missouri Coteau." It is in some places 30 miles broad and 180 feet in height above the plain at its foot, and extends north and south for a great distance; being in fact the northern extension of those great ridges of drift which have been traced south of the great lakes, and through Pennsylvania and New Jersey, and which figure on the geological maps as the edge of the continental glacier,—an explanation obviously inapplicable in those western regions where they attain their greatest development. It is plain that in the north it marks the western limit of the deep water of a glacial sea, which at some periods