Grande Baie River. The charter members are A. Tremblay, of Hebertville Station, and others.

Dominion charters have been granted to:

The St. Lawrence Construction Co., capital $20,000, headquarters at Montreal, to buy and sell immoveable property or land. The charter members are: J. Ethier, A. Dansereau, A. Lecompte, H. Audette, of Montreal, and O. Dufresne, of Maisonneuve.

## MECHANICAL WOOD PULP.*

By Stanislas Gagne, B.A., Sc.

(Continued from last issue.)

### Wet Machines.

Theoretically, when the pulp has been screened, the mechanical process of extracting and preparing fibres from wood is ended, and the product is ready for the paper mill. This is actually the case when the pulp is employed immediately for the production of paper or cardboard, which some of our Canadian mills manufacture, but the large bulk is produced for exportation, and, therefore, has to be put into convenient form for handling and shipping. The wet machines are used to extract the pulp from the water, which holds it in suspension, and to turn it into sheet form containing a conveniently low percentage of water. Figures 32 and 33 are cuts of the types mostly used in Canada, and Figure 37 illustrates the principle on which they work. First, there is a vat A, into which the pulp is admitted from the screen trough; the cylinder B, partly submerged, is a frame work covered with very closely woven brass wire cloth, which allows the water to pass through while the pulp it contains adheres to its outside surface, the couch roll C presses the felt D against the cylinder B, causing it to take up all the pulp adhering to the cylinder, leaving the wire cloth comparatively clean; the loaded felt then passes over roller E, which guides its direction over suction box F, which draws out part of the water in the pulp through the felt, over roller G, and between the press rolls H and K; the latter press out part of the water, and the pulp gathers around the upper roll H. The felt, now unloaded, passes over stretch roll L, over roll M, is beaten by beater N, washed by sprinkler P, passes over guiding rolls O and R, between the rolls S and T, which press out the water it contains, over roll V, and again over cylinder B, taking a fresh load of pulp, and so forth, continuously.

The vat A is made of ordinary pine, is water tight, and provided with outlet pipes, etc. The cylinder cloth must be of very fine construction, so that no pulp will pass through the meshes nor adhere to it too strongly; the ends of the cloth should be sewn together and not soldered, as it is sometimes done, because, at such a soldered connection water will not pass through; hence, no pulp will adhere to that part of the cylinder, and a gash across the sheet of pulp will result with each revolution, thus decreasing the capacity of the machine. The couch roll C is usually made of cast iron, and covered over with soft India rubber, which facilitates the removal of the pulp from the cylinder B by the felt. The felt D is usually about 26 feet long and 72 inches wide, and is woven in a continuous, endless form, of the best wool; grey ones made of Canadian wool are well adapted for the work, and give as good if not a better service than any. Most of the rolls are made of wood with the exception of the roll K. Much care is taken that the collecting roll H, which is formed from a solid piece of hardwood, is made perfectly true and is never allowed to dry, so that the surface will not be cracked nor split. The suction box is covered with a perforated plate, and as the felt passes over, the water is sucked down. Some advocate that the suction box should be connected with the draft tubes of the turbines, instead of suction pumps, but the disturbance and loss of power thereby caused exceeds that involved in the operation of pumps. Many mills prefer doing without suction boxes on the wet machines, leaving the work of driving out the water from the pulp partly to the press rolls and partly to the hydraulic presses; they claim that suction boxes wear out the felts much quicker, which seems to me reasonable, and it is a question whether they produce a drier pulp. The press rolls are tightened together by means of a spring and hand wheel at both ends of the collecting roll H, as seen in Figure 33, except in the case of that newly designed by the Jenckes Machine Co., of Sherbrooke, Que., where water pressure cylinders connected to lever arms at both sides of the machine do the work. This plan insures a more evenly distributed pressure between the two rolls, and thereby a more uniform sheet. When a sufficient thickness of separate sheets of pulp have gathered on the collecting roll H, the attendant cuts the sheet with a "doctor" or knife, as shown in cut 33, or by means of a pointed stick of hardwood, which he passes quickly across under the sheets. When the lower end is grasped and the roll allowed to complete its revolution, the sheet falls on the table in front of the machine, where it is folded and sent to the hydraulic presses. The guide rolls are made of wood, on which a certain thickness of cloth is nailed in a spiral form, and by means of a conveniently placed hand wheel can be moved by the attendant to one side or the other, thus keeping the travelling felt in a proper direction. The beater N is made of four arms attached to a revolving shaft, and together with water from the perforated pipe P cleans the felt from all impurities. The press rolls, S and T, are of

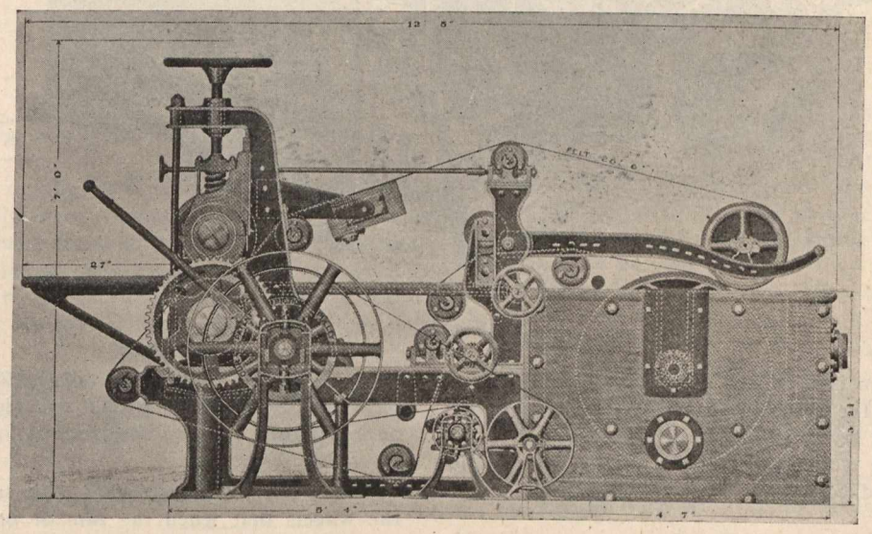

Fig. 32—Wet Machine, Waterous Engine Works Co.

*The above paper won the first prize given by the publishers of the Canadian Engineer for the best student's paper presented to the Canadian Society of Civil Engineers for 1903, the judges being members of the Society.