

King and Russell deduced nearly corresponding conditions from the region of Lake Lahontan. They describe large depositions of tufa during a warm interval of evaporation; and a second deposition during the final desiccation. The latter produced, besides some tufa, a mineral which became changed to calcium carbonate (thinolite of King, page 133). Lake Mono and other lakes in the Basin experienced similar changes.

The Great Basin owes its existing dry condition to (1) the feeble amount of annual precipitation (less than 8 inches, according to Schott's chart) and (2) the great evaporation caused by the high temperature of the region. The precipitation would have been, even in the Glacial period, relatively small; but the temperature then was cold, to freezing, and consequently evaporation became relatively small. It is thus argued that the lakes of the Great Basin were swollen during the times of Glacial cold, owing to the diminished evaporation and some melting; that floods from the melting at the time of the Glacial retreat would have added largely to the waters and carried them up to a state of maximum height; that the waters would have diminished during the following return of glaciers over the neighboring mountains; and then would have reached a second maximum, when melting again made floods under the warm climate and abundant precipitation of the Champlain period. The floods having passed, a drier climate ensued; and that is still continued.

EROSION, TRANSPORTATION, AND DEPOSITION.

To Champlain history belong the events that occurred during the time of land depression and warm climate of the Middle Quaternary. The work of erosion, begun in the later Tertiary, and carried on over the continent and about the newly lifted mountains and elsewhere by the ice and waters of the Glacial period, was continued with great energy through the earlier part of Champlain time; and the results are to be seen in the bold and crested heights and deep cañons of the Rocky Mountain region, and in deeply cut gorges over a large part of the land. But later in the period, transportation and deposition were the chief work of the rivers. There were also shallow lakes about which Mammals congregated and left their bones in lacustrine deposits. Peat beds and marshes abounded, and these have special interest from the remains of Champlain life which they contain, especially the heavy Herbivores which became mired in them in their efforts to escape from pursuit. Cave deposits also have prominent importance, they having been the resorts of Carnivores, Rodents, and other species, and containing also bones of the various animals dragged in for food. And as the caverns commonly occur in limestone, the deposition of stalagmite over the floor of the cave has often enveloped in stone, skeletons and their fragments, with other relics of the occupants.

Champlain seashores also have their deposits; and by means of their numerous shells and other fossils of shallow-water and beach-made accumulations, they mark the limits, as already shown, of marine submergence in many regions from which the sea is now excluded.

Fluvial and lacustrine deposits. — The Champlain subsidence diminished the pitch of southward-flowing rivers. It sometimes reduced it to zero, when lakes formed if there was room for them; and occasionally it reversed the direction of flow in a stream. Consequently it converted *excavating*