

### PULP INDUSTRY.

There are other industries in Canada, which in preparing their products for market grind up plants and trees, and thus let out their cell contents. One of these is the pulp industry—likely to become very extensive in the near future. Two processes are in vogue in this industry. In one, the logs are macerated with chemicals, the mills being known as sulphite mills. In the other process, the logs are ground into shreds in what are known as mechanical mills. Both processes liberate the greatest possible quantity of stored material from the wood cells, and if this material is equally poisonous with that liberated from sawdust, then the waste water discharged from a pulp mill should be much more poisonous than from a sawmill. The St. Andrew's experiments determined the percentage of poison from a sulphite mill which is fatal to fish life, but, so far as I know, the percentage of poison from a mechanical mill has never been determined. A provisional conclusion, however, may be based upon some of the experiments to be described later in this paper.

### BEET SUGAR INDUSTRY.

The manufacture of sugar from the maple and from the beet depends upon the fact that sugar is one of the reserve materials stored in the cells of these plants. In order to liberate the sugar from the beet roots they must be thoroughly ground into a mash, so as to rupture the cell walls. The more effectively this is done, the higher is the percentage of sugar obtained from the beet. It is easily conceivable that the water that escapes from beet sugar factories may contain matter that is poisonous to fish life.

Professor Prince called attention to both these sources of pollution in his report for 1899, and they are referred to now merely for the purpose of emphasizing the fact that other industries may pollute the streams of Canada to even a greater extent than lumbering. In all three industries the source of pollution is the contents of the wood or plant cell.

There is a similar action going on in nature all the time. Leaves, branches, and trunks of dead trees are decomposing continuously; their cell contents are being dissolved in rain and melting snow, and are in part carried away in streams and rivers. The only difference is that in