

HOW SAP MOVES.

All plants obtain their nourishment in a liquid or gaseous form by imbibition through the cells of the younger roots or fibrils. The fluids and gases thus absorbed, probably mingling with other previously assimilated matter, are carried upwards from cell to cell, through the alburnum or sap-wood until they reach the buds, leaves and smaller twigs, where they are exposed to the air and light and converted into organizable matter. In this condition a part goes to aid in the prologation of the branches, enlargement of the leaves and the formation of buds, flowers and fruit, and other portions are gradually spread over the entire surface of the wood, extending downwards to the extremities of the roots. We often speak of the downward flow of sap and even of its circulation; but its movement in trees in no way corresponds with the circulation of blood in animals, neither does it follow any well defined channels; for it will, when obstructed, move laterally as well as lengthwise, or with the grain of the wood. The old idea that the sap of wood descends into the roots in the fall, remaining there through the winter, is an error with no foundation whatever. As the wood and leaves ripen in the autumn, the roots almost cease to imbibe sap, and for a while the entire structure seems to part with moisture, and doubtless does so through the exhalation from the ripening leaves, buds and smaller twigs; but as warm weather again approaches, the temperature of the soil increases, the roots again commence to absorb crude sap and force it upward where it meets soluble, organized matter, changing color, taste and chemical properties. If this not the case, we could not account for the saccharine properties of the sap of the maple or for the presence of various mucilaginous or resinous constituents of the sap of trees in early spring, because we find no trace of such substance in the liquids or crude sap as absorbed by them from the soil. The life of the tree, Mr. Fuller teaches, is all in the bark and sapwood, the heart being dead and serving the tree only to strengthen it mechanically, as shown in the fact that it may be removed entirely by decay, and still the tree grows on vigorously for centuries.—Fuller.

EXCESSIVE STUMPAGE.

The following is a sample of a number of letters that have been appearing in the press of New Brunswick:—

HIGH STUMPAGE.

"To the Editor of the Sun:

"Sir, I have noticed that there have been some discussion in the newspapers on the question of stumpage, and I don't think this question is brought up a day too soon.

"It is all very well for the Government to say that this tax is necessary for the purpose of revenue, but let them reduce expenses and do with less revenue. If they continue to insist on collecting this stumpage they will drive us, lumbermen, out of the country. The reason is because we cannot go into the woods and produce logs for sale to millmen without losing money.

"Every season some of us have to go greater distances, others have to incur additional expense in getting out their logs, and then, when we come to sell, we find that prices instead of being higher are lower, and we come out at the little end of the horn.

"I don't believe there is a practical lumberman in the country who does not agree with me.

"It is all very well for some of the papers to call attention to small purchases of licenses, but we know of hundred of miles of Crown lands that have been given up by the owners.

"I suppose it won't make much difference if I go elsewhere to earn my living, but if many others do the same thing people will begin to feel the effect on trade in the towns and the farmers in the settlements, for there is no doubt we support the various trades with our requirements for lumbering to a considerable extent.

"Yours,

"LUMBERMEN."

The steady advance in the rates of stumpage by the Provincial Government has led to much discontent among the lumbermen of New Brunswick. The log haulers are obliged to go

far away from the streams for the timber; the damming of streams is a more expensive item than formerly; wages have increased considerably of late years; the camp supplies are of a higher class and more costly; and, everything considered, the cost of producing the logs and delivering them in the booms near the sawmills, has been so seriously increased that only the prices of an extra good market would remunerate the lumbermen. But while the market in England—to which they are principally shut up—has been growing worse and worse through the competition of Norway woods and the pine and spruce deals of other parts of Canada, with the New Brunswick spruce deals, the Government of New Brunswick has been steadily increasing the lumbermen's burthens by increasing the stumpage charged on logs cut on Government lands. These rates are excessive when compared with the value of the material, —in most cases equal to 25 per cent. of the value. It is not surprising, under the circumstances, that there was a large falling off in the cut last season, and consequently a serious reduction in provincial exports. Most lumbermen have again reduced their operations for the current season, greatly to the loss of the farmers who depend largely upon the lumbering operations for a market for their surplus produce, and to the loss of the merchants whose transactions with the farming population are thus considerably curtailed. The towns are also sufferers, since there is less labor employed and less money disbursed in connection with sawing operations. It seems, too, that some lumbermen are leaving the province and looking elsewhere for a more congenial field, and we know of one large operator from that quarter who has recently made an extensive purchase of saw mills and timber limits on the Ottawa. If a reduction of the stumpage rates will prevent the ruin of lumbermen, and by reviving a prosperous industry tend to promote prosperity among the agriculturists and merchants, the Provincial Government should not hesitate as to the course it should pursue. It is manifestly its duty to relieve the industry of a least a portion of the special taxes imposed when the lumber business was in a prosperous condition. The charges were excessive even when spruce logs commanded their highest figures, and they should certainly be reduced now when they are out of all proportion to the logs' value. The lumbermen have a very strong case, and they will, no doubt, know how to press it vigorously.—Montreal Herald.

AN IMPORTANT MATTER.

On the question of lumber duties and the purchases of Canadian timber limits recently made by American lumbermen, the Montreal Journal of Commerce says:—

"The conservation of the timber supply of Canada is a matter of great moment to the future industries of the country. The part which wood of various kinds plays in these is so important that a diminution in its supply, or a large increase in its cost, would injure or destroy many branches of manufacture which now help to support a considerable proportion of the population.

"The lumber trade at present suffers somewhat from the duty exacted by the United States on the portion of the product exported there. We must always look to that quarter for a market for more or less of the cut, which, burdened with a duty of \$2 per M feet, has to compete with the lumber manufactured in Michigan and Wisconsin. The effect of this has practically been that the Americans supply their wants from our forests at little more than the cost of manufacturing and delivery. The value of the standing pine in Michigan to-day ranges from \$3 to \$5, or more, per 1,000 feet; our timber brings no more than \$1.50 to \$2 per 1,000 feet for the standing tree. If the duty of \$1 were removed by the United States it is not likely that the whole benefit would be reaped by manufacturers here. The object of the remission of the duty, and no doubt its effect to some extent, would be to reduce the price of lumber, and the benefit would probably be shared between the producer and the consumer. If such action increased the average price \$1 per 1,000 it would be added almost entirely to the value of the standing timber, since

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The Best Article Ever Offered to the Trade.

I have much pleasure in drawing attention to my WROUGHT IRON COOKING STOVE, for Shanty, Hotel and Boarding House use. These stoves are made of Heavy Sheet Iron, the top and lining of the fire-box being of Heavy Cast Metal and all the connecting parts of substantial Wrought Iron Work. The dimensions of these Stoves are as follows:

SINGLE OVEN STOVE

Top surface contains six 10-inch holes, with ample room between, and one oven 28x24x19. Fire box takes 28-inch wood.

DOUBLE OVEN STOVE

The Double Oven has a top surface containing twelve 10-inch pot holes, with two ovens, each 28x24x19. One fire-box of suitable size for area to be heated. Below will be found Testimonials from some of the leading Lumbermen, who have used my Wrought Iron Cook Stoves since I commenced manufacturing them. They are the names of gentlemen who are well known and reliable, and will carry more weight than any recommendation of my own could do.

The Best Stove I have ever Used.

PETERBOROUGH, May 31, 1880.

ADAM HALL, Esq., Peterborough Dear Sir,—I have used your Wrought Iron Cooking Stove in our lumbering operations since its introduction here, and have no hesitation in saying that I prefer it to any other. For durability, economy and efficiency, where a large number of men are employed, it is the best stove I have ever used. You can, with confidence, offer it to hotels, boarding houses and lumbermen.

Yours truly,

THOS. GEO. HAZLITT.

The Stove for Lumbermen.

PETERBOROUGH, June 1st 1880.

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Yours truly,

J. M. IRWIN

In addition to the above I can refer you to the following lumber firms who use my Wrought Iron Range exclusively in their camps:—

THE GEORGIAN BAY LUMBER CO.....Waubushene
THE LONGFORD LUMBER CO.....Longford Mills
MESSRS. GILMOUR & CO.....Trenton and Ottawa
MESSRS. RATHBUN & CO.....Deseronto
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Dealers in, and manufacturers of, Dimension and Bridge Timber, Sawn Lumber, Clapboards, Shingles and Lath. Packing Cases and Boxes a Specialty.

OFFICE, MILLS AND YARDS: 342 to 396 William Street, MONTREAL, and at ROXTON FALLS, P. Q.

the cost of manufacture would remain unchanged, and the increase would represent additional profit to be got out of the stumpage. An appreciation of 50 per cent or more in the value of our standing timber would be an enormous increase to the national wealth.

"Whatever may be said for or against a protective policy generally, it will be generally admitted that, as far as possible, the working up of the timber supply should be carried on at our own mills, and furnish employment for our own capital and labor. Heretofore this has been almost the invariable rule, as far as logs are concerned, the exports of this class of goods having been comparatively trifling in amount. But of late indications of a change have been apparent.

"The mill-owners on the eastern side of the state of Michigan have in part exhausted their own supplies of standing timber, and the balance has been rapidly accumulating in a few strong hands, where it is held for the future supply of the owner's mills, or for future sale at greatly enhanced prices. This has caused those in need to go further afield, and purchasers from Michigan have been exploring the Georgian Bay and Lake Superior country, and have been buying up any suitable limits which they could obtain. The timber for these could be rafted to the Saginaw river and other lumber-

ing centres in Michigan, and all the benefit which this country will derive therefrom will be the export duty, at present \$1 per 1,000 feet.

"Here is, we think, a case in which the intervention of the Government is called for. If the United States will not take our lumber without imposing a duty of \$2 let us exact the same duty on the unsawn timber with which they would supply their mills. We should have free trade or fair trade in this article, if in any."

THE WEEPING BIRCH.

We have lately noticed, says a contemporary, how some trees have suffered in the very hot weather, especially in the London parks, and it is a pleasure to see the way in which the birch adds to its tiny shoots in the fiercest heat, and always looks as fresh as in May. The white (Betula alba) is, either in leaf or leafless, a handsome and graceful tree, and it is no less remarkable for its lightness and elegance than for its hardiness. It stands in no need of protection from other trees in no stage of its growth, and lives on the bleak mountain side and other exposed situations, which even the sturdy oak would shrink. It is a fast-growing, and rather short-lived tree, in favorable situations sometimes attaining a height of 80 feet, but generally not exceeding 30 feet or 40 feet.