LUMBERING IN THE MARITIME PROVINCES.

[Special correspondence CANADA LUMBERMAN.]

LUMBERING in the Provinces of New Brunswick and Nova Scotia, is quite different, or at least differently carried on, than in any other part of Canada, both in the bush and in mill.

In the southeastern part of Nova Scotia oxen are used exclusively, and instead of the old orthodox ox yoke and bow there is a sort of yoke strapped across the head below the horns, same as is seen in parts of southern Europe. These lumbermen seem to think horses are too valuable to use in lumbering But there are a few getting out of this idea and find that a man can do much more with horses than oxen. The lumber in Nova Scotia, like New Brunswick, is mostly spruce, and is generally brought down to the mills full length of the tree and cut short by hand in the mill, with a crosscut saw. These mills, although some of them are quite extensive, are quite old in their style, such a thing as an endless chain carrying the logs in mill is unknown. True, they use an endless chain, but they use short dog chains and grab hooks, using from two to four men more than are necessary.

METHODS OF SAWING.

Live gangs are the favorite saws for cutting the lumber. These are quite different from anything to be found in the west. The logs follow one another in the gang and are held in place by a travelling head block with spikes on top and bottom, a sort of an inverted durable L dog; one of these travelling headblocks is in front and one in rear of the gangs. The lumber cut is not well done, as they carry too heavy feed; I have seen as high as 1¼ inches at a stroke. Hence their deals do not bring as good a price as St. Lawrence river cut of the same quality. Very thick saws are used. I found one mill using No. 12 gauge and they thought it quite an achievement. But the strange part of this was, they only use them five inches wide, as they say if wider they will not run true. Such a thing as hammering a proper tension in them is unknown, all slabs, edgings and lumber are trimmed and cut off by means of the old style of swing saw, such a thing as a two saw trimmer or slash table was never seen in these provinces. One man in New Brunswick put in a slash table in a sort of a way but took it out as it broke a saw one day. The circular saw mills, Rotarys as they are called here, are generally too light and poorly built for accurate work. There are, however, a few exceptions to this rule. Solid saws are scarcely used at all. "Hoe" tooth is the favorite. The fact is, sawyers here are away behind in filing and generally taking care of circular saws. This is the reason that the solid saw is not more in use. Many more men are employed in mills here generally than any other place I ever saw. Live rolls, etc., and many other labor saving devices are not ingeneral use.

HOW LUMBER IS PILED.

Another peculiarity one notices is to see men carrying deals on their shoulders, sometimes long distances. Men so employed usually have a leather cushion on one shoulder and a stick about three feet long on the other, reaching behind the neck and under the board or plank so as to equalize the load on both shoulders. Most of the New Brunswick steam mills use boilers from 40 to 50 feet long and from 30" to 40" diameter, no flues, but simply long tubes, which are laid side by side and as many as required in a battery. Under this whole space under them is a fire box. I have seen five and six men firing such a battery of boilers, while the sawdust was carted away to some distant bank. Such a device as a hog to grind this sort of fuel and feed it and sawdust automatically, with one man to attend the whole battery, never seems to have occurred to them. Cutting their logs alive into deals makes a great quantity of waste in shape of edgings, which if stocked and cut with a high speed gang would be saved by way of the sidings got off the log in stocking it. The quantity of deals cut by one of these gangs is wonderful. Plenty of gangs in New Brunswick average 70 M per day from the round log and edged on a separate edger. Lumber is not classified and piled in anything like Western mill yard style, but all lengths and widths piled up haphazard just as it comes from the mill, and generally all around and close to the buildings. I wonder at this much on account of insurance if for no other reason. Band saws are coming slowly to the front and would do so more rapidly but for the lack of sawyers. Many of the most progressive are realizing that the Band saw is the lumber maker of the near future. And another fact is making itself patent is some device to get more and better lumber from the same logs. The old question of not how much lumber can I cut but how much money can I make is causing many to think seriously of putting in Band saws. Some are now satisfied that a band will fill this bill in two ways, both in quantity and quality, besides having less breakages than the old long stroke heavy feed gauge. Most of the lumber manufactured is cut into deals, although a larger quantity is cut into 1 inch and scantling for South American and New England markets, deals being almost entirely for European demand. In many sections spruce forests, not cut too close, will reproduce themselves in from ten to twelve years. I have seen fine spruce forests on the Mirimichi River in New Brunswick growing where the old dead furrows are plainly to be seen, showing that the land was one time cultivated. In this fact it only remains for the lumbermen of these Provinces to lumber judiciously their limit and barring fire to have a perpetual paying territory and the Government a never ending source of revenue. In many sections hemlock exists in large quantities; but for the U. S. market, the present mode of manufacture would have to be materially changed.

NEW BRUNSWICK SHINGLES.

Cedar exists in immense quantities and of excellent quality in all northern New Brunswick, and is largely manufactured into shingles. These they make in first-rate shape, but their machines are usually slow, averging from 12,000 to 15,000 per day per each machine. These all go to New England markets, a few going to Prince Edward Island and Nova Scotia points. I think on the whole, in no place in Canada, are better shingles cut and better packed and graded than in northern New Brunswick.

At the present time the lumbermen are much exercised over the sawdust regulations. As heretofore they have mostly been pouring their refuse in the streams; this has become such a nuisance, that the government has wisely decided to put a stop to it, and none too soon, as many splendid salmon and trout streams are almost destroyed.

OBSERVING LUMBERMAN.

WHY DO BAND SAWS BREAK?

PROBABLY no one question pertaining to saws has been asked in the last ten years as often as this, and it would be difficult to find one that has been more imperfectly answered. It has been claimed alike by both mill owners and filers that fractures in band saws are mainly caused by poor steel or uneven temper, but this is far from the true answer.

The writer has had a long and varied experience in operating band saws, and most excellent opportunities for experimenting with them under various conditions, and it is his opinion, gathered from this actual experience and extensive observation, that not one band saw in twenty-five sent out by leading and reputable saw houses sustains a fracture through interior or imperfectly tempered steel. So much has already been said and written about the fitting and tensioning of band saws that it is unnecessary to go deeply into that really important factor in the life of band saws at this writing. I will simply say in this connection that the filers and fitters generally are well acquainted with the fact that fracture will take place in the best saw on earth in short order if it is run with an uneven tension.

Many saws have been ruined by uneven tension, and there is no doubt that many more will be, as beginners are found in every band saw country, and even the experts sometimes overlook a "fast" spot in their saws and find a crack as the direct result. This is a matter that will adjust itself with the growing knowledge and ability of the band-saw "fitter," for the essential points to be observed in his line are perfectly uniform tension, pitch of teeth to prevent crowding back on properly aligned wheels, perfectly square and even set (swage), with amount of clearance adapted to the timber being sawed, rounded gullets, sharp saws and the absence of glaze or case hardening.

I now propose to show the most destructive factor in the life of band-saws, the rather short-sighted policy of mill-owners and operators in allowing it to go on, and the injustice they do themselves and saw makers by attributing the short life of the saw to poor steel. The destructive element is excessive speed of saw travel, which is not only non-beneficial, but a positive detriment.

Band saw steel as now made is the finest, best, toughest and most costly steel used in any wood-working industry. Through the courtesy of one of the most prominent saw manufacturing firms the writer recently saw a number of pieces of their band saw blades broken on a Riehle testing machine, and they showed an average tensile strength of 150,000 pounds per square inch, or 12,000 pounds per inch in width of a fourteen gauge saw.

The fact that the steel in question does possess this enormous tensile strength causes mill men and others not acquainted with working and destructive strains to wonder at fractures taking place in their band saws, and through their lack of knowledge on this subject they almost invariably condemn the quality of steel or temper, when in fact, in a great majority of the cases of fracture, the saw is simply taxed beyond its tensile strength. The average operator will naturally inquire, "How can this be possible when we are only running from two to four tons strain on a ten-inch or twelve-inch saw?" The answer is so simple that it is surprising that it is not more generally known. Most of the strain comes on the edge of the saw, which, when run at a rate of speed nearly equalling two miles per minute (10,000 feet) causes the slack side of the saw to vibrate very materially, the amount of vibration varying under a given speed, according to uniformity of tension of saw, balance and rigidity of mill and stability of its foundation. This vibration of the saw creates an additional strain that is beyond computation. In a measure it is an unknown quantity, but that it adds a strain beyond the great tensile strength of the saw has been clearly demonstrated by a long series of experiments in high and low speeds, fracture taking place in the high speed and not in the low. These experiments were made in mills running and sawing regularly and on a mill which did no sawing, but which was put up for the purpose of testing for speed only. Every one of these tests established the fact that the high speed with its attending vibration is detrimental to the life of the saw without any commensurate returns in the quality or quantity of lumber manufactured.

My experiments and observations justify me in taking the position that better lumber and fully as large a quantity can be turned out on a speed of seven thousand feet per minute (all other conditions being equal) than on a speed of 10,000 feet, as a higher rate of feed can be maintained when the vibration is reduced to the minimum. That a large saving can be effected in saws, belting and machinery through reduction in speed is self-evident. Here are some comparisons of relative speeds and feeds, the entire feasibility and practicability of which were demonstrated by the numerous tests mentioned.

To make the illustration easy to figure and comprehend we will take but one length of saw and one space of teeth, and call the feed continuous: a saw fifty feet long with teeth space one and a half inches running ten thousand feet per minute, and for a basis of speed we will take twelve inches. The same relative proportions follow any reasonable change from this basis of speed and feed, though twelve inches makes a fair average of feed.

Given, then, a fifty-foot saw with one and one-half inch space, running 10,000 feet per minute, you have on a twelve-inch feed as many feet of feed as 50 will go times into 10,000, which is 200 feet of feed, and allows 33⅓ teeth per inch of feed. If speed of saw is reduced to 9,000 feet per minute the feed can be increased to fourteen inches and maintain as easily as twelve inches on the first speed given; 9,000 feet of saw travel gives a 180 revolutions of saw, which on a fourteen-inch feed gives 210 feet of feed per minute and allows 28 4-7 teeth per inch of feed. A further reduction of speed to 8,000 feet per minute and a corresponding increase of two inches in the feed gives 160 revolutions of the saw, and makes on a sixteen-inch feed 213⅓ feet per minute and allows 25 teeth per inch of feed. A speed of 7,000 feet per minute gives a 140 revolutions of saw, which on an eighteen-inch feed makes 210 feet of feed per minute, and allows 22 2-9 teeth per inch of feed. It will be noticed in this comparison that the highest rate of feet given is eighteen inches, while the lowest is twelve inches, and that the number of teeth per minute in each case is perfectly safe. The basis of twelve-inch feed is a fair average, take the country through. Soft pine operators can take eighteen inches of feed for their basis, and when they get up to a twenty-four inch speed they still have 16⅔ teeth to each inch of feed they carry.

The figures proved the proposition that a higher rate of speed can be maintained on a reasonably slower speed than 10,000 feet, and it can be demonstrated by any operator who conscientiously tries to save saw bills and extra work in brazing and tensioning. Vibration is increased by vibration, and fracture of blade by both. While a high rate of speed and extra vibration occasioned by it are responsible for the majority of fractures, it is well to consider other points that may have a tendency to produce cracks. Unless the operator knows positively the cause of the trouble he is not competent to treat it and is very much handicapped in all efforts to overcome the difficulty. When all things pertaining to the mill are in the best possible condition there still remains the ever constant hammering of the saw by its impact with and on the wheels, to say nothing of the bending and straightening while it is in motion. When one considers that a fifty feet band saw running 10,000 feet per minute is bent and straightened in every portion of its length 400 times per minute, 24,000 times per hour, 60,000 times per run of two and one-half hours, while all the time it is under a severe tensile and torsional strain, the wonder is that it does not break more often.—Lumber.