

BY THE WAY.

THOSE who have made a careful examination of the growing crop in Manitoba say that wheat has reached a length of not less than twenty inches and indeed is already commencing to head out. All the rocks of agriculture in the prairie province have not yet been surmounted, but a good lead has been made, and present indications point to an early harvest. This, however, is to be remarked that the wheat acreage under culture this year will be 40,674 acres less than last year. This is accounted for by the large quantity of unthreshed grain held over from last season preventing farmers from giving sufficient attention to fall plowing. In other cereals the reports tell of an increased acreage. About 30,000 more acres of oats are under cultivation than ever before. The acreage of rye is increased by 315 acres, peas by 1,633 acres, barley by 7,816 acres, corn by 1,725 acres, and the area under roots is nearly doubled.

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One is hearing complaints continually of the impurity, less or more, of the grain and flour exported from this side of the Atlantic. Between the trade on the Canadian side of the Chinese custom line and that on the other side these doubtful honors are perhaps evenly divided. We have talked before in these columns of deceptive practices discovered in the shipment of both wheat and barley to Europe and in all cases the exposure has been to the prejudice of the whole trade - saints as well as sinners. It always will be so. If the punishment would fall alone on the heads of the guilty ones the case would not be quite as regrettable, but it never does. An English contemporary, the British Baker, has been making the complaint that maize in considerable quantities has been found mixed with recent arrivals of American flour. The English miller buys flour, not a mixture of flour and maize, and the presence of this adulterant in American flour must certainly create a hurtful impression of the flours that are made in this country. It is foolish business all through. We may think that sometimes it pays to be tricky. We have our own opinion. On the lines we cite there is nothing either clever or paying in the business.

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There can hardly be any doubt that the Dominion Millers' Association will be called upon to protect their members against a system of fraud that is the vogue in certain parts of the Province of Quebec. Millers in Ontario have filled orders from Quebec dealers for given quantities of flour at prices as agreed. After the shipments have reached their destination word is sent to the shipper that the flour cannot be accepted at the price invoiced and some flimsy excuse is given for the action. The shipper is entirely at the mercy of the dealer who practices these tricks. He knows that demurrage charges are quickly played on the waiting cargo. It would never pay to have the shipment recalled. This is known to the consignee, and he takes advantage of the situation, and, metaphorically, with bludgeon in hand, he says, "I will pay you such and such a price or you can keep your flour." These practices have been on the increase lately when flour prices have been on the decline. It will be readily seen at what disadvantage the honest dealer in Quebec is placed. His neighbor becomes possessor of flour which has been purchased, as a result of his dishonesty, at a price that enables him to undersell the other and yet make a profit. The honest man, to meet this form of competition, is obliged to sell at a loss, but sees no encouragement to continue trade on these lines. Here the Ontario miller is struck again. In a word, trade in Quebec is demoralized, and to remove the cause of the demoralization will be the work of the millers when in association assembled.

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A Manitoba paper draws a doleful picture of the losses of grain in that province. A plethora of good things is not always an unmixed success. The crop of 1891 was of a size and kind that sent a thrill of joy through the heart of every Canadian from ocean to ocean. But there has been some hollering before everyone was out of the woods. The amount of ground in the prairie province under cultivation was enormous and the yield per acre something unprecedented. The Manitobians,

however, appear to have bitten off more than they could chew. Says our contemporary: "The management of such a quantity of produce was wholly beyond the means at the disposal of farmers. Help was costly and difficult to obtain; the inferior and undesirable reaping machines in use were continually breaking in the heavy grain and the labor of stacking was exhausting owing to the usual weight of the sheaves, while many farmers had from fifty to a hundred and twenty stacks to build. Before the large harvest was gathered and while many fields were still covered by stubs the winter set in with unusual severity, commencing with a violent storm that battered the stacks full of snow and made the work of threshing difficult if not impossible. The intense cold caused the weak and brittle metal of the threshing machines to give way as if the castings had been made of clay in a brickyard instead of being constructed in a foundry. Thaws, followed by frequent blizzards, made the stacks a sheet of ice, crushed by snow, with the tops only projecting from surrounding drifts. Threshing had finally to be abandoned after enormous quantities of grain had been rendered useless by the ice that became mixed when the sheaves were passing through the machines, and the work of reducing the stacks that should have been done early last fall is going on now on some farms." The attempt to overtake this work has proved ineffectual. Hundreds of thousands of bushels of grain have been so damaged by ice and damp that the whole has become heated and is now useless. The mistake is fortunately one that is not likely to be repeated; and the information that the acreage of wheat sown in Manitoba this year is 40,000 acres less than 1891 is evidence that our friends in the Northwest do not get caught a second time in a blunder. Similar conditions have existed in Dakota and Minnesota. The Market Record, of Minneapolis, says, "There is much disappointment in handling the grain carried over the winter in stacks or otherwise unthreshed. The early threshings came out quite well in quality. The later ones are bad. Elevator people have lost heavily on such grain, until now many will not buy the wet grain at any price. Others buy at low figures. Still with sales here at twenty to fifty cents there must indeed be a low price paid to farmers at points where the freight alone is twenty cents a hundred to ship it here. So much is offered the market is glutted. That is a cause of the extremely low price now." The Jamestown Alert, of North Dakota, says, "It is said that not one farmer in ten has secured a grade of No. 1 hard for wheat threshed this spring, where, had it been threshed last fall, such would not have been the grade. In fact much of the wheat has turned out to be rejected, and occasionally a lot has been heard of that has been graded No. 2 northern, which is a fair milling grade. The disappointment over this condition of affairs has been general. Much of this damaged wheat will be only fit for feed." But after all it is cheering to know that there was the plenty from which these great losses could be taken and yet plenty remain.

THE POWER OF WATER.

THERE are very many, generally unknown, peculiarities about water as a power-making agency, even to a great many mechanics that are quite efficient in practical hydraulic engineering. The spouting velocity of water is controlled by the same law as falling bodies. As an instance the spouting velocity of water under a 16-foot head is the same as that of a body falling 16-foot, that is, the velocity of the falling body at the end of the 16-foot fall is the same as the initial velocity of the spouting water from under a 16-foot head, both being 32.4 feet per second.

The velocity from under a 64-foot head is 64.8 feet. It strikes the careless thinker as being quite strange that water should have a spouting velocity of 32.4 feet from under a 16-foot head, and why 64.8 feet from under a 64-foot head, and each are apt to jump at the conclusion that as the head increases in height it loses relatively in power. That, however, is very far from being true. A 20-inch water wheel will yield eight times as much power under a 64-foot head as it would under a 16-foot head, but would, of course, use twice as much water. The power developed being always directly as the quantity of water used and the height of the head.

The square root of the multiple of increased height is the multiple of the increased spouting velocity. Thus, as we have seen, the head has been increased from 16 to 64 feet or 4 times, while the spouting velocity was increased 2 times only, 2 being the square root of 4.

The spouting velocities of streams of water issuing from under various heads is as the square roots of the heads; or, in other and plainer terms, velocities increase in exactly the same ratio that the square roots of the heads increase; and a convenient way to ascertain the spouting velocity of any given head is to take the square root of it and multiply it by the constant factor 8.1. As an example we will take a head of 16 feet, the square root of which is 4, which multiplied by 8.1 equals 32.4 feet the velocity of a 16-foot head. Again we have a head of 64 feet, the square root of which is 8, which, multiplied by the constant 8.1, equals 64.8 feet per second, the spouting velocity of a 64-foot head.

Now, if we take a 4-foot head as a basis and call its useful effect one, we are able to construct a simple formula for ascertaining the relative useful effect of any other head. First obtain the spouting velocity of the head as above explained, and divide it by 16.2 which is the spouting velocity of a 4-foot head; then divide the height of the head in feet by four and multiply the two together and the product will be the efficiency as compared with a 4-foot head. As an example take a 16-foot head, the spouting velocity of which is 32.4 feet, which divided by 16.2 equals 2; and 16 divided by 4 equals 4, which multiplied by 2 equals 8. Therefore, the efficiency of the 16-foot head is 8 as compared with one for the 4-foot head. Or again, take a 64-foot head, the spouting velocity of which is 64.8, divided by 16.2 equals 4, and 4 divided into 64 equals 16, which multiplied by 4 equals 64, the efficiency of the 64-foot head being that many times greater than the 4-foot head. It must be understood that the vents are the same in size in their calculations. As the size of the openings are decreased or increased the effectiveness is decreased or increased in proportion.

The result of these calculations are only relative to get at actual results. In any case we must know the actual quantity of water that can be used.

THE WATEROUS COMPANY.

A REPORTER noticed the Waterous team going to the station last night with two very large pulleys, with two men on the wagon painting them. This rather raised his curiosity, and, on enquiry, he found that this was a shipment of two 82 x 16 inch face grip pulleys, arranged to work on one central driver, fifty inches in diameter, being made for Hunt Brothers, of London, for their electric light plant. The order was received Monday, June 27, and the pulleys shipped last night, making just nine working days, out of which can be counted the holiday of the first of July, when the Waterous people excused to Buffalo. When the mechanism of these pulleys is taken into consideration, it will be seen that this is very fast work. While on this subject, it might be mentioned that the Waterous people have shipped about twenty-five to thirty tons of these pulleys during the month of June, two of the largest shipments being to the Hamilton Electric Light and Power company, and the Kingston Light, Heat and Power company. The new feature of placing two pulleys on a double driver, economizing space, is highly appreciated by the electrical companies, who, as a rule, drive their dynamo from each side of their shaft, and crowd their pulleys as close together as possible. Several prominent electricians have (after a thorough examination) expressed their approval of the Waterous grip pulley, making the statement that they had not previously seen a pulley that they would care to attempt to use, and for that reason had not up to date used grip pulleys. The shipment just made to Hunt Bros. is the fifth to them of grip pulleys, they having some ten or twelve pulleys and couplings in use at their electric light station in London.—Brantford Expositor, July 7.

PREACHING VS. PRACTICE.

IT is one of the easiest things in the world to make a barrel of high-grade merchantable flour out of 4.10 bushels of wheat—with the mouth or pen. And one of the hardest things to make it with the mill.