

Mr. PATTERSON: It could have an effect on navigation. It could have an effect in any harbour if the water in the harbour is two inches lower than it otherwise would have been. If it is at a low water period it might be that a boat could not get into a particular harbour, if it is loaded fully. But ordinarily there is, as you know, a great variation just from month to month, and the boats load according to the depth that they know they are going to get in the harbour they are proceeding to.

Mr. MCGREGOR: How much would be the extreme variation?

Mr. PATTERSON: It varies in different lakes. The extreme variation in lake Ontario in nature was about six feet, something like that.

Mr. MCGREGOR: What about lake Superior?

Mr. PATTERSON: Lake Superior is a much larger body of water, and the range there is not as great. On top of this variation on the subject of the level of the lake of course you have the storm effect, where high winds will blow water into a certain area and will create a higher level in that particular area. But the average level of lake Superior varies about five feet, I would think—four to five feet.

Mr. SLOGAN: I was just wondering if Mr. Patterson or Mr. McLeod could tell us whether they have noticed any difference in the Red that flows from south to north, or the Assiniboine that flows from west to east and a river that would, we will say, flow from north to south.

Mr. MCLEOD: I don't think that the difference in direction of flow is particularly significant. All questions with regard to flows and floods and changes in the Red or Assiniboine are related, of course, directly to the climatic conditions preceding the period of the high flow in question, and they are related, too, to the type of land through which the rivers make their way. Also they are related to the general topography. For instance, as you know, Mr. Slogan, high flow on the Red river results in virtually a lake in the area from Emerson northward. The gradient of the river is very gentle and the river itself is quite wide in proportion to the amount of water it carries normally. I think those features of topography and of climatic conditions outweigh normally at least any difference with respect to the actual directions of the rivers.

Mr. SLOGAN: The reason I asked that was I thought—well, for instance, the Red river melts down south first and you get the flood waters coming up before the breakup in the northern area and you get your ice jams; whereas if the flow were in the opposite direction you would get a gradual drainage and would not have the ice jams to put up with.

Mr. MCLEOD: It is conceivable there might be some difference due to the difference in the times of melting, although I do not think they are very significant as far as the Red and Assiniboine are concerned. Unfortunately, if one is going to be high the other is going to be high at just about the same time usually.

The question of the ice jams, of course—well, again I do not think there is too much difference there, because if we take another river such as the St. Lawrence, ice jams occur that affect places like Montreal harbour, which from the point of view of latitude is quite a bit south of much of the upper watershed consisting of the Great Lakes; and I do not really think there is any particular relationship to the direction in which the river flows, other than perhaps the slight variation you have mentioned in so far as the break-up may come a little earlier on the Red, with the water coming from the south, than on the Assiniboine with the water coming from the west. I do not know if I have answered your question.

Mr. MARTEL: I have just one other question. I wonder if it is proper to ask it of you, or perhaps to ask it of the forestry branch. My question is what