

the tower is a receiving scale of 200 bus. capacity. The tower is connected with the elevator by means of a belt gallery containing a 36-in. belt conveyor.

A loftier leg of 10,000 bus. capacity in the elevator receives the grain from this conveyor, & by means of 2 belt conveyers over the bins will discharge it to any bin in the house. Underneath the bins, in the basement, are 2 systems of belt conveyers, which bring the grain from the bins to the working end of the elevator & discharge to 2 shipping legs, each having a capacity of 10,000 bus. an hour. The grain is weighed out in the cupola & spouted direct from the scales to the cars. The car spouts are metal & supplied with bifurcated loaders.

The power house is of brick & is located 100 ft. from the back end of the elevator. The power is transmitted to the elevator by a rope drive running up to & over the deep bins to a line shaft in the cupola, from which power is distributed to the different parts of the elevator & to the marine tower by means of ropes.

The Coteau Landing elevator was built this year. The main building is 143 ft. long by 90 ft. wide & 155 ft. high. It rests on a foundation of piles, heavy grillage & masonry, & is built out into the river so that barges can receive grain from either or both sides of the elevator. This arrangement gives also a wharf 8 ft. wide on either side of the elevator. The 1st story consists of heavy post & girder work, which supports the bins. The latter are 59 ft. deep, built of planking, & are surmounted by a cupola running the entire length of the building & 5 stories high. On east side of the elevator are 4 shipping bins, each of 5,700 bus. capacity. These, with the 74 others in the house, give a storage capacity of over 500,000 bus. The walls are covered with galvanized corrugated iron, & the roofs with tar-felt & gravel.

The engine & boiler house is of brick, 53x41 ft. in size, 23 ft. high, & stands close to the west end of the elevator. The smoke-stack is of steel plates lined with brick. It is 12 ft. in diameter at the base & 155 ft. high.

The elevator is equipped throughout with all of the modern conveniences & special machinery for handling grain with the least possible delay. It has 6 elevator legs, with 18x7x7-in. cups & 84-in. head pulleys. Three of these legs are for receiving, & are located between the 2 tracks, which run clear through the center of the building. Any one or all of the 6 legs may be used for shipping, & each has a capacity of 8,000 bus. an hour. Three pairs of Clark shovels are located between the tracks in the 1st story, and 30-in. belt conveyers are located in the basement to carry grain across the house & discharge it to the 3 elevators in the south end.

On the 1st floor is located a powerful friction-driven geared car-puller, with wire rope drum, arranged to handle cars on either of the 2 tracks. South of the middle of the house are 3 loading spouts, to discharge grain to cars standing on the house tracks.

The 1st story of the 5 story cupola is the distributing floor. It contains 12 distributing spouts, which take the grain from the scale hoppers to the different bins. The 3rd story contains six 1,200-bus. hopper scales, which receive grain from 6 large garners in the story above. The 4th story contains also the cupola line shaft, which extends the full length of the elevator. This shaft receives power from the engine shaft by means of a rope drive, & each of the 6 elevator heads is driven direct by rope transmission from this cupola shaft. The top story is occupied by the elevator heads & the spouting from them to the garners. Each elevator head is provided with a switch valve, so that the grain may be spouted to either of 2 garners. All power transmissions through the house are supplied with friction clutches, so that any

part of the machinery can be shut down or started at will.

On each side of the elevator are 4 dock spouts, which receive grain from the shipping bins, each spout being supplied with wire tackle & a hand winch for handling the spout. Each spout will discharge grain to the barges at the rate of 15,000 bus. an hour.

The power plant consists of an engine 18-in. diameter & 42-in. stroke, & 2 boilers 72-in. diameter by 16 ft. long. A complete electric light plant, with dynamo, operated by an engine, is included in the equipment. The fire-protection system consists of a powerful fire-pump, with complete system of standpipe & hose connections on each floor, & hose reels, with hose & nozzles at convenient points throughout the building. The outfit is deemed sufficient for any emergency. There is also a complete system of pneumatic sweepers throughout the house, arranged to discharge the dust to the furnaces under the boilers.

Both elevators were designed & erected by J. S. Metcalf & Co., of Chicago.

The C.P.R. Toronto-Sudbury Line.

The survey of this route commenced in Mar. last under H. D. Lumsden, C.E., was completed early in Oct. Four engineering parties were employed in making the preliminary & location surveys. The plans have been completed for filing with the Department of Railways at Ottawa.

The line, as located, starts from Kleinburg, on the Co's Owen Sound section, 21 miles from Toronto, & joins the main transcontinental line at a point between Romford & Sudbury Jct., about 3½ miles east of the latter point, the whole distance from Kleinburg to the main line being 226 miles, making a distance of 250 miles from Toronto to Sudbury, as against 306 by the G.T.R. route via North Bay.

From Kleinburg the line runs almost due north, passing about 1½ miles west of Lloyd-town, thence a little east of north to near Allandale, passing about ½ mile west of Bond-head, & about 2 miles east of Cookstown. At Allandale it crosses the G.T.'s Hamilton & Northwestern branch by an overhead bridge, & the Collingwood branch on the level. After passing through Barrie the line runs almost due north to Midhurst & Craighurst, then n.e., passing Coldwater, & continuing almost in a direct line to the crossing of the Severn River, 9 miles up stream from Port Severn. From this crossing it continues a little e. of n. to Bala, the outlet of Muskoka Lake, where it crosses the south branch below & the north branch above the falls. From Bala the course is a little w. of n. to Parry Sound, touching Lake Joseph at Hatherley's Bay, & crossing the O.A. & P.S. Ry. by an overhead bridge about 3 miles from that Co's Rose Point or Parry Sound Station, running through the town of Parry Sound, & crossing the Seguin River at the falls near the grist mill where the electric light plant is now located. From Parry Sound the line goes a little w. of n. passing through the townships of McDougall, Carling, Shawnaga, Harrison, Wallbridge & Mowat, reaching the crossing of French River on an Indian reserve near Cantin's Island. The 2 branches of French River are crossed about 2 miles apart, & the line continues generally in a n. w. direction to the connecting point near Sudbury, crossing the Wahnapiatae River about 12 miles below Wahnapiatae Station on the main line.

An excellent line has been obtained with maximum grades ascending northerly of 1%. Coming south the maximum is ¾ of a foot per 100. The maximum curvature is 6 degrees, or a radius of 955.37, but these are only at a few exceptional places in the rocky country north of the Severn. There is no rock work be-

tween Kleinburg & the centre of the township of Matchedash. From there to the northern terminus a considerable amount is met with. For the length of the line the bridging is not heavy. The heaviest bridge will be just north of Kleinburg, where the Humber Valley, 1,200 ft. wide & 110 deep, has to be crossed. The only other streams of importance to be crossed are the Severn, with a span of 150 ft.; the Musquash at Bala, 1 span of 100 ft. & 1 of 150 ft.; the O.A. & P.S. Ry. & adjoining stream by 2 spans of 60 ft.; the Seguin River at Parry Sound, 2 spans of 100 ft.; Shawnaga River, 1 span of 100 ft.; 2 branches of the Nosquetiwan River, spans of 100 ft. over each branch; Magnetawan River, 1 span of 100 ft.; Key River, 1 span 100 ft.; French River, 2 branches, 1 span of 150 ft., 1 of 250 ft.; Wahnapiatae River, 1 span of 100 ft.

The line goes through the heart of the Muskoka tourist district, tapping both Muskoka Lake & Lake Joseph, & it would shorten the time between Toronto & Lake Joseph by several hours. It is still impossible to speak with any degree of certainty as to the C.P.R.'s intentions as to the construction of the line, but in view of the recent settlement of the C.P.R.-G.T.R. difficulties, it is almost a foregone conclusion that the work will not be gone on with at present. We are inclined, however, to think that there has been no abandonment of the idea, but merely a postponement. Ten years ago the C.P.R. had a preliminary survey made of the route, which was referred to in the Co.'s annual report for 1888. At about the same time the G.T.R. acquired the Northern & the Northwestern Rys., & an arrangement was effected between the C.P.R. & G.T.R. in regard to the former's northwest traffic going over the G.T.R. between Toronto & North Bay. The C.P.R. has for years shown a direct line from Kleinburg to Sudbury on its maps, & no doubt intends to build it sooner or later. The new arrangement with the G.T.R., which no doubt is satisfactory as regards northwest traffic, gives the C.P.R. no share of local business. The tourist traffic to the Muskoka Lakes has been greatly developed by the G.T.R. in the last 3 or 4 years & may now be said to be only fairly started. With proper hotel facilities it is capable of almost indefinite expansion. It can hardly be doubted that the C.P.R. has its eye on this traffic, & that when the time is opportune it will reach after it by a line that will traverse the heart of the lake district. At present the C.P.R. has more important work on hand in strengthening its position in British Columbia, where, in addition to the western portion of the Crow's Nest line yet to be completed, it has the Robson-Midway line under construction, 105 miles of the heaviest work on the Co.'s system, which is being built without a dollar of subsidy & the financing of which alone is quite enough of an undertaking for one year.

The C.P.R. has no charter for a line from Toronto to Sudbury, but it would appear that it could be built under the powers conferred by the Co.'s original Act of 1881, which gave the Co. the right, from time to time, to lay out, equip, maintain & operate branch lines of railway from any point or points along its main line to any point or points within the Dominion. In 1895 W. Mackenzie, H. D. Lumsden, C.E.; G. A. Cox, F. Nichols & D. D. Mann obtained a Dominion charter for the James' Bay Ry. Co., with power to build a line from Parry Sound to Doke's Indian reserve, thence to the easterly line of Lake Wahnapiatae, & to the mouth of Moose River, James' Bay. In 1897 another act was passed, empowering the Co. to extend its line from Parry Sound to Toronto, it being provided that the railway from Parry Sound to James' Bay, & the extension from Parry Sound to Toronto should be commenced within 2 years therefrom, & 15% of the capital stock of \$1,000,000 expended thereon. This charter is con-