

disposal was of course intimately associated with the local work of the local water supply, and in that time I think I was responsible for the oversight of probably a hundred public water supplies and some 40 or 50 sewage disposal works. Since that time, of course, I have been in Ottawa in the Immigration Service.

Q. I suppose you have seen the Bills now before the House of Commons and the Senate?—A. Yes.

Q. What is your opinion, with your vast experience, regarding the advisability of Parliament taking action in stopping the pollution of our lakes and streams?—A. In general terms, I would say that there is no question as to the desirability of there being legislation providing for the definite control of sewage disposal. As to what that sewage disposal would mean however, in my judgment I would say that I am sure no rules could be laid down under the Bill for dealing with the sewage disposal of all towns on a common basis. The dilution, for instance, in the Ottawa river as compared with the creek at Berlin is so absolutely different that you have at once two problems, which an intelligent sewage board, or Rivers Conservancy Board as they call it in England, ought to be in charge of, to come to an intelligent determination as to what ought to be done.

Q. What is your opinion about sewage treatment? Do you believe that sewage, before it is allowed to escape into a waterway, should be purified?—A. I think it is generally considered now that the term 'purifying of sewage' must be distinguished from the term 'treatment of sewage.' I have said that I believe it necessary to have the law. With regard to what the treatment means in any given case, I think it would be well to illustrate what I believe to be the situation. We all know the city of Ottawa, as an average city, is pumping about 200 gallons of water per head per day, or about four times as much water, and more than four times as much water, as the town of Berlin, which has to take its water from artesian wells, requires for a town many times busier as a manufacturing town than Ottawa. If you attempt to deal with the sewage of Ottawa at the rate of 200 gallons per head per day, you will require the installation of works so expensive owing to that one item of four times the amount of water in the sewage that you are introducing what would mean a financial problem that the city of Ottawa cannot practically cope with at all. Mr. Race, the bacteriologist, the other day, said that on this continent his figures gathered up here and there show that the cost of sewage treatment per million gallons runs from \$11 to \$15. Now, we are pumping roughly 20,000,000 gallons in Ottawa today, every day, so twenty times 12, we will say or twenty times 15, means over \$200 a day for the handling of the sewage after you have established your works, or it means \$1,000,000 annual output for the handling of the Ottawa sewage when the amount of water is what it is. In the town of Berlin, some twenty odd years ago, after our Board approved of the system, they installed what they called filter beds where the outlet pipe from the town could readily flow on to them. That was a very strong clay soil, and did not filter the sewage enough. They polluted the creek so badly that there was a lawsuit and they finally, after a fine of \$20,000, bought land on the hillsides which was sandy soil, and put in a septic tank at the end of their pipe on the level, and they lifted the liquid to this filter bed on the sand, which gave a perfect filtration. The original cost was considerable, but a perfect result was obtained, because the water there is 45 gallons per head per day. So I say after you reach the question of what you are going to do then you have to discriminate in each particular case.

By Mr. Northrup:

Q. Is there any way of limiting the pollution of streams?—A. The very primary question that you are going to deal with in that Bill absolutely demands that the Bill will include a power by which the law will control the amount of water pumped, because I have never known a municipality, except Berlin and possibly one or two others in this country, that has had enough common sense municipally to simply say: