

normal topographical survey. During the winter, field work is involved as well.

Mr. KINDT: During the winter when the ice is frozen over do you get into the problems of the flow?

Mr. McLEOD: Oh yes; very much so. As a matter of fact it is one of the more difficult problems. If you look at the top three pictures on that sheet on the wall you will see samples of winter measurement equipment. There is a measuring sled on skis which suspends the current meter. There is also a tank with a gasoline heater in order to keep the meter from freezing in travelling between the holes cut in the ice.

Mr. KINDT: At Lethbridge the tributary of the south Saskatchewan river which flows by there is often quite low during the month of January. In that respect there is a real problem there for industrial development—

Mr. McLEOD: Yes.

Mr. KINDT: —in connection with the conveying of waste material and other things. This ties into the whole question of water development in that area.

Mr. McLEOD: Yes. Another example of that, as a matter of interest, is up in northern Quebec. Our engineers attempted to measure one stream some winters ago and after getting through seven feet of ice they discovered there was no flowing water and no flowing slush. So for useful purposes the flow of that stream at this time in the winter was zero, although it is quite a good sized river in open water conditions.

Mr. KINDT: Is there information readily available on the Old Man river which flows by Lethbridge, in respect of the behaviour of that stream?

Mr. McLEOD: Yes. We have taken records on the Old Man river near Monarch for nearly twelve years now. The records for nine years are in our published records, which of course are available to most anyone. They are distributed as soon as they have been published to all the provincial agencies, libraries, universities and of course a supply is kept for sale or free distribution according to the individual or agency which requests it.

Mr. KINDT: That is fine. Thank you.

Mr. McLEOD: Now perhaps it would be useful if I covered very briefly some of the problems in planning a hydrometric survey program. The first important item is what use would be made of the information. As you know a great many uses are made of surface waters, either in the rivers, natural channels or the natural areas of the lakes, or in artificial channels for navigation, production of hydro-electric power, irrigation, domestic water supply purposes, recreational purposes, and reduction of pollution or the disposal of pollution materials by dilution, provided of course the rivers are large enough to accept it. I might add this latter use is becoming less and less helpful to the larger communities in Canada. I do not propose to say anything more about this aspect because it is really not my business. I just make that observation.

Of course those of us who have been around Ottawa have heard the local sounds of pain in reference to the fact that we are going to be involved in a large sewage disposal system in this area in the next few years, despite the size of the Ottawa river. You will perhaps draw some sort of a picture from that situation.

I think I might mention a typical example of water use planning which occurs when a reservoir is proposed for a town water or municipal water supply. Foremost among the requirements of the design engineer would be the need for a long continuous record of stream flow to provide the data for determination of the size of the reservoir. Is its capacity greater than