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BY THE WAY.

IT was quite fitting, that the Royal Society, which met in session in Ottawa, a few weeks ago, should invite Prof. B. F. Fernow, the talented chief of the Division of Forestry in the United States department of Agriculture, to deliver an address before that body. Nowhere in his own country, nor in Canada, could he have found more appropriate soil for the delivering of his paper, which was entitled "The Battle of the Forest." A pleasing reference was made by Prof. Fernow in opening his address to the work of Mr. Wm. Little, of Montreal, and Prof. Wm. Saunders, of Ottawa, who, he said, had furnished the momentum to the American Forestry Association. These well-known Canadian students of forestry protection had by their enthusiasm stirred up their neighbors to practical activity. Prof. Fernow spoke in very plain terms of the rapidity with which the forests of North America were being cleared out and even now, he said, over the whole stretch of territory from Ottawa to Washington, not a forest was to be seen. This ought to be a matter of grave concern, when we consider how singularly placed North America had been with forests. Nowhere else in the world were nearly so many species of woods to be found. In all 425 species of woods were known to grow on the continent and yet only 40 or 50 of these have become known to the lumberman. Prof. Fernow referred to the attempt that was being made to strengthen the forests in France and predicted Canada and the United States would yet be put to the same emergencies, if matters were not remedied within 25 years. France had expended forty billion of dollars in this direction and expected to spend four times this amount, for the same foolishness that was now going on on this continent. In Canada, he said, there was three times as much timber as in the Republic.

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One of the great drawbacks in formulating into practical shape suggestions in the line of forest preservation is the little interest that the people as a whole take in the subject. It is not, as we use the term politically, a live question. Those who study the matter, either from a national or scientific standpoint, realize what it must mean to any country that neglects the care of its forests for any great length of time. A glance at the position of France, Germany and India to-day is evidence enough in this direction; the people do not trouble themselves about the matter. Prof. Macoun, of the Canadian Geological Survey, has well said that the government had to be backed up by the people before it would do anything in the way of forest preservation from Winnipeg to Ottawa, a distance of 1400 miles. He gave it as his opinion that throughout this stretch of forest much shameful destruction had taken place, whilst bush fires had destroyed even the British Columbia forest to a great extent. In some cases these forests had been burnt even up to the mountain sides.

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The anxiety to lumbermen by forest fires has been less of late years than formerly, and yet no season goes by without serious loss being suffered from this one cause. News has reached us within the past month that Michigan has experienced some concern on this account and it is also stated that forest fires are reaching along the Northern Pacific in the West Superior district. We hear of fires in other points, but so far as information is in our hands nothing of the kind has occurred in Canada. It is well, however, even on very small suggestion, that attention should be drawn frequently to the necessity of every care being exercised to prevent forest fires and that our governments should be most vigilant in seeing that very complete protection is afforded the forests in their respective jurisdictions. A month ago Mr. W. C. Edwards, M. P., one of the largest lumbermen in the Dominion, stated in the House of Commons that he believed, after a wide experience, that 20 times as much timber had burned as was cut. Prof. Fernow, to whose address we make reference elsewhere, emphasizes in the strongest language the same matter. In truth the degree of carelessness exhibited towards our forest assets is so shameful as to be hardly pardonable. One who has recently been over the Rainy River section tells us that the destruction there of valuable timber by fire has been on a very large scale. Explorers will roam about and build fires for cooking their meals. They may not put them out when leaving and the result is forest fires destroying to our province thousands of dollars of valuable property.

A CANADIAN BANKER ON LUMBER.

MR. B. E. Walker, general manager of the Canadian Bank of Commerce, in his address at the annual meeting of this bank a week ago said of lumber: For the year ending June 30th, 1893, the value of our exports of woods in all conditions, manufactured and unmanufactured, was about $29,000,000, against $25,000,000 five years ago.

What the year just closing will show we cannot say, but one of the features which showed conclusively in what strong hands the business is generally held, was the promptitude with which the United States firms, who had contracted to take our lumber, carried out their obligations, notwithstanding the financial storm. Had it not been for this our lumbermen would hardly have known what course to pursue during the past winter. As it was, they doubtless intended, as a whole, to take out about the usual quantity, but the early mild weather broke up the winter roads, and as a consequence, some hundreds of millions of feet are left in the woods. In the Ottawa district most of the logs were got out, and despite some trouble with low water will in the main reach the mills promptly. The logs held back are mainly in the Georgian Bay and North Shore districts.

In the Ottawa district the cut of logs and the logs carried over will make the supply about the same as last year, a little over six million pieces, but the quantity of timber made is trifling.

The nature of the market will depend much on the United States tariff. The entire cut of deals has been contracted for and is being actively shipped to Great Britain, aided by low freights. The business with Great Britain in thin lumber is steadily growing, and that part of the trade is very satisfactory. On the other hand, part of the lumber paid for by United States buyers is not yet shipped, and although many good contracts for this season's sawing have been made, the actual shipments are smaller than at any time recently. While this is due partly to the very bad condition of business in the United States, the settlement of the tariff will doubtless make a market for our lumber, although perhaps with a slight concession in price from last year. Stocks in the United States are said not to be large and our supply will no doubt be required.

LET NOTHING BE WASTED.

THE age in which we live is characterized by its utilization of what has been known as waste material. Debris and refuse are being reclaimed from their supposed worthlessness, while wealth and comfort, says the Age of Steel, are now deduced from what has hitherto been without commercial value or public service. With epoch-making discoveries we are tolerably familiar, their magnitude giving them dramatic interest, and their coincidence with our own time table of life adding not a little to our conceit and boasting. While our progress, however, is a fact, and our bigheadedness a misfortune, the smaller economies of the age are of the unobserved, yet the veritable potentials of our prosperity. Everything has specific value, be it great or small, the difference being in gradation but not in essentials. The pebble is but the microcosm of the rock, and the molehill of the mountain, the difference being one of magnitude but not of substance. In the matter of our industrial waste or refuse this law has generally been neglected till science exposed the folly of waste and the stress of industrial competition compelled its utilization. Necessity has always been the mother of economies, and in this instance when the margins of profits were attenuating into consumptive decimals, applied science came to the rescue and gave commercial value to what had hitherto been a nuisance. Examples are numerous, and by way of emphasis we collate a few of the most conspicuous.

For many years the slag from iron furnaces was but useless refuse. It was dumped on waste land, in convenient ravines, and in unsightly masses wherever possible. It is now manufactured into asbestos, cement, glassware, pottery, fire-brick, fertilizers, and into the paint which now embellishes the Pullman palace car. Sawdust, so long the nuisance of saw mills, once dumped into swamps and pits, can now be made into sheeting for buildings, and when mixed with paper pulp supplies an excellent article. It is also serviceable in making aniline dyes, wood alcohol and certain acids. Cotton seed, once left to rot at the cotton gin and used for fuel, now furnishes the oil, lint, food for cattle and fertilizers; the product of the oil industry amounting to $16,000,000 per annum, with the sale of lint and hulls realizing over $1,500,000 each in the same period. The refuse of silk factories or warehouses, once a nauseating and uncleanly compound of leaves, imperfect cocoons and dead worms is now utilized, being sorted by machinery, and the short threads incorporated in valuable commercial fabrics. Coal tar was once but an olfactory nuisance, and sometimes got rid of by burning it under gas retorts, now aniline dyes are obtained from the benzole it contains. Other by-products of coal, such as sulphate of ammonia, etc., are now sources of industry and wealth. The refuse of woolen mills, once a sanitary sinner in the pollution of creeks and rivers has come in the range of chemical science, while in many large chemical works the saving of gases, since a menace to public health, have by condensation been transferred into valuable commercial articles.

Other examples might be quoted, but the catalogue as so far given is ample evidence of the fact that these modern economies of waste play no insignificant part in the general make-up of our industrial products and prosperity.

THEORY AND NATURE.

THERE are, says Power, a good many points where theory and nature have a falling out. The steam utilizes but a small proportion of the thermal value of the fuel it consumes, and its improvement appears to be open only in the direction of higher initial and lower rejection temperatures. The maximum efficiencies are obtained with fiercely hot furnaces, low uptake temperature, high pressures, and high grades of vacuum, giving the greatest available range in both boiler and engine. In the animal organism combustion is carried on at a moderate rate and low temperature, and there is apparently little available difference of temperature in the body, yet as a machine the mule is more efficient than the engine, and will do more work per pound of fuel consumed. The man who finds out the principle upon which this is done, and teaches us to apply it, will be a greater scientist than Faraday, a greater inventor than Watt.