

APPENDIX No. 4

Q. Well, take Manitoba then?

A. I am speaking of this land in the old lake bottom. But when you get to the prairie steppe, to the second prairie steppe, we get to what we would call rock in situ—in other words, the land is covered in places with drift and in other places there is no drift. Where there is no drift we have alkali lands that you are speaking of. The alkali land at Winnipeg is not of the same character as the alkali land on the second prairie steppe. I am very glad you brought this up, because it is a very important matter. There is a basin that contains fresh water, and here is another basin and when we examine it we find it contains saline water. Now, the question comes up, 'Why?' This one with fresh water is on the drift, and this one with alkaline water has its bottom on the impervious St. Pierre shales, as we call them, that underlies the greater part of the prairie as a permanent sub-stratum. To me this is a most important question, this water question. When I am speaking of alkali at Winnipeg it was of water on the surface; but when we speak of the bad lands on the prairie with these St. Pierre shales on which it is based, the alkaline stratum, the deeper you go into it the worse is the water you get; hence, to get water all over the second prairie steppe you must keep in the drift which overlies that. This applies also to the third prairie steppe, when you get beyond the Beaver Hills and down to Battleford. I am speaking of the prairie country; when you get into the valleys the conditions are different.

By Mr. Schaffner:

Q. We have a great deal of trouble in regard to water. Of course we are on the second prairie steppe, 180 miles west of Winnipeg. With us, if a man started to dig a well the surface alkali would not make much difference, but when we get wells 200 feet deep the deeper we go the worse is the water; it makes no difference.

A. No, you cannot get good water. That is a law to me. If a gentleman says to me, 'How will we get good water on the third prairie steppe?' I would say, 'In shallow wells.' Another man said to me, 'My well is thirty feet deep,' and I said, 'I am glad you did not go through the drift, because if you had done so you would not have got good water.' When you get west of Edmonton you can go deeper, because the drift is deeper there. But it is a serious matter with regard to wells, and therefore I would recommend, in fact I have done it repeatedly, that every farmer that has not good water should gather his rainwater and put it in tanks.

Q. Might I ask you what you mean by the term 'drift'?

A. It is a superficial soil that was not laid down at the earlier time. It is gravel and stones, and clay, and sand mud that overlies the alkali that you are speaking of. All of the alkaline ponds in the Northwest are based upon impervious conditions, clay, or something in the bottom that prevents it from leaching away. The fresh water ponds are very often produced from springs.

By Mr. Thompson:

Q. If this water were filtered would it not be good?

A. No, it is not a mechanical mixture, but a real chemical mixture. We found nearly all the ponds in the Touchwood country contained a slight solution of Epsom salts, some of them more so than others.

Q. Are you speaking from experience, Professor?

A. I am, sir.

By Mr. Lewis:

Q. On the second and third steppes, would ploughing make that eventually good soil, the same as in Manitoba?

A. Yes, I am satisfied that all these alkaline lands will be first class, when they are broken up and cultivated.

By Mr. Derbyshire:

Q. And the salt taken out?

A. And the salt taken out.