

feet were removed. The cycle of denudation was not completed, as is shown by fragments of the first surface which still remain.

The coming of the ice sheet of the glacial period is thought to have altered the general topography but little, with the exception perhaps of a smoothing of the uneven surface or a filling up of sharply cut valleys. The period during which the ice was wasting or melting is marked by many drainage channels that are now abandoned. The occupation by the glacier of the valleys of the principal streams which have a north-eastward trend, caused no doubt a damming up of the water which, together with that from the melting ice, overflowed along the ice front and sought channels that were almost at right angles to the original channel. Many of these are still used as part of the present river courses, but in the southern portion of the Canadian plains there are many of these glacially-induced channels that are now abandoned, and have apparently no other reason for their existence. The Saskatchewan drainage was diverted to the Missouri for a short period while its former valley through the Coteau was blocked by ice. The diversion filled lakes Chaplin and Johnston and proceeded south, scouring out the valley now occupied by Lake of the Rivers, Willowbunch and Big Muddy lakes. A little later the outlet was shifted to east of the Coteau, and the Regina plain was a lake basin drained by the Souris river probably to the Red River valley. This lake was lowered by the retreat of the ice to a position farther north, and a new channel was again adopted. This was deeply cut by the flowing stream, and is now used by the Qu'Appelle and Assiniboine rivers, which have but a small flow at present.

The melting of the ice in the lowlands of the Red River valley created a lake along its front that was not as readily drained as was the case in the retreat of the ice cap across the prairies. In the Red River valley there seemed no outlet, and the basin filled until it spilled over its lowest point, far south in Minnesota at Lake Traverse. The removal or melting of a vast mass of ice in the north seems to have resulted in a slight elevation of the crust that had been depressed by the weight of the ice. This recovery, which means an actual tipping of the lake basin, lowered the lake by spilling its water to the south, and as the lake at its several stages formed beaches, the levels of these give us the amount of tilt that occurred between their dates of formation. This outlet was abandoned when the lake secured a lower northern outlet. The greatest depth of water over the site of the city of Winnipeg was about 560 feet.

The benefit of this old lake to the agricultural value of the Red River valley can hardly be measured. Over the sur-