UTILIZATION OF WATER POWER FOR MINING AND INDUSTRIAL PURPOSES IN ONTARIO.*

SITUATED as all the principal mining camps of Ontario are, in rocky areas well supplied with rivers and lakes, they are able to take advantage of cheaply developed water power within convenient distance for transmission to mines and works. The harnessing of water powers for mining and other industrial purposes has gone on with much rapidity in Northern Ontario. The silver mines and mills of Cobalt are operated by electric energy derived from falls on the Montreal and Matabitchuan rivers; power for Gowganda is developed on the Montreal, and further utilization of that stream is now being undertaken; the Mattagami River at Wawaitin and Sandy Falls furnishes current for operating the mines and stamp mills at Porcupine; energy is transmitted from the Blanche River at Charlton to the Tough-Oakes mine at Kirkland Lake, and a power source in Marter township on another branch of the same stream is about to be developed to supply further requirements of the camp; Iroquois, Twin and Couchiching Falls on the Abitibi are now operating the machinery of the Abitibi Pulp and Paper Company; and the Sturgeon at Sturgeon Falls, the Spanish at Espanola, the St. Mary at Sault Ste. Marie, the Wabigoon at Dryden, the Rainy at Fort Frances, perform a similar function for the pulp and paper plants at these places. In the Sudbury region, the Canadian Copper Company obtain their power from the Spanish River at Turbine and have large projects for further developments on that river; and the Mond Nickel Company draw upon the energy developed by falls on the Wanapitei in Dryden and Secord townships, on the Vermilion at Wabigeshek, and the Spanish at Nairn. The Michipicoten at High, and the Magpie at Steep Hill, falls supply power to the iron mines of that district. The Winnipeg River where it leaves Lake of the Woods, is utilized in grinding wheat on a large scale at Keewatin and for municipal and industrial purposes at Kenora, and the tumbling rapids of the St. Mary where it empties out of Lake Superior suffice for a variety of industrials at Sault Ste. Marie. In eastern Ontario, water power from the Trent operates the silver refinery at Deloro, from Deer Lake the gold mine at Cordova, and from the Madawaska the graphite mine and mill at Whitefish Lake. At Ottawa and Gananoque, Peterborough and many other places, water power on a considerable scale has long been in use for operating machinery, providing light, etc. It is unnecessary to mention the Falls of Niagara and the vast scheme for distributing throughout southwestern Ontario the benefits of cheap power so successfully carried out by the Hydro-Electric Commission of Ontario; or the developments at De Cew Falls, or on the Grand, Saugeen, Severn and numerous other streams in the older parts of the province, since the uses to which the power is applied belong more to manufacturing and agriculture than to the mining industry. In probably every case, the cost of power has been reduced by at least 50 per cent. of its expense when derived from burning wood or coal, and the development has been a boon to mining in the province.

But water power has its disadvantages as well as its advantages. Chief of these is the liability to serious diminution because of insufficient rainfall. The annual precipitation of moisture in southern Ontario is about 32 inches, but is considerably less in the northern parts of the province, varying according to district. In some years, of course, the precipitation is much heavier, and in some much smaller. The excess is simply allowed to run off, and so is of no significance to the user of water power; but there is no way to supply a deficiency. Ample storage capacity assists to equalize the flow, but reservoirs cannot create water, or hold it unless it flows into them. The season of 1914 was unusually dry, and in consequence during the low-water period, which occurs in January, February and March, the water powers upon which the mines and plants of Cobalt, Porcupine, Sudbury and elsewhere depend were unequal to the occasion. The situation in the early part of 1914 was much the same, but the beginning of 1915 faced an accumulated deficit, and a system of shutting down mills and works in rotation had to be put into effect. The result was, of course, to lessen production, to what extent the statistics for the output of 1915 will no doubt reveal. It would seem that the effect is likely to be prolonged into the year, for the light snowfall of winter disappeared with few or no accompanying rains, and the present prospect is not promising for a good supply of power in 1915. One result will be that resort will be had to auxiliary steam plants, and where they have been retained, their aid will undoubtedly be welcomed. In making provision for the operation of machinery, prudence counsels a reserve of motive power. Thus, in constructing a central compressed air plant at the Hollinger gold mine to serve present and future requirements, sufficient boiler capacity was installed for use in case of failure of the supply of electricity developed from water power. The style of compressor selected had the advantage of being reversible; that is, the machines may be used as steam engines, and their motors for generating electric power.

By an amendment to the Rivers and Streams Act the Legislature last session considerably modified the law regarding the use of rivers for the dual purpose of floating sawlogs and generating power. Formerly, the lumberman was practically in full control, the statute granting him the right to use the river at freshet seasons for driving his logs to market. So long as there was no other use for the water, no harm was done, but as shown above the development of water power on the streams of eastern, northern and northwestern Ontario during the last few years has been very rapid. The power user naturally wished to conserve as much of the freshet flows as possible, so that his turbines might continue to turn during the inevitable season of low water. If compelled to shut down, mines, pulp mills and other industries depending upon him for power were obliged to follow suit.

Both lumbering and water power development are important, and the situation required regulation. What the Legislature did was in effect to place authority in the Minister of Lands, Forests and Mines to deal with emergencies as they arose, and to exercise control over the levels of any stream where conflicting interests required action to be taken. The amendments will be found in 5 Geo. V., chapter 15 (Rivers and Streams Act, 1915).

*From the 1914 report of Mr. Thos. W. Gibson, Deputy Minister of Mines for the Province of Ontario.

NOVEMBER SALES OF TELEPHONE BONDS IN THE PROVINCE OF SASKATCHEWAN.

During November there were sold $101,100 Saskatchewan rural telephone companies' bonds: Bright, $3,000; Rose Bank, $4,500; Sinnett, $2,500; Fillmore, $2,000; Iola, $7,200; Patience Lake, $7,000; Togo, $11,000; West Beverley, $2,000; Collingwood, $4,200; Lampman, North, $1,200; Bonnie View, $5,000; Paswegin, $1,000; Silton, North West, $3,500; Manor, $6,000; Fairy Hill, $1,000; Naisberry, $1,500; Bridgeford, $6,000; Wawota, $2,500; Alida, $20,000; Rock Haven, $7,000; Claire, $3,000.