experiment. In the first of these two cylinders I put a pint of ordinary soft water; in the second cylinder I put the same quantity of the hard water which we have now prepared. To each cylinder I now add the same volume of a solution of soap and shake vigorously half a minute. A bulky and persistent lather, nearly filling the cylinder, is formed by the soft water, while the hard water shews merely a thin pellicle of scum, the product of the destruction of the soap added. You will observe that it is necessary to add nine or ten times as much soap to the hard water in order to get a lather comparable with that obtained in the first cylinder. It is evident that hard water causes a waste of soap, and the amount of waste is strictly proportional to the amount of lime in the water, since a perfectly definite decomposition takes place between the soap and the lime salt present. Were the lime present as sulphate the destruction of soap would still occur, with this difference, that in that case no simple and inexpensive mode of softening the water could be applied, and the water would be what is usually called *permanently* hard. The only practicable remedy in such a case is the use of washing soda, for although such remedies as soluble barium salts are very effective in throwing the sulphates out of solution, yet the poisonous character of barium salts, to say nothing of their cost, makes them unavailable in ordinary circumstances. In the case of water which possesses only temporary hardness, *i.e.*, hardness due to carbonate of lime, not only may we use washing soda to cure the evil, but two other processes deserve mention. By boiling the water we drive out of solution the carbonic acid gas, in virtue of which the carbonate of lime is held in solution. On now allowing it to settle, the almost insoluble chalk is deposited, and the soft water may be drawn off. The second and very ingenious plan of softening such water is due to the late Prof. Clarke of Aberdeen, and is usually known as Clarke's process. It consists in adding slaked lime to the water in proper amount to form chalk with the free carbonic acid, which is therefore withdrawn from solution and precipitated along with the now insoluble lime salt originally present in the water Many large towns and cities in England and elsewhere now soften their whole supply in this way. The water of the Ottawa River is remarkably soft since the gathering ground is essentially free from limestone rocks. The Upper Ottawa region is