ECONOMICAL MANUFACTURE OF SMALL LOGS.

OTTAWA, November 12th, 1904.

Editor CANADA LUMBERMAN:

DEAR SIR,—The increasing scarcity of large timber or logs that will average 12 inches or over is bringing home to the manufacturers of lumber the necessity of arranging their mills for a more economical method of handling the increasing quantity of logs which run under rather than over 12 inches. Many firms are now taking out logs, in lengths from 12 to 24 feet, that will not scale over 1000 feet for every 25 logs.

To economically manufacture such material into lumber necessitates the rapid handling of a large number of small pieces in order to make any kind of a satisfactory showing. I would like to ask your numerous readers their opinion as to the best method of handling such material, cutting it into the following sizes of lumber, viz., 5/8x3" to 9" wide; 1"x3" to 9"; 2"x3" to 9"; 3"x3" to 9", and 4"x4" to 6", and length from 6 feet up, spruce or pine. I think the discussion of this question would be of much interest and value to the lumber trade at large, and hope those interested will discuss the question fully in your pages.

Yours truly,
I. N. KENDALL.

A COMPARISON OF POWER TRANSMISSION SYSTEMS.

TORONTO, Nov. 19th, 1904.

Editor CANADA LUMBERMAN:

DEAR SIR,—With your permission I will endeavor to give a few perhaps interesting facts on power transmission by rope.

The question may be asked, what is the oldest method of power transmission. Gearing is the oldest method, it is positive in its action, and is claimed to operate with less loss of power by friction than any other method. But as a means of transmitting large powers, this method is fast disappearing, for the following reasons:

A failure of one part is almost sure to be fatal to the whole. It is expensive in first cost as well as in erection and maintenance, and is very objectionable on account of noise, although in some cases it might be an advantage, especially with small power.

Belting comes next as a method of transmission, and can be used to advantage where high speed is to be obtained on account of its flexibility, or where it is necessary to shift from a tight to a loose pulley. But it also is expensive in first cost, and when large power is to be transmitted the great width necessary makes belt driving not only uselessly extravagant but also difficult to install.

Then again, all belting requires perfect alignment of shafting and has a large percentage of slip, especially on cast iron pulleys, and as a result loss of power. I have personally seen cast iron pulleys become so warm on account of the belt slipping that I could not hold my hand on the pulley. Hence belts have to be made so taut to do the required amount of work, that there would be a loss of power by friction in the bearings and sometimes cause heated bearings. Where this occurs it would be of advantage, if the pulleys would permit, to use lagging, as it is a well known fact that wood pulleys or pulleys lagged with wood will actually give from 25 to 60 per cent. more power, being guaranteed to that extent, providing the same belt is used and with like tension of belt. Belting like gearing is also noisy in operation and produces electrical disturbances.

Electricity as a means of transmitting power has considerable merit and for long distances its advantages are unexcelled. For example, a factory in California is driven from a power house 250 miles away. But for ordinary mill practice of to-day this method has not reached a sufficient state of perfection or economy in installation to justify the millmen in adopting it in place of belts or rope.

It is only within the last few years that the use of ropes as a means of transmitting power has received the general recognition of millmen. This system having forced its way to its superiority as main drives, is now superseding all others in new plants both in Canada and the United States, and in some places is used entirely throughout the factory. This is especially noticeable along the great lakes, where numerous grain elevators are found, in which belting has entirely disappeared. Below are some of the most prominent advantages peculiar to rope driving and which engineers and millrights are taking note of.

First.—The distance and direction in which power can be transmitted is practically unlimited. In one of Hawkins' books on Mechanical Engineering the following table is given comparing the four greatest powers of transmission, namely: Electricity, Air (pneumatic), Water (Hydraulic), and Rope.

Distance of Transmission in feet.	Electricity.	Hydraulic.	Pneumatic.	Rope.
300	.69	.50	.55	.96
1,500	.68	.50	.55	.93
3,000	.66	.50	.55	.90
15,000	.60	.40	.50	.60
30,000	.51	.35	.50	.36
60,000	.32	.20	.40	.13

Hence it is seen that rope is more effective up to about three miles, beyond which electricity and pneumatic powers are more effective.

Satisfactory driving may be done where the distance between shafting is as great as 175 feet without the aid of carrier pulleys. With carrier pulleys the distance may be prolonged indefinitely. On the other hand, successful driving can be done with ropes where the shafts are close together. There are now in operation many drives where the shafts are but 10 feet apart.

Second.—The amount of power that can be transmitted with rope is also practically unlimited; for instance, there are several drives in the United States which are transmitting from 3,000 to 4,000 horse power, of which I might mention the rod mill drives of the Sharon Steel Company, which is by multiple system; 60 ropes 2 inches in diameter are used.

Third.—Economy in first cost and maintenance. In drives of 200 h. p. and upwards and where the shafts are from 20 to 30 feet apart, the cost as compared with belt drives will vary from 10 to 30 per cent., according to the distance and size of drive. This advantage increases rapidly as the distance apart of shafts and amount of power to be transmitted increases.

Fourth.—Small cost and maintenance of a rope drive is a strong point in its favor. The average life of a rope on a properly constructed drive is from five to ten years, providing that the rope is running free from obstructions and the speed of the rope is not more than about 4,500 to 5,000 feet per minute, and in that time all the care that it needs is proper splicing, which is a simple thing when once the idea is grasped.

Fifth.—Economy of space. The width of rim space required is from one-half to two-thirds that of belting, varying with the size of rope used. It is also positive power where the angle of the grooves are 45 degrees; also when calculating for speed no allowance need be made for slipping of rope as is usually the case with belting. Further, it is steady running and absolutely noiseless, due to the flexibility of the rope and the air passage in the bottom of the groove, which usually is 9-16 of an inch. This holds good for large drives as well as small ones, notwithstanding that horse power is being transmitted in thousands and the ropes may be running a mile a minute. Another great advantage when wishing to convey power to a number of floors is that the full number of ropes start from the driving pulley, while the number for each shaft are easily dropped off at each floor.

Sixth.—The great advantage in future addition of power. This may be readily done by installing pulleys with extra sheaves, and when more power is wanted more rope is added, filling up the extra sheaves, where if it were belting, you would have to get a new belt because it would not be possible to splice a piece on the side of the belt.

There are two distinct systems of rope drives, namely, the multiple or English system, and the continuous or American system. The multiple system is the simplest, consisting of a number of independent ropes running side by side in the grooves of the pulley. It is claimed by some authorities that the life of the rope is longer on the multiple system on account of the rope always bending in the one direction, but I think this is doubtful.

In the continuous system one rope is wound around the driving and driven pulleys several times, the number of laps being according to the amount of power required. With this system it is necessary by some means or other to conduct the rope from an outside groove of the driver to the opposite outside of the driven. This is done by means of a travelling tension carriage whose duty is to do this as well as to secure a uniform tension throughout the rope. It is so arranged as to travel back and forth automatically, regulating the slack of the rope which occurs from the stretch in the rope, also irregularities of load. This should be so arranged as to take the slack where it accumulates, which is on the slack side of drive just off the driven pulley.

In the second way, where it is not convenient to take slack directly from the driving pulley, the same result may be obtained by taking it from the driven, the rope being led from an outside groove, which is a loose or independent sheave to the tension sheave, and thence returned to the opposite outside groove of the driven pulley. I think that splicing a rope is much easier accomplished than splicing a belt, being done in less time and requiring less tools. The proper splice is called a transmission splice, varying in length according to the size of rope used. One engineer has said that 95 per cent. of troubles in rope driving are due to bad splicing.

Much more could be said about rope driving, but time and space are limited. Thanking you, Mr. Editor, for the valuable space in your journal,

I remain, yours respectfully,
D. D. DAVIDSON.

OBITUARY.

Just as we go to press we learn, with profound regret, of the death of Mr. John Bertram, President of the Collin's Inlet Lumber Company. His demise took place on November 28th at his residence, 19 Walmer road, Toronto, after an illness extending over several months. About three weeks ago he was operated upon for appendicitis and from that time he gradually sank. Deceased was also President of the Bertram Engine Works Company and Chairman of the Dominion Commission on Transportation. His death is an irreparable loss to the country and to the lumber trade. A sketch of his career will be published in the January number of THE LUMBERMAN.

TRADE NOTES.

Henry Disston & Sons, Incorporated, have decided to establish a Canadian factory in Toronto.

Josiah Fowler, manufacturer of edge tools, St. John, N.B., recently returned from an extended trip to the Pacific Coast, where he arranged for placing his goods on the market there.

A. R. Wilson is building a new saw factory at St. John, N.B., which will be 40 x 100 feet, two stories, and built of brick. The ground floor, which will be used as a showroom and factory, will have concrete floors and a plate glass front.

The Hay Foundry, Limited, of Listowel, Ont., has been incorporated, to manufacture machinery and carry on the business of iron founders. The capital of the company is $40,000.

The Canada Machinery Company, Limited, is a new concern incorporated last month, to manufacture machinery of all kinds. The head office will be at Point Edward, Ont., and the directors include David Milne, Thos. Kenny and Charles S. Ellis, of Sarnia.

The American Axe & Tool Company, of Glassport, Penn., have decided to establish tool wooks in Canada, and are looking for a suitable location in Montreal or vicinity. The company have been doing a large Canadian trade, Mr. J. Hoffmann, of Montreal, being their representative.

On account of a recent large extension to their business in the Maritime Provinces and Newfoundland, Woods, Limited, of Ottawa, find their accommodation inadequate and are considering the erection of a large addition to their Slater street manufactory. This company manufacture a complete line of lumbermen's supplies for wood operations.

Among the orders recently received by the Gordon Hollow Blast Grate Company, the well-known manufacturers of blast grates, edgers and trimmers, of Greenville, Michigan, was one from the Dennis Bros. Salt & Lumber Company for their two mills near Tustin, Michigan, for two log haul-ups, two trimmers, two heavy edgers and two 10-saw slab slashers.