

Our New Industry.

CANADIAN BEET SUGAR A REALITY.

Although one hundred and fifty years have elapsed since Achard, a German investigator, discovered that sugar could be secured from the beet, no successful attempt at its wholesale manufacture was made until 1870. Over twenty years ago, two factories were started in Quebec, but failed, through lack of capital, mismanagement and indisposition of farmers to grow the beets. Of recent years, however, the industry has made great strides in Europe and the United States, and can now be said to have become firmly implanted on Canadian soil. Within a few weeks, the production of sugar from the sugar beet will have been accomplished in our own land, and the prospects for its future development are most encouraging.

Of the four factories about to be completed in Ontario, that owned by the Wallaceburg Sugar Beet Co., Ltd., Wallaceburg, Ont., will likely be first in operation. On a recent visit to that town, a "Farmer's Advocate" representative was shown over the immense new building, and the splendid beet fields, by D. A. Gordon, manager of the company, and D. Lefavour, his efficient assistant. From what was seen, the people of that district have just reason to feel proud of the magnificent structure of steel and brick on the banks of the Sydenham River. The Kilby Manufacturing Company, of Cleveland, O., have had the contract of this gigantic concern, which, when completed, will cost \$600,000. It has been the aim of both contractors and promoters to erect a plant capable of extracting from the beets the largest amount of sugar at the least possible cost. Nothing but the most improved machinery has been installed and the quality of the workmanship as pronounced by experts is unequalled. A very commendable feature of this plant, and one which exemplifies the keen foresight of the management, is the arrangement of the plant in such a manner that either cut-leaf, yellow or granulated sugar may be manufactured. The latter, being in greatest demand at present, will alone be produced this year, but changes in future markets can be equally well catered to by this company.

THE BUILDING.

The framework of the entire building is of steel, the walls are of brick, and 300 heavy pillars of iron support the cement floors, upon which the machinery is laid. The main apartment is 258 ft. in length, 67 ft. wide, and 73 ft. (of four stories, as shown in our engraving) in height. In a direct line with the main building stands the warehouse for refined sugar, a two-story structure, 197 ft. long, 67 ft. wide, and 30 ft. high, having a capacity for storing 15,000 barrels. The beet shed, which is built of cement and structural iron, has a capacity of 10,000 tons, and affords accommodation for unloading from either wagon, train, or boat, a combination possessed by but few factories. It is 400 ft. long, 196 ft. wide, and 21 ft. high. Closely connected with the main building is the boiler house, 164 ft. by 47 ft., and 31 ft. high, containing eight 250-horse-power Scotch marine boilers. Adjoining this is the permanent workshop, with its large lathes, planes,



MANITOBA NOT ALL A TREELESS PLAIN.

drill presses and pipe and nipple cutting machines. Next, and at the south-east corner, stands the lime department, having a length, breadth and depth of 71, 41 and 65 ft., respectively. The kiln itself, which towers from the center of the building, has a capacity of 21,250 cubic feet.

THE PROCESS OF MANUFACTURE.

The various stages in the manufacture involve machinery both intricate and elaborate. They are, nevertheless, interesting, and anyone who visits a factory for the first time cannot but be struck with the ingenuity and completeness of the process. As the beets leave the sheds, they float in cement flumes to a scroll which leads to the beet washer. From thence they are elevated to the upper story of the main building and weighed by an automatic beet scale, which afterwards dumps the beets into a slicer. When sliced, they fall on an endless belt over the diffusion battery, where warm water is used to assist in the separation of sugar and pulp. The cells of this apparatus each hold three tons sliced beets (cossets). Leaving the battery, the juice is measured, after which it passes through the first calorimeters, of which there are six. At this point, an excess of lime is added and the juice treated with carbonic acid gas to precipitate impurities. It is then passed through mud presses, where it is filtered and the juice collected in a tank, to be pumped to the second carbonators, where lime and carbonic acid are

again introduced for the precipitation of foreign matter which may remain. The filtration which follows is performed by three large mechanical filters, operated by gravity. This juice having been received in a tank, is thence pumped up to the first saturation station, where sulphuric acid gas is introduced for further purification and for bleaching. Again the juice is filtered, passing on to the evaporator supply tank and thence to the evaporators, of which there are four, each having a capacity of 3,000 square feet heating surface. At this time the juice becomes a syrup and is pumped up to the syrup saturation station, to be treated with sulphurous acid gas, after which it passes over five small filters and is forced up to the vacuum pan supply tanks. Leaving the vacuum pans, where much of the moisture is removed, it enters the mixers and passes on to the crystallizers, of which there are ten, each having a capacity of 45 tons. From these it emerges as granulated sugar, ready to be bagged or barreled for the trade, and at once finds a place in the warehouse.

DISPOSITION OF THE PULP.

When the juice is extracted from the sliced beets, the pulp is conveyed by means of carriers to a large pit or silo, about ten rods square and 6 ft. deep, situated just south of the factory. From this basin, a complete system of drainage has been arranged, so that the objectionable odors so often found in the vicinity of pulp pits will be reduced to a minimum.

This year, the patrons of Wallaceburg factory will be allowed to remove, free of cost, an amount of this by-product equal to the quantity of beets supplied the factory. At the Michigan factories a similar policy has been pursued until the farmers were convinced of its feeding value, after which from 35 cents to \$1 per ton has been willingly paid by feeders. Some experiments have shown the dry matter in beet pulp to be equal, pound for pound, with the dry matter in corn silage, and therefore very valuable as a milk-producing agent. Cows, it is said, will readily consume from 50 to 100 lbs. daily.

THE BEET FIELDS.

Before the company could decide to invest the large amount of capital required to build and operate a factory, it was necessary that the farmers give definite assurance that a supply of beets would be forthcoming. This the husbandmen of Kent County readily did to the extent of 4,800 acres, and a visit to the country around Wallaceburg would convince any traveller that the seed was not sown to be neglected, but has undoubtedly received at the hands of the growers that care and cultivation which the crop demands, as far as the season would permit. (For the Dresden factory a similar acreage is under cultivation.) That the farmers might be directed in the most scientific and up-to-date methods of procedure, the company have had a band of six expert agriculturists engaged since the beginning of the season, giving instruction in preparing the soil, sowing the seed, cultivating, and raising the beets when mature. Some whose faith in the success of this industry was firm, devoted a considerable portion of their farm to the sweet roots. Capt. Steinhoff has 160 acres; D. A. Gordon 60, J. S. Fraser and John Cooper 50 each, and John Coffee 90 acres in one field. The



HEAVY OAT CROP FOLLOWING SUGAR BEETS.