

Superintendent, the B. M. process of treating ties is practiced. The plant shown in figs. 1 and 2, was erected in 1911 as the result of a large contract secured from the Canadian Northern Ry. for treating ties. The treating company is a Scotch one, with plants at various points throughout the world, this being the first to be erected in Canada. Other plants are contemplated for Edmonton, Alta., and Victoria, B.C. The Fort Frances plant is employed exclusively on C.N.R. ties, of which the contract calls for enough to keep the plant operating at full capacity for upwards of two years to come. As mentioned in the description of the creosoting process, the C.N.R. is also having a large quantity of ties treated by that process, it being the intention to test both methods thoroughly.

The plant under consideration is about four miles east of Fort Frances, on the north shore of Rainy Lake, adjoining the C.N.R. main line from Port Arthur to Winnipeg, to which it is connected by a loop, passing through the plant from the west, and back on the main line at the east end, all as shown in figs. 1 and 2. Ties are delivered by the C.N.R. to the plant as required, so that but little storage space is provided for. The ties enter the grounds from the west to the position marked by the unloader in the plan, fig. 1. The treatment, involving the employment of a watery solution, makes unnecessary the piling of

The trains of cars, formed as in the former instance, are drawn into the cylinder by a steam winch and cable. The two cylinders are located side by side, the older one being 85 ft. long, and the new one 110 ft. A third cylinder is in prospect, similar to the last one installed. The construction of the cylinders is so similar to ones described in the creosoting process that the reader is referred to that article for this information. After the cylinder has been charged with timber and the doors closed, a vacuum of about 25 ins. is created in the cylinder, and maintained for at least half an hour, in order to draw out as much of the moisture in the wood as possible, and open the pores of the wood for the reception of the solution.

Following the vacuum, the solution is drawn into the cylinder, and the pressure is raised to about 160 lbs. by very high pressure pumps. After the pressure has been raised and maintained for a certain time, the temperature of the liquid is gradually raised to about 165 degrees Fahr., at the same time raising the pressure in the cylinder to 150 lbs., so as to inject about half a pound of the combined salts per cubic inch of timber. This combination of temperature and pressure has been found to give the best penetration, coagulating the colloidal and albuminous matter in the wood cells, and permanently combining sufficient of the antiseptic salts in the wood

convenient level at the door of a box car, where attendants carry them and pile them in the cars for delivery around the loop to the main line. The use of the same box cars that have just been emptied from the incoming ties, at a point a little further along the line, is a most important consideration in their shipment. It will be remembered that, with the creosoted ties, box cars cannot be used for shipping the ties away from the plant, on account of the damage to the interior of the car in the event of grain or other matter being carried. The B. M. treated tie looks but slightly different from an untreated one, and will not soil the interior of the car.

The plant is so isolated from settled communities that provision for the accommodation of the men employed is made in the bunk house and mess house to the east of the plant.

The B. M. process has many points in its favor. As compared with creosoting, on account of the cheapness of the materials employed, the cost is just about a third. The supply of raw material is practically unlimited. Both processes have much to be said in their favor, and both must be considered on their respective merits in deciding which is the better for the conditions of operation. The results on the C.N.R. in the use of the two processes will be awaited with interest, but as they have been employed such a short time, it will be some

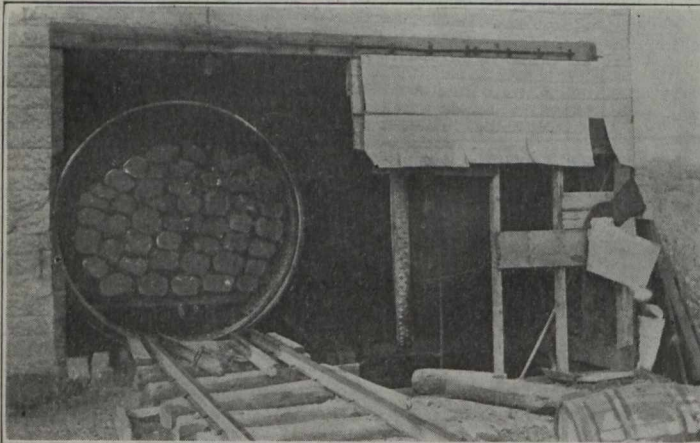


Fig. 4.—Treated Ties Leaving Cylinder.

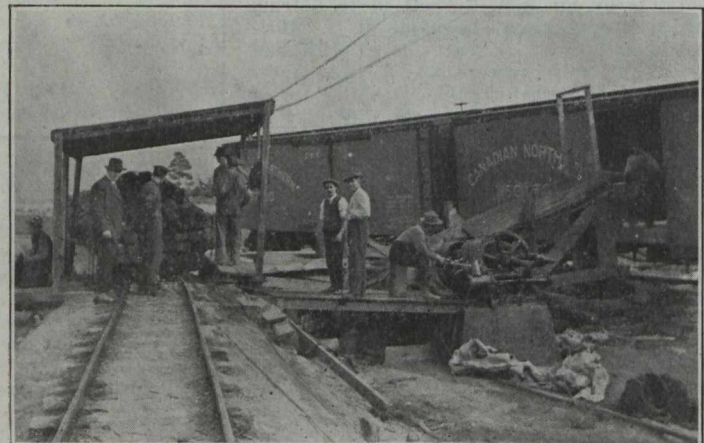


Fig. 5.—Loading Treated Ties into Box Cars.

the ties for months for seasoning purposes, they being ready for treatment as soon as received in the plant. All the storage space as yet required is that to the north of the unloader, between the tracks, shown in the foreground in fig. 2. Immediately beyond this storage pile will be noted in fig. 2 the unloader sheds, shown more clearly in fig. 3, a view from the opposite direction.

Referring to fig. 3, on the left, the ties as received (barked at the point of loading, dispensing with that operation here), are loaded from box cars on to a platform slightly higher than the level of the car floor, across which there is a travelling chain, carrying them across to the shed on the right. In the plan, fig. 1, it will be noted that the standard gauge track is south of the buildings, while north of the buildings are narrow gauge service tracks, converging with the main tracks at the west and east end. On these service tracks, as in the creosoting plant, are small cars, with formed sides and hoops into which the ties are loaded, in the loading shed on the right in fig. 3, directly from the travelling table. As each car is loaded, it is run down the track by gravity to near the cylinder it is to enter. In fig. 2, there is only shown one cylinder, but since the photograph was taken a second has been added, as in the plan fig. 1.

fibre to insure protection against decay, both the zinc chloride and aluminium sulphate being antiseptics. The gradual raising of temperature and pressure takes upwards of an hour, the total impregnation being carried out in about three hours, depending on the nature and fitness of the wood to be treated.

The supply tank, from which the cylinders are filled, is located in a large buried vat, under the floor of the building across the service track to the south of the cylinders. The main floor of this building contains the chemicals employed in their concentrated form, and is the mixing room for preparing the solution. Through openings in the floor, the chemicals are dumped into the vat, approximately in the proportion of 3 parts of zinc chloride and 1½ parts of aluminium sulphate, to 100 parts of water. In the buildings adjoining this tank room are housed the power house, with its pumps, compressors, and complement of recording and indicating gauges, and back of the building is the boiler room.

The ties, as ready to leave the treating cylinder, are shown in fig. 4. From that point the train of cars is drawn down the service track by the capstan, to the loading machine in fig. 5. Here the ties are dumped off the small cars, one at a time, on to a sloping carrier operated by a small winch engine adjoining, being raised to a

years before satisfactory data on the life of the ties in this country will be forthcoming. Observations elsewhere show that both processes increase the life of the tie many times. Creosoting, being the older process, can cite more examples. There are cases on record of creosoted ties laid over 30 years ago and still sound and serviceable. Time will probably demonstrate the same thing of the B. M. process, for in instances where B. M. treated timber has been used in severe condition such as in damp mines, it has stood up well.

Statistics collected by the United States Government show that while the number of ties treated with zinc chloride in the U. S. has not increased in the last four years for which figures are available, the number treated with creosote has increased rapidly, the figures being as follows:—

	Zinc chloride.	Creosote.
1907	9,864,765	5,750,874
1908	8,640,230	9,620,420
1909	8,051,054	9,943,360
1910	9,195,861	14,841,843
1911	9,445,961	16,510,721

These figures might be looked upon as an answer to the query:—"Which is the better of the two"? But after careful investigation it appears that the question cannot be dismissed so easily, and the evidence on both sides will be presented in an early issue of this paper, the subject being of the utmost importance.