

to the surface and struggles for existence for a short period, and then finally goes down, never to rise again, and with his fall hundreds to whom he had given the means of living, and their wives and children, are thrown out of employment and without any other means of support. The goods are sold by the assignee frequently far below their actual cost to the manufacturer, thus inflicting upon other manufacturers a greater loss, and greater wrong, than ever they received from American importations into the country. Thus, should we lack judgment and again rush into over-manufacturing because we have protection, we may become the suicides of our own industries and our own fortunes, and that may become a blight to the country, which, with caution and prudence as guides, would become a blessing.

To the mechanics of the Dominion, so many of whom have been looking forward to protection as a boon that would, with the sweep of a magician's wand, bring immediate prosperity to the country, we most sincerely sympathize. Not only have many of them been thrown out of employment, but those who have been fortunate enough to be kept employed have been obliged to work on short time; and now, instead of benefitting by the new policy, as they fondly supposed they would do, their wages are being reduced ten per cent. What room, then, under such circumstances, is there yet for increasing the industries of the country until there is a field in which such goods can be disposed of? Take, for example, our large manufacturing establishments from Montreal to Sarnia, and we know, to our regret, how many of them have been closed, how many working on short time, and how many only working for a part of the year. What room is there, then, for others, until all these are in full operation, and with every probability of their continuing so? It will, however, be their policy to keep their prices sufficiently low, so as not to invite competition from across the border.

In concluding these remarks, we can only say to our mechanics: have patience for a time, and do not despond because no immediate good results follow the adoption of a protective tariff. It will be some months yet before manufacturers will see their way clearly to extend their business. Young and hearty men should not remain here in idleness, awaiting something to turn up: to them we say, who can find means to do so, go before the summer is too far advanced, and take your chance on those rich free lands of the West, where, after a few years of toil, but not of want, you will become independent, and, perhaps, supporters of those very factories in which you were once employed.

Much has been said about the unjustness and ingratitude of Canada in putting a duty upon English manufactures; but it will be a long period yet before Canada will have a population sufficiently numerous to enable her to manufacture with success many classes of goods that we require from England. For years to come we must buy from their markets; but whether the consumer will, or will not, have to pay the extra duty on these lines of goods, is not a matter of so great an account, individually, as to become a burthen or a grievance—provided better times return, and our population, one and all, find employment.

For want of space in this number the continuation of the work on "Machine Construction and Drawing" will appear in the June number.

Correspondence.

THE UTILIZATION OF SAWDUST.

To the Editor of THE SCIENTIFIC CANADIAN:

SIR,—Every one acquainted with the sawing of lumber at the numerous mills in this country, worked by both steam and water-power, must have been struck with the immense quantity of sawdust which accumulates around them, or is carried off by the stream, and which in many instances becomes a nuisance, which the mill-owners, generally, would be glad to see abated. In most cases, especially in water-power mills, the sawdust finds its way into the river, where it forms shifting bars detrimental to navigation, is destructive to fish, and for various reasons becomes an objectionable element in the water; but it is generally around steam saw-mills that the sawdust accumulates most, there seldom being any stream to carry it away. There are mills at Ottawa and many other places where whole hills of sawdust are piled around, being the accumulation of years.

Practical economy can in no way be better exemplified than in the utilization of waste material of various kinds.

Taking it for granted that it is possible to utilize this substance, which is the object of this communication to show how it is possible, it will take no elaborate calculation to prove that the loss annually sustained is enormous. For instance, the gang-saw, in common use here, makes a cut of at least $\frac{1}{4}$ of an inch in width on a 12-inch plank 12 feet long; this would amount to 432 cubic inches, or a board 3 feet long, 1 inch thick—the two outside portions, or slabs, not being used as planks, the cut used to separate them is a balance in the calculation to the one cut separating two planks—so that the actual loss on four planks of the size mentioned is equal to a board of the same length and one inch thick. When the number of feet of lumber produced in a year is estimated, this will give an idea of the amount of sawdust produced and lumber wasted at the same time.

This substance might be utilized in various ways. It might be made into a cheap fuel by adding gas tar, or some substance to give sufficient cohesion, and compressing into blocks of a suitable size. It might be made into paper pulp; I believe that several patents have been granted for this purpose, but the cost of the soda or potash to neutralize the oily matter at the wood has been, as yet, an obstacle in the way. Sawdust, in small quantities, has been used in the process called casting in wood; the sawdust ground fine, or otherwise prepared, is mixed with glue and pressed in moulds of various shapes. The articles produced are made to represent wood carvings, and are used to embellish cheap furniture, &c. It might be adapted to some useful purpose in a dozen different ways yet to be found out.

The object of this article is to point out what, in the opinion of the writer, is the most simple, cheap, and easy way to utilize the sawdust and waste refuse of the mills—that is, to distill it and convert it into pitch tar, pyroligneous acid, creosote, etc., the product of the distillation of wood.

The plant necessary for this purpose would be simple and inexpensive, consisting mainly of the proper retorts and distilling apparatus. They would be heated by the blocks, edgings, and larger débris of the mills.

There may not be much of a market demand for pitch tar, creosote, &c., still I think that the difference in value between those products and the raw material, sawdust, would pay. In the matter of creosote, a demand for it might be produced by the adoption more generally of the process for injecting it into wood, lately employed abroad with success, in the matter of railway ties, timber for docks, etc. Recent experiments in this direction have proved, conclusively, that wood so treated was, by a large percentage, much more durable and impervious to rot than wood not so treated.

The retorts and other plant for distilling could be made portable to a great extent, so that when the sawdust at one mill or group of mills was consumed, they could be removed to another locality. I have hills of sawdust in my mind's eye that would keep a batch of retorts going for a surprising length of time.

Whether this idea of distilling the sawdust be a feasible one or not, I leave others to judge. There can be no doubt, however, that the utilizing of sawdust, in one way or another, is a "consummation devoutly to be wished."

WILLIAM H. MONSON.

Ottawa, Ontario.