

MAGNITUDE OF OUR LUMBER MANUFACTURE.

The Saginaw River is the largest lumber producing point in the world. Since 1870 the cut each season has ranged from 730,000,000 to over 1,000,000,000 feet in round numbers. The season of 1883 was in many respects unfavorable for active operations of the mills. The mills got a late start and early in the season many heavy rains set in and continued until the first of July, causing high water, which in some instances forced the mills to suspend for weeks. The streams were flooded and log rafting checked, consequently many of the mills were delayed for want of logs and to crown the misfortune the Tittabawassee boom men struck, and log rafting was entirely suspended for a period of two weeks. There was also more or less delay for logs during the balance of the season. Under these circumstances the record of the mills, cutting an aggregate of 938,675,078 feet of lumber, is an extraordinary one, when it is considered that 1883 was the banner year, no untoward circumstances occurring to cause delay during the entire season, and yet the production of 1883 only falls short of that of 1882 in round numbers about 73,000,000 feet.

NORTHERN AND NORTHWESTERN RAILWAY.

To the Editor of the Canada Lumberman.

SIR,—In your issue of Dec. 15th your Toronto correspondent gives some figures to prove that this Company exacts a higher rate of freight on lumber from common points to Toronto than the Midland, and also states that the Midland Company has cancelled all shunting charges to sidings west of Bathurst street, and to Parkdale, and that the N. & N. W. Railway is the only line that insists on collecting these charges.

In the first place your correspondent makes the error of adding shunting charges to our rates, and deducting terminal charges from the Midland's, before making comparison.

His selection of shipping points is not fair, as in citing Midland (a Georgian Bay point) he should have shown in comparison our Penetang and Collingwood rates, which are exactly the same, and also Georgian Bay points; and as regards the statement that we add \$2.00 per car on lumber destined for Parkdale, such a statement could only be made on utterly incorrect information. The facts are: Parkdale being a regular billing station on the N. & N. W. Railway all lumber consigned direct to that station is, of course, delivered without any shunting charges, for at no time has shunting been charged on direct consignments. But when lumber is consigned to Toronto, and we are asked to haul it back to Parkdale, surely we are justified in making a charge for so expensive a service.

Then as to the assertion that the Midland makes no charge for shunting to west end sidings. I have Mr. A. White's statement in writing before me that the Midland Railway collects shunting charges, in addition to freight, on all lumber consigned to Toronto and ordered to Parkdale, and west end sidings.

Mr. John Earls, of the Grand Trunk, also assures me that his company collects shunting for this service.

Now, as your correspondent has such accurate information, he should be able to prove that Messrs. White and Earls are wrong in saying their companies do make these charges, otherwise, he should withdraw his statement against this company.

Herein I give you figures showing comparison of rates on Midland and Northern, viz.:

	When consigned to Toronto and ordered to Parkdale, or to any siding between Parkdale and Bathurst	When consigned to Toronto and ordered to any siding between Bathurst and King Streets	When consigned to Toronto and ordered to any siding between King Streets and Toronto
Midland	\$ 23 40	\$ 22 40	\$ 21 40
Waubesahe	20 40	22 40	21 40
Penetang	20 40	22 40	21 40
Collingwood	20 40	22 40	21 40
Gravenhurst	21 00	23 60	22 00

Press of business and absence from the city has prevented me from replying to these strictures of your correspondent before.

By-the-by, why does he exercise such extreme care to cover up his identity? Why not appear openly and discuss this subject frankly with us?

By so doing he will hear both sides of the question, and can then deal with the subject more intelligently and with some degree of correctness.

Yours truly,

ROBT. KERR,

General Freight and Passenger Agent's office Northern and Northwestern Railway, Toronto, Jan. 12, 1884.

To the Editor of the Canada Lumberman.

SIR,—Referring to Mr. R. Kerr's letter dated Jan 12th,—In justice to the Northern & Northwestern railway will you kindly permit me to state that the shunting charges of this division, and also rates from competitive points are precisely similar to those of the Northern and Northwestern.

Through a misunderstanding upon the part of our late agent at Toronto some shunting charges in that city were not collected, but accounts are now being rendered and will no doubt be duly paid.

We look upon our lumber merchants' interests as being identical with our own, and try to arrange our affairs accordingly, but never through petty cuts in rates, which our best customers would be the first to condemn.

Yours respectfully,

A. WHITE,

District Traffic Manager, Midland Division, Grand Trunk Railway, Peterborough, Jan. 10th, 1884.

WOODS IN THEIR EARLIER STAGES.

When the late distinguished chemist Liebig first turned his researches to the benefit of agriculture, he caused some manures to be manufactured which, on his recommendation were widely applied and tested. He had determined by analysis exactly what the crops required for their nutrition, and he had supplied by means of chemical compounds those substances in which certain soils were defective. Confidently awaiting great results, he was much disappointed when farmers convinced him that there was no commensurate improvement. He was not a little puzzled by this unaccountable failure of theoretical science; but all at once it dawned upon him that he had neglected the most obvious and essential precaution. He had neglected to render his compound soluble in water. Seeing that all vegetables—agricultural crops as well as trees—imbibe their nourishment from the ground dissolved in water, this fatal error had rendered the manures inoperative. When, however, the same ingredients were combined in a form soluble in water and applied to the soil, and the results were most satisfactory. A similar error may be committed by the forester if he allow his wood to become so open and defective in shade, that the moisture accumulated during the winter may be dried up early in the summer or before the end of the season of active vegetation. It is apparent how important a part moisture or water plays in vegetation. Trees will thrive almost equally well on soils of the most different geological formations, if only the condition be fulfilled that there is a sufficiency of moisture. For most trees, it matters very little what rock it is which has crumbled to form the upper soil so long as the soil is moist enough and of sufficient depth to retain moisture. The moisture showered on the forest soil during the winter months requires to be stored up and economized so as to last over the summer period of active vegetation, and to this end it is necessary to keep the ground densely shaded from the sun's rays. The close order of trees producing the requisite shade also enriches the ground with more fallen leaves, giving forth in their decay an increased quantity of carbonic acid—a powerful solvent of the soil minerals. Shade arising from close order will be accompanied by a greater measure of stillness and the useful gas will not be wafted away by the wind, but remain in the covert forming watery food for the roots.

It is not altogether uncommon to see young woods in which many of the trees are crooked or forked and of a branching habit, the ground underneath them being covered with a profuse vegetation of annual weeds and grasses intermingled with such other weeds as cranberry, whortleberry, broom brambles, or heather.

These symptoms are indications that the woods have been originated from plants two wide apart or two severely thinned, or that both these errors have been committed in their treatment. Instances may sometimes be encountered in which it is attempted to correct the multiplicity of side branches by a wholesale system of pruning. The strong development of side branches being a sign that too much light is penetrating the covert, and that the upper canopy of foliage is not dense enough, pruning will in these respects make matters worse and favor the growth of the weeds. In forestry on an extensive scale, where timber raising is chiefly a financial undertaking, the pruning of young trees in the forest will be quite an exceptional operation. It may be all very well in a park wooded for ornament and game preserving, but in a forest the area of young trees will be so considerable, and counting several thousands of young trees per acre, that the attempt to traverse it with pruning operations will generally be hopeless. Where the attempt is made, the growing sense of the magnitude of the task is apt to induce haste and carelessness in the execution. But all the toil and expense of pruning woods during the earlier stages of their growth may be very simply and effectually avoided by crowding the young trees more closely together.

As already indicated, the branching habit which pruning strives to correct as well as the tardy growth which may accompany it, arises from the too wide difference between the young trees. To the introduction of a wide and open fashion of covert several causes may have contributed in this country. In the first place the revival of forestry in Britain may be considered to date from the extensive formation of Larch plantations by the late Duke of Athol. Now the larch is quite an exceptional tree, and more necessitous of light and air than any other. It is by no means improbable that the methods and rules conducing to the successful cultivation of the larch would at first be apt to obtain a general application. These being transferred to other trees would tend to perpetuate a pattern of wide separation in planting. Wide planting may have been encouraged also by the desire of saving the expensive labor of early thinning, and by apprehension of the bugbear of weakly drawn up plantations in which the slender poles bend with their own weight. In many cases, too, the convenience of shooting caties coverts to be so originated and maintained that at no stage of their growth would there be any difficulty in freely walking through them. A further reason why there is a tendency to have young trees comparatively wider apart than is usual on the continent of Europe is to be sought for in the greater mobility of our climate and its irregularity. Where the seasons are more regular and the summer is generally a long consecutive period of dryness and sunshine, the pressing need of storing moisture by the maintenance of thick shade in the woods is self-evident. Hence the trees are, till near the end of their career, kept close together, with close and interlacing canopy, and the golden rule of arboriculture is to keep the sunshine off the ground. Our climate, with its occasionally more copious summer rains and general irregularity, rather keeps this rule to some extent out of sight than invalidates it. Before we consistently neglect it, we shall do well to consider carefully the other disadvantages which follow where trees have spaces between them admitting sunshine to the ground.

Besides endangering the continuous supply of moisture in the event of a dry season, the sun in an open covert will call into existence a luxuriant growth of annual and other weeds. These increase evaporation of moisture, and interfere greatly with the formation of leafmould or humus from fallen leaves, a most valuable product which has the chief share in enriching and improving the forest soil. They also absorb a great deal of plant food, diverting nutriment to themselves, and impoverish the soil which, under a dense shade would be reserved for the sole possession and nourishment of timber.

Another disadvantage of open order with interruptions in the canopy as contrasted with full shade, will be manifested in the altered

habit of growth thereby induced. Everyone is familiar with the difference of form between a tree grown singly in the open field and one grown amidst a mass of timber in a close covert. When the sunlight can permeate the covert to the ground, the young tree will acquire something of the isolated type. They will form strong and numerous side branches, because their lower foliage will be kept green by the penetrating sunlight instead of being killed by darkness and contact with near neighbors. Young trees so wide apart will not be so uniformly straight, nor will they grow so rapidly upwards, being rendered irregular and starved by a quantity of branches.

It will therefore be a safe rule to close the woods overhead against the sunlight, and that during the earliest possible stage of their growth. Thus the floor of the covert may be kept tolerably bare of grass and weeds and covered chiefly with decaying leaves and black vegetable mould. Under such conditions the lower side branches will wither and drop off of themselves, and the principal growth will be in the stem and upwards.

Some indications will be required of the scale of distances apart which would in the earlier stages of woods be sufficiently close to secure desirable results. To specify this so as to meet all circumstances exhaustively would involve many details and would be difficult. It will perhaps be a step in the right direction, leading some way towards practical precision, to specify what is in general the most favorable distance to adopt in originating a covert artificially by planting. An approximately correct answer to this simpler question would provide a standard distance to which other cases might be referred.

Experiments with the object of determining this point are briefly referred to in his Manual of Silviculture, by Dr. Heyer, father of the present director of the forest faculty attached to the University of Munich. This manual was, twelve years ago, the standard text-book on the subject for North Germany. Quoting from imperfect recollection the test laid down was, what distance apart will in 30 years, with hardly any thinning, yield the greatest cubic contents of healthy wood. He considered it sufficiently proved that three feet apart was the most favorable distance. Very numerous and satisfactory plantations, especially of common pine, are to be seen with this scale of distance, which gives each plant the space of a square yard, and requires 4,840 plants per acre. To plant much closer together would presumably produce after some years, such a struggle for existence among the young trees as might be prejudicial to them, or would demand a careful attention to thinning at an early period when thinning would probably be unremunerative. At four feet apart and over, the plants would not so soon take possession of the ground by joining their branches over the growth of weeds and grasses in the clearing, nor would the trees be so numerous as to yield equal cubic contents after 30 years.

If the distance of three feet apart should sustain its advantages for plantations in this climate, as would probably be the case, a standard of distance would be furnished which would be a guide in the origination of coverts also by natural or artificial sowing. Where the seedlings in these latter came to stand much closer together it would be well to weed them out during the first five years. In case of future accidents which might reduce their numbers, it would be prudent to leave them considerably more numerous than in the pattern plantation. Where, on the contrary, there were fewer than this proportion, additions would have to be made by planting up the gaps till there were about 5,000 plants per acre.

In plantations of three feet apart maintenance operations during the first five years would be confined to the replacing of those plants which might have died, and the removal of too luxuriant and dangerous weeds. From then till their 20th year they would require little attention. Their periodical examination would probably not reveal necessity for any treatment, unless in mixed coverts the different rates of growth of different kinds of wood should render assistance necessary. Certainly in their tenth year trees three feet apart would as yet be