



PUBLISHED
SEMI-MONTHLY.

The only Newspaper devoted to the Lumber and Timber Industries published in Canada

SUBSCRIPTION
\$2.00 PER ANNUM

VOL. 5.

PETERBOROUGH, ONT., OCTOBER 15, 1885.

NO. 20.

HACKMATAK KNEES.

Among the board piles and heaps of shingles which line Banvor's wharves at intervals are noticed another product of the forest which, a though used for many purposes and shipped far and wide, are little known about. I mean knees, which come from the roots of the hackmatack and spruce tree, generally from the former. The handling of knees has been carried on in Maine, for many years, and although the trade has declined considerably late, several firms are yet engaged in it. The knee trade is not what it once was, for the reason that ship-building has declined, while iron knees have to a considerable extent taken the place of wooden. A wooden vessel requires a great many knees, large and small, every deck beam being fitted with six—three at each end—and when ship-building in Maine is good, so is the knee trade. A good part of the knees sold now go into the construction of large warehouses in the big cities, floating bath or boat houses, barges, etc.

Knees are gotten out at all seasons of the year. Sometimes a man can make four or five dollars a day and at other times but small wages. It all depends upon whether he strikes a locality where suitable trees are grouped together, or a section where they are few and scattered. He selects the biggest root for the knee and then bores into the tree trunk a little way from the ground to find whether it be decayed or sound. The knee is cut out in a rough manner with an axe and shipped to the nearest buyer. Sometimes the tree trunk is taken out for timber, but it is oftener left where it falls. A gnarled and stunted tree is the best for knees, as may readily be inferred, and a loam subsoil with clay bottom is the kind of land where such trees grow, the hard clay turning the roots aside and thus forming the desired angle. The knees, as its name indicates, is formed of two parts at right angles with each other. The lodger is known as the stock and the shorter as the root. The knees are of various sizes, designated by numbers from four to ten, inclusive. The dimensions range from four feet length of stock and two feet root for a No. 4 knee, to five feet six inches stock and four feet root for a No. 10. The thickness varies, according to these dimensions, from four inches to ten, after the rough knees have been run through a Daniel's planer. The prices paid by dealers to the cutters are as follows: No. 4, 20 cts. each, No. 5, 50 cts. each; No. 6, 65 cts. each, No. 7, \$1.25 No. 8, \$2.25, No. 9, \$3.25 No. 10, \$4.25.

The greater part of the knees that come to Bangor are cut in Piscataquis county, which abounds in hackmatack. Regarding the present timber growth of Piscataquis I heard a good yarn the other day. It seems that away back in the dim and legendary good old times that we hear so much about, there was in Maine a

land agent named McIntire, who must have come of the famous "bold McIntyres," for he was a man who used his authority for all it was worth, and in this particular instance for more. In his time there were certain domains of Niatou, now Medway, who were accustomed to helping themselves liberally to the timber about Quakish Lake, which is on the West Branch of Penobscot above Grand Falls. This timber then belonged to the State, as it stood on land that had not yet been conveyed to any purchaser, and McIntire resolved to put a stop to the Niatou people's enterprising operations. There was a great growth of meadow hay in this section, on which the trespassers depended for the sustenance of their cattle, and the land agent, perceiving this, ordered some of his henchmen to set fire to the dry grass. They did, and quite a conflagration started. In fact McIntire builded better than he knew, for instead of simply burning up the hay the fire attacked the fine old pines and hardwood trees and swept across the country nearly to Moosehead Lake, destroying millions upon millions of the best timber Maine ever saw. But the fire was not all loss, for from its ashes, over the stumps of the old pines, has sprung up since a growth of sapling pine, white birch and poplar—three trees which are the source of much of the manufacturing life and commercial property of Piscataquis and Penobscot. The famous spool wood district, with its factories, is included in this rejuvenated forest section, and from there are obtained second-growth pine logs from which so many millions of box-boards are sawn, and the poplar, of which so much has been used for paper pulp. The spool stock has been sent from Bangor to points as far distant as Paisley, Scotland; the pulp-wood to Providence and Maryland, and the box-board all over the New England and Middle States, while thousands of sacks of finished spools are sent to Connecticut and elsewhere.—*J. D. in Maine Industrial Journal.*

LEAKAGE AT TUBE ENDS.

Leakage at tube ends is one of the most frequent and annoying defects to which the ordinary horizontal and upright tubular boilers are subject, and while it is not necessarily on its first appearance dangerous, it indicates that something is wrong either in construction or management of the boiler, and it should be attended to at once, for if neglected the resulting corrosion of the head and tube ends will speedily induce a dangerous condition. Many explosions of upright tubular boilers have resulted solely from this cause. Faults of construction may consist of insufficient rolling, or too severe rolling or expanding of the tubes, by which the ends may be split or cracked, so that it is impossible to keep them tight. The second defect is, perhaps, more frequent than the first. The feed-pipe is also very frequently wrongly

located in the head close to the tubes, and when it is, and cold feed-water is used, the tubes in the immediate vicinity are almost sure to show a chronic leak. A heavy coating of scale on the heads between the tubes is sure to set them leaking severely, as the water is thus kept away from the head and tube ends, and they become overheated. In this case the only thing that will do any permanent good is to remove the cause, that is, the scale, when generally, if the defect has not existed for too long a time, the tubes may be rolled and made tight again. But a comparatively short time of severe leakage in this case is pretty sure to so severely corrode the ends that new tubes are required. This collection of scale is also a fruitful source of scaling and cracking of the back tube sheet. The front end of the boiler is not so much subject to this action, as the heat to which it is subject is not so intense. The removal of a heavy coating of incrustation from between the tubes of a boiler is sometimes a matter of some difficulty unless due intelligence is used. With "staggered" tubes, very bad water, and where the boiler is worked hard, the case is much complicated, and the almost sole reliance is a judicious use of solvents, coupled with proper cleaning, as often as the boiler can be spared for the purpose. With properly arranged tubes much help can be obtained by the use of proper chisels and scraping tools. Still no rule of procedure can be given that will apply to all cases. A thorough examination of each case is always necessary to determine the best method of procedure, and it is always easier to keep a boiler clean than it is to clean it after it is badly fouled.—*The Locomotive.*

KEEP A RECORD.

Some weeks since we called upon an engineer friend who was thoroughly wrapped up in his machine. In the course of the conversation he produced a book in which he had for months kept a record of the coal consumed each day, and the horse power developed by his engine as shown by indicator cards taken in the fore and afternoon. These cards, being filed, served as a record of the condition of the engine in these respects which are apparent from the card. This was kept for a long time without his employer's knowledge, half in fear that some objection would be raised, but was at length produced to settle one of the innumerable little points, which only such a record can definitely settle, and met with so hearty an approval that the engineer was supplied with a record book, purposely ruled and lettered, and a planimeter for the more convenient and accurate working up the cards.

All engineers who are handling powers of any extent should inaugurate a system of this kind. Keep a record not only of your coal and power, but of changes which are made and their effect upon your fuel consumption and the

working of your engine. It will not only enable you to review your experience and retain valuable information, but suggestions will frequently arise from it which will be invaluable. It begets a habit of thought, and furnishes the material for deductions which will make you a success in your business, and gives you a means of proving what you have done and can do, which no amount of assertion on your part or recommendation by others can equal.—*Journal of Commerce.*

SAWDUST PAPER

A Vermont newspaper has recently appeared which is entirely printed on paper made from sawdust, the product of Mr. Pond's roller pulp machine, by which sawdust, shavings, chips and pieces of wood can be made with great rapidity into a pulp of clear, fine fibre. This machine will also manipulate the stocks of cotton, sugar cane, wild hemp, etc., at the rate of from 2 tons of dry pulp per diem. The resulting pulp is far superior to any other form of wood pulp, because the fibre is preserved intact and the cellulose is left with it, giving it great strength, softness, and pliability. The tensile strength per square inch of newspaper, which contains from 60 per cent to 75 per cent of ground wood pulp, is from 8 lb. to 12 lb., and stands a test of 17 lb. to the square inch, showing that it is much stronger than paper made from one third rags. As all kinds of paper can be made from this pulp without the addition of rags, cotton, or jute, it can be manufactured at a reduction of from 30 to 50 per cent, or the present cost. The unbleached pulp is also useful for wrapping-paper, and is equal in color and strength to the best Manila. The woods most adapted to the process are the soft woods, such as spruce, fir, pine, poplar and hemlock, the latter making the strongest fibre being equal to jute in strength. Besides the manufacture of paper, the pulp can be utilized for woodware, such as pails, barrels, and mouldings.—*Journal of Progress.*

A DESPATCH from Pichanock on Oct 5th says Lumbering is going to be very brisk in this neighborhood this season. For the last three or four years nothing has been done on the Gilmour limits, and this year several jobbers have received contracts from Mr. Gilmour at very fair prices, and a number of them have already entered on the fulfillment of their contracts. Men and provisions are arriving daily, and there is every prospect of things being pretty lively here this winter. Mr. Gilmour's Pichanock farm has been re-opened, as have also the offices and stores. The Gilmours themselves will also carry on operations on a fairly large scale. Prices average to jobbers from 80 cents to 90 cents per standard.

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