

IMMENSE LUMBER CONSUMPTION OF A CANADIAN ESTABLISHMENT.

We give herewith a view taken in the lumber yards of the Massey-Harris Company, Limited, Toronto, and also introduce a portrait of their lumber buyer, Mr. Alex. McKee.

The Massey-Harris Company are among the largest buyers, and are, we believe, the largest consumers of hardwood lumber in Canada, their annual consumption being between 7,000,000 and 8,000,000 feet. Notwithstanding the fact that in the manufacture of agricultural implements steel is largely superseding wood, yet the growth of the business of this company is so large that their consumption of hardwood lumber is increasing year by year. The average value of the lumber which they generally carry in stock is nearly \$250,000. When one considers the enormous amount of money which is circulated by this one company alone among the mill men of western and northern Canada, and the large number of persons that find employment directly and indirectly in these mills, some idea of the importance of this industry to Canada can be conceived.

It is a great source of satisfaction to know that such enormous quantities of hardwood lumber are used in the Dominion of Canada, giving employment not only to the saw mills of the country, but to a large number of artisans who construct, from this raw material, various kinds of implements, which are exported over the entire world.

The principal object of this article is to draw the attention of saw mill men throughout the country to the fact that they can find in the company we have mentioned a purchaser for very large quantities of hardwood lumber, either dry or green, and we are satisfied that it would be to the advantage of the mill men of Canada to sell their product to local companies whenever

For such lumbers the Massey-Harris Company inform us they will pay more than mill men or dealers can obtain by exporting.

For packing cases, for which they use 1" soft elm, they consume one to two million feet annually. They buy this mill run (dead culls out), thus taking the entire cut, which is of great



MR. ALEX. MCKEE.

advantage to the mill man. For many special sizes they pay an extra price.

Their buyer, Mr. McKee, is well-known to nearly every mill man in western Ontario. He has been lumber buyer and inspector for the Massey-Harris Company and the old Massey Manufacturing Company for over 20 years, and is perhaps the best posted man in Canada on hardwood lumber. He knows the value of every board in connection with the business, and is able on this account to make an inspection more favorable to the mill man than the ordinary one.

EVOLUTION OF THE WATER WHEEL.

THE essential principles of a well constructed water wheel are not unlike those of a finely balanced and adjusted automatic cut-off steam engine. In either device the first consideration is a point of impact of the power with some vehicle through which the power is conveyed directly to the machines to be driven. In the steam engine this point of impact is the piston head, and the power is the steam admitted to it through the cylinder. In the water wheel the point of impact is the bucket, and the power is the weight of water conducted to it.

During the early stages of steam engine development the margin of profit in the use of steam over hand power was so enormous that little or no attention was given to economy of fuel; but with

the expansion of competition which this large margin naturally invited, the minutest detail of cost of production came to be closely scanned, and to-day the quantity of fuel consumed in any well ordered manufacturing establishment is as accurately noted as any other material that enters into the factory product, and vast sums are cheerfully paid for plants that secure the closest proportion between a certain weight of coal burned and each pound of water evaporated.

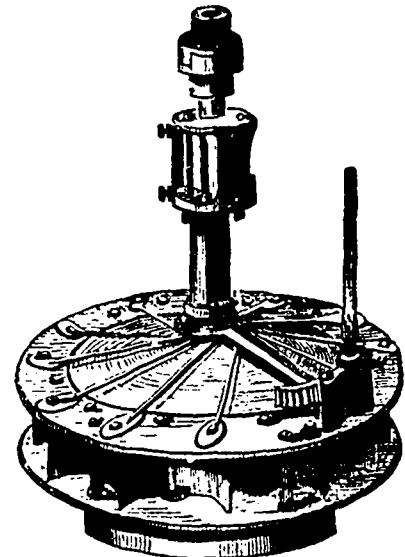
Such scaling down in the cost of steam power for a time left vast water powers throughout the land comparatively unused and apparently useless; for manufac-

turing could be pursued at any point, and in fact was diverted from localities possessing superior natural advantages to those that offered the best facilities for the distribution of finished goods.

Electricity, however, the great annihilation of distance, has, with wondrous strides, taken the front rank of the march of progress, and with the harnessing of Niagara the age of steam may almost be said to have yielded to the electric age, while in its wake, if not at its side, nature's other great elementary force—water—unassumingly stands forth the basic power of the day; the time-honored over-shot and breast water wheels which served their generation modestly but well, but for which the world became too small, are venerable relics of the past, along with Watt's steam engine and Stephenson's locomotive; and to the turbine has been assigned its final worthy place in the economy of the world.

Some will say, then, is not one turbine as good as another? Not so, any more than that one engine, of whatever type, using steam, is as good as another. There are few really bad turbines, for they all possess at least one-half the generic virtues of their species—they will let the water into them. But just as the highest type of steam engine is that which exhibits the nicest adjustment between the inlet of steam and the cut-off to the exhaust, so the highest type of turbine water wheel is that which observes the finest balance between the volume of water conveyed to it and its capacity to discharge or exhaust the same water while utilizing, by reason of its correct principles of construction, the greatest possible percentage of the power due the water.

The process up to this happy medium is, or should be, one of elimination or the dispensing with every part and weight that makes for friction, and that tends to the misdirection or mis-use of the power contained in the water. Such results are not a matter of lucky guessing or of random efforts by new men in a new field. In the case of the "Leffel," "Vulcan," and "Perfection" turbines the



"LEFFEL" TURBINE.

manufacturer, Mr. Madison Williams, successor to Paxton, Tate & Co., Port Perry, Ont., states that they represent thirty years of patient trial, experiment, modifications, and a steady aim to run parallel with natural laws, so that while many builders have multiplied devices, parts, connections, and cumbered their wheels with useless and hindering appliances, these turbines stand out as models of simple design, devisable workmanship, and high efficiency of power, that make them prototype of the most modern self-contained automatic steam engine, having the advantage over the latter that they use no fuel, require no fireman or engineer, and once properly placed may be relied on to do their work day in and out for years after, so long as the stream flows.

These turbines are built in sizes from 6½ inches to 8 feet in diameter, and may be made to yield anything from ¼ horse power to 2,500 horse power, or over for a single wheel. Five sizes from 6½" to 11½" are constructed entirely of brass, and those from 13½" to 20 inches have brass gates. Sizes larger than 20 inches are all of iron.

In illustration of the almost marvellous ingenuity of these wheels, a recent requirement was for a turbine to develop 60 horse power under a certain fall of water. The requirement was more than met by a wheel 7½ inches diameter, which was capable of 90 horse power, and as the same principles apply to all the wheels built at the works of Madison Williams, it would seem that there remains little, if anything, to be attained in the improvement of water wheels that is not embodied in the three types already referred to.



CORNER IN LUMBER YARD, MASSEY-HARRIS COMPANY, TORONTO.

possible, rather than to export it to be manufactured abroad.

The hardwood lumbers mostly used by the company are white ash, white and red oak, rock elm and hickory. They also use considerable quantities of maple, basswood, soft elm and whitewood. White ash pole stock 3½" x 4¼" and 8 or 12" x 14 feet is very valuable to them, as is also 1½" x 10" x 12 feet white or red oak or rock elm, which is used for binder wheel rims.