2d. A mixture of farm-yard manure and superphosphate of lime and guano, formed the best fertilizer that could be employed for every kind of crop, but more especially turnip and root crops generally. The farm-yard manure supplies all the elements of the food of plants, and by its decay in soil causes the latter to have a higher temperature than it would have if manured with guano or superphosphate alone. The artificial manure was a valuable auxiliary to the natural; it contributed one, and sometimes two, and three ingredients of the food of plants; but it was especially useful as a means of forcing the young plants out of the reach of the fly.

3d. Whilst Peruvian guano, in combination with superphosphate of lime, or farm-yard manure, was a most valuable adjunct, yet its continued use, *per se*, would be attended with injurious results, and for the following reason: Peruvian guano contained a very large proportion of ammoniacal matter in relation to the amount of phosphate of lime found in it. This ammoniacal matter acted as a solvent upon certain constituents of the soil, and rendered them available for the purpose of vegetable nutrition much sooner than would be the case if no guano were applied. Thus the guano not only contributed, itself to the food of plants, but enabled the plants to draw (so to speak) in advance upon the resources of the soil, which, if they did not exist in great abundance, would speedily be exhausted under the stimulating influence of the guano. *In limine*—the effects of the prolonged use of Peruvian guano may justly be compared to those produced by the adoption of the Tullian or Lois-Weedon system of tillage. In both cases the soil will sooner or later be exhausted of its store of fertilizing matters.

4th. Phosphate manure, such as superphosphate of lime, and even such as phospho-Peruvian guano, which contained a moderate proportion of nitrogenous matters, exerted but little solvent action upon the fertilizing constituents of the soil. The effects, therefore which such manures were observed to produce in the development of plants might be attributed solely to the nutriment afforded by these manures, and not to the intervention between the plant and the soil.

He recommended the employment of the natural and artificial manures in conjunction, and stated that the results of his own observation led him to recommend a mixture of two parts of superphosphate of lime and one of Peruvian guano, in preference to the use of guano alone; and this mixture might with advantage be employed for every variety of crop.

the Botany of the Red River Settlement and the old Red River Trail.

[Continued from page 68.]

Before going on I may here describe the usual routine of travel on such trips. It is always a rule to start early in the morning, and we generally rose at about five, and while one caught the horses and saddled them, the other would have made a fire and cooked the breakfast, which consisted generally of a nondescript dish of Mr. Buckingham's (who was appointed cook to the expedition), made with pemican, biscuit and butter. This with a kettleful of tea, as hot and strong as tea and water would make it, was eaten with a relish known only to those living in the open air and taking active exercise.—Breakfast over, things were packed, and we started generally at sunrise, and travelled till about noon, when we would stop at some good pasturage, and allow the horses to eat for a couple of hours, and cook dinner; then start again, travel till near night, or till we could find at one place the three essentials—water, wood, and grass. These we would find sometimes at five and six o'clock, or sometimes have to push on till eight or nine o'clock. When a suitable place was found the horses were let go, a fire made, and supper cooked. After supper, wood was cut, and a fire built to last all night. If possible, the horses were then brought in close to the camp and hoppled—that is, had their forelegs tied together to prevent them wandering far; the cart was then wheeled close to the fire, and, spreading the robes and blankets beneath it, we rolled ourselves in them, feet to the fire, and soon fell into a sleep, the soundness of which was in proportion to the fatigues of the day, the softness of the ground beneath, and the musical powers of the wolves who ocasionally gave us a serenade.

We left the settlement on the 16th October, the long Indian summer, as it is called, having just then commenced. Crossing the Assiniboine River at Fort Garry, we followed the river up on the west side till we arrived at Pembina, a small settlement immediately on the American side of the boundary line. The country here, like that at the settlement and between, is a perfectly flat treeless plain, and well adapted for agriculture, the only drawback being the scarcity of wood, which is only found in narrow strips on the banks of the river, and already most of it has been used for fuel.

Crossing the Red River here, we travelled through a low swampy country, dotted with small groves of aspen, and, along the banks of small streams, scrubby oaks. Here we began to find game in great abundance, prairie chicken, ducks, and the little ground squirrel, and occasionally fox, badger, elk, and the little prairie wolf, which generally annoyed us a good deal at night. In this part of the journey the rivers were bad to cross, being deep, and the bottoms of soft mud, into which the horses would stick till assisted out. This continued for about fifty miles, till arriving at Snake Hill River, we found the river bed sandy, and the land high and dry, consisting