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CANADIAN MILLER

GRAIN TRADE REVIEW

NEW SERIES "MECHANICAL AND MILLING NEWS"

Old Series, Vol. XI. } Number 7
New Series, Vol. IV. }

TORONTO, ONT., JULY, 1894

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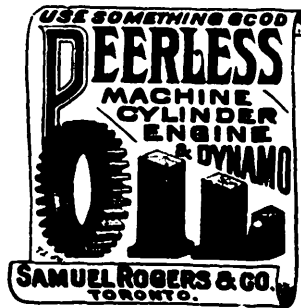
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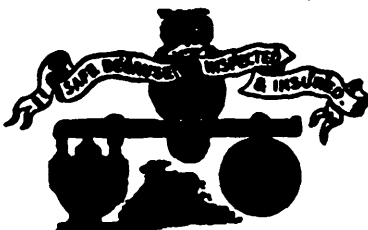
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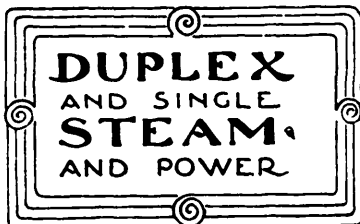
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NEW SERIES, Vol. IV, Number 7

TORONTO, ONT., JULY, 1894

TERMS, \$1.00 PER YEAR
(SINGLE COPIES, 10 CENTS)

REDUCTION FLOUR MILLING.

By R. JAMES A. FRISVOLD.

MANY years ago it now seems, when roller milling was in its infancy, an effort was made to establish a short method of reduction flour milling on the three break basis by some that possessed the least knowledge of the business, but as the idea was not supported and encouraged by those having the most influence in the matter of developing flour making processes it was practically abandoned, and thereafter all effort took the one direction of lengthening and elaborating.

It does not now appear that the cause of failure was so much due to the use of only three breaks as in not knowing how to make the proper divisions of the material, after the breaking had been done, in order to secure a complete finish and avoid waste by allowing partly reduced flour making material to pass entirely through the mill and land in the feed bins at the tail end of it.

It was this waste of stock that caused the three break idea to be abandoned; so much was wasted in that way that no profits could be earned, although profits were much larger then than now.

There were some that put in pony burr mills to finish the waste material with, but the results were not generally satis-

factory, and the whole scheme had to be given up, more for the want of talent and inclination to develop it than for any other reason. This is conclusively proven by the fact that since then the three break system had been brought to a high state of perfection and is now in very common use.

Attention was a second time called to the three break system a few years ago, when the short system idea was sprung upon the fraternity, and so vigorously contended for by the writer and others.

Foreseeing that a further lengthening of the then very elaborate gradual reduction system would be out of the question and that shorter methods must surely follow, flour milling engineers came down from their lofty perches and began in genuine earnest to consider ways and means for shortening rather than for lengthening the already very long methods.

Those who had been so long accustomed to middlings making by the gradual reduction process were for the most part quite unwilling to abandon it and come down to direct flour making, as was being advocated by the short system people, and so turned their attention to the rehabilitating of the defunct three break system with the view of having both a short and at the same time a middlings making system.

When we speak of a middlings making system especial reference is had to patent flour making which had for many years been the rage among millers everywhere, and as they could not at once abandon patent flour making, neither could they give up middlings making, as they thought, because of middlings patent flour had

to be made. That, however, is true in part only, and depends somewhat on the locality and the kind of wheat used.

But, anyway, the three break system was again taken up by those possessing both the skill and the knowledge needed for its further development, and it now exists in a very perfect state, and can be safely adopted by all desiring no shorter method.

The writer does not believe that any middlings making or patent flour making system is really needed, as such anywhere, no matter what the conditions are, but as there are so many that do think so he is quite willing to accept the three break method as legal and a long stride in the direction of simplicity.

The miller that believes in making patent flour--and it may just as well be admitted that until a decided change in sentiment takes place patent flour must be

the hard wheat to flour in any very large proportion. Hard wheat is inclined to break into particles instead of being reduced to flour, and hence it is probably better to accommodate it by the use of three breaks with smooth corrugations. With the smooth corrugations the flour that is made direct should be white, when separated from the impurities, and when mingled with the middlings flour, ought to make, and will make, if the balance of the mill is arranged right, a high grade of flour. No short system mill from three breaks down to one should be arranged in a manner that will injure the break flour, as in the case of long system mills, because if so the object is already half defeated. The intention of short system milling is to preserve the break flour even though patent flour be the highest aim.

There is another method embodying three breaks that has for its chief object a thorough cleaning of the bran.

The results of such a system are much the same as in a two break system. The work of the first pair of rolls is a little higher than the first in the two break system, and the work of the second pair a little higher than the second in two break system, but the third pair get right down to the bran and the flour is fit for low grade only.

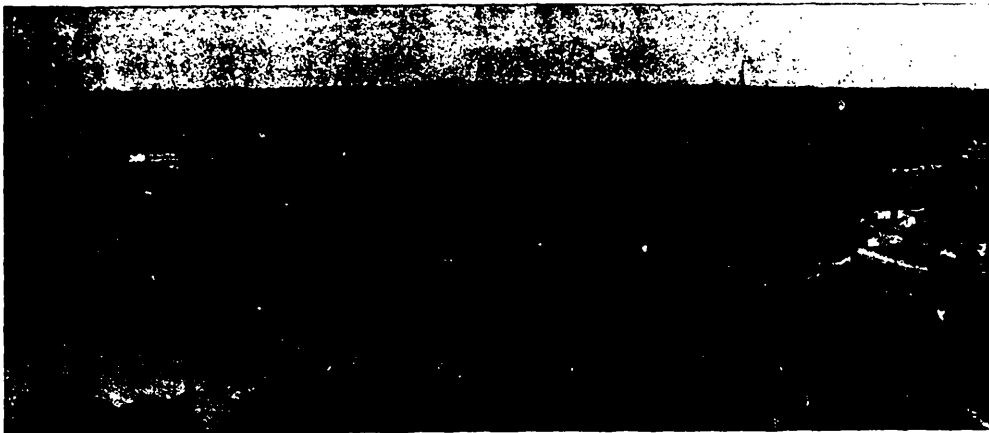
This method does not make

so many middlings as the other, and is more nearly akin to the regular two break method than to the regular three break.

SETTLEMENT OF BUSINESS DISPUTES BY ARBITRATION

In Winnipeg, says the Commercial, we have a system of arbitration established and carried out by a business organization, and the result is a hundred times more satisfactory than it would be if the law were called in to settle such disputes. We refer to the arbitration board in connection with the grain exchange. The system of arbitration established by the grain exchange is of course only by agreement of the members. It has no legal power nor force, and there are no means of enforcing decisions beyond the rules of the exchange. We believe there is room for a legally qualified board of arbitration in Winnipeg, before which business men could take their disputes for final settlement. Such an institution should be able to accomplish much good work, in the direction of settling trouble among business men and saving expense, as well as saving friendship. Arbitration is usually adopted in a friendly spirit, but who ever heard of the law being invoked in a friendly way.

A prominent merchant of Memphis, Ohio, is offering a reward of \$1000 in gold to the person who will invent a package or barrel weighing one pound and carrying 100 pounds of flour or meal. With such a barrel there will be an end of sealage.



KINGSTON, JAMAICA, KING STREET OVERLOOKING HARBOR. (See pages 4 and 5.)

made--can with propriety and safety adopt the three-break system, because as compared with the gradual reduction system the cost is light enough to enable any miller with moderate means to put up a mill and proceed to business.

When arranged to make middlings in a modified form, that is, in not being an extreme in that direction, a three break mill can be used for making a very fine straight, in substantially the same manner as the two break system already referred to. If the breaking corrugators are not too sharp the break flour made in a three break mill may be brought up to a fairly high state of perfection in color and an excellent product result from the blending of the break and middlings flour.

If such mills are so arranged they can be worked both ways to advantage, and when demand requires a strictly middlings or patent flour it can be made, and, on the other hand, if a straight or 80 to 90 per cent. of the whole product of a very high order be required that also can be made.

In operating a mill of that kind a miller must be guided by conditions and circumstances, as in fact he would be in any other position. A three break mill properly arranged will make either straight or patent, as patent is usually made, and the miller can accommodate both himself and his customers, and be in a position to make money, if any money is to be made in the business. We might also call attention to the fact that where hard wheat is to be ground exclusively or even very largely, the three break system may be the best, all things considered; because of the difficulty in directly reducing

THE WEST INDIES.

CANADIAN FLOUR TRADE WITH THE WEST INDIES. CON. MILLER'S LETTERS.
 POSSIBILITIES OF DEVELOPMENT. A. C. H. FOSTER.
 LEAD COLUMN

WERE this the proper place it would be an interesting and pleasant task to present our readers with a letter-press description of the West India Islands, to tell of their charm of climate, the story of their rich resources in toothsome fruits; and the many delights, especially in those who live in a more frigid zone, of this beautiful tropical country. But this is not the purpose of the MILLER just now.

No one is likely to take more interest in these things than members of the milling fraternity. These islands, however, have another attraction to Canadian millers, and that is in the field they open out for the consumption of Canadian mill products. In Jamaica, with its population of 650,000, Barbadoes, the Bermudas, British Guiana, Martinique and the other West India Islands, there is undoubtedly a large field for Canadian flours, and the question that interests millers just now is how they may secure, at least, a fair share of the flour trade of those islands. The official figures tell us that the value of wheat and wheat flour exported by the United States to British Guiana and the West India Islands averages about \$7,000,000 a year. From an inquiry made by the Executive of the Dominion Millers' Association a year ago, it is learned that a total of 524,800 bbls. of flour are imported by the West Indies yearly.

This is a trade worth securing and the purpose of the present chapter is to throw some light on the subject.

ENCOURAGEMENTS AND DIFFICULTIES.

THESE are very fully treated in an interview further along in this chapter with Mr. Adam Brown, who, during his visit to Jamaica, representing Canada as honorary commissioner at the exhibition of 1891, did yeoman service in furthering the interests of Canadian flour on the islands. The interview ought certainly to be read by every miller. Mr. Brown tells, as he has done before in his official report, that the trade in flour with the West Indies is, of course, in the right manner. This view has been confirmed by a letter from Hon. Geo. E. Foster, written to the Millers' Association in 1891. Both Mr. Brown and Mr. Foster place every emphasis on the necessity of sending to the Indies only a flour that can be guaranteed for a period of at least two months. There is good reason to believe that Canada's opportunities for flour trade with these islands have been injured through flour of an inferior quality having been sent there.

INTERVIEW WITH MR. ADAM BROWN.

HOW CANADIAN MILLERS MAY SECURE A HEAD OF THE WEST INDIES.
 LEAD COLUMN

WITH the view of securing additional information concerning the West India trade in Canadian flour a representative of the CANADIAN MILLER paid a visit to Mr. Adam Brown, postmaster at Hamilton, and honorary commissioner to the Jamaica exhibition for Canada in 1891. As with everyone who has had occasion to meet Mr. Brown, either in his official or private capacity, the writer found him most approachable, genial and ready to impart whatever information was in his power.

"Of course your particular interest," said the ex-commissioner, "is in Canadian flour and let me say how glad I am to find you are paying attention to this question. What you had to say in the last issue of the MILLER ought to prove food for thought with every miller who has an ambition to see his trade develop outside of mere local boundaries.

"My interest in the trade of the West Indies dates back to the days when I was a young man, a clerk with Gillespie, Moffatt & Co., of Montreal. That is more than twenty-five years ago, and at that time a large trade was done with the Indies in Canadian products, flour included. These were the days of sailing vessels, and placed in even competition with the United States, as regards carrying facilities, there was no trouble in Canadians holding a large share of the trade with those islands. But conditions change. Steam took the place of canvas, and for a score of years, up to the time of the Jamaica exhibition in 1891, our business with the Indies became almost a blank. This circumstance of itself is an answer to the question sometimes asked, 'How has the United States succeeded in securing such a strong grip on West India trade?'

OPENING TRADE WITH THE INDIES.

"Having received my appointment from the Dominion government to represent Canada at Jamaica, I lost no time in ascertaining what products were most required in the Indies. Flour occupied a foremost place in the list. To interest Canadian millers I addressed a convention of Ontario millers a few months before leaving for the tropics. I had before the meeting what seemed to me the plan needful to secure the flour trade of the Indies. I will be frank in saying that I received but scant encouragement from these gentlemen as a body. They did not seem to grasp the situation, and to realize the volume of trade that was theirs, if they wanted it. About

have followed the suggestions born of my experience and experiments when in the Indies, their flours have never failed to give the fullest satisfaction. I notice that in last month's MILLER you publish results of an analysis of flours made in Georgetown, Demerara, which gives the St. Lawrence, a United States brand, the place of honor over our flours. I am not so sure that the test in question is a fair one. The Americans do not like the possibility of Canadians capturing the flour trade that they have held for so many years, and various efforts are adopted to create a prejudice against Canadian flours. This may be one of those peculiar moves. This I do know, that in Jamaica we met the St. Lawrence brand and downed it with Canadian flour every time. Flour made from Manitoba hard wheat will stand every test that these tropical climates call for. Wherever Canadian flours have proved disappointing, it has been because our millers have shipped in an inferior quality of flour." Here Mr. Brown instanced two cases in particular that had come under his notice, where a poor flour had been shipped to the Indies and our trade suffered seriously as a result.

METHODS OF SHIPPING.

"Complaint has been made in the past," I remarked, "of the character of our packages." "Yes," replied Mr. Brown, "it is folly to make shipments to the Indies except in barrels with round hickory hoops. Our millers were disposed to treat this as a trifling matter, and were slow to adopt the round hoop barrel, and thereby lost trade. Aside from the foolishness of butting against the customs of the country, the round hoop means money to the West India flour handler. After the barrels are empty they can be sold for 1s. 3d. and 1s. 6d., for packing oranges, pine apples and other fruits. This figure comes into the calculation of the flour handler in estimating the price paid for his flour. Flat hoop barrels are worth nothing."

IMPROVED CARRYING FACILITIES REQUIRED.

"I have mentioned," continued Mr. Brown, "in answer to a suggestive inquiry, 'how well



MONTEGO BAY, JAMAICA.

the same time I communicated with a number of the leading milling firms of the country and interested them to the extent of making shipments of flour to the exhibition. The millers who made exhibits at that time were W. W. Ogilvie and Ira Gould & Sons, of Montreal; Lake of the Woods Milling Co., Keewatin; Todd Milling Company, Galt; James Goldie, Guelph; Whitelaw & Baird, Paris, and Walker, Harper & Co., Norwich.

DRY FLOUR AN ABSOLUTE NECESSITY.

"The Hon. Mr. Foster said to me, 'If you can be sure of the flour you take to the Islands holding sweet for not less than 60 days, then success is made.' This purpose I kept steadily in view at the start, and was able to prove before the exhibition was over that Canadian flour would not only keep sweet for 60 days, but I was able to make a distribution of bread made from Canadian flour that had been in store in Jamaica for four months, and everyone was ready to declare that sweeter or better bread had never been eaten in Jamaica. Flour sent from Canada must be made of perfectly dry wheat-Manitoba No. 1 hard-and when this is done, United States competition need not be feared."

I asked Mr. Brown "How it was then, when we certainly had the wheat to make the particular brand of flour necessary to this tropical climate, that Canadian flours were being criticised as holding only a second, third or fourth place among the flours imported into the Indies?"

"Let me be very clear on this point," said Mr. Brown, with some emphasis. "Wherever Canadian millers

Canada fared in West India trade when we were on a par in carrying facilities. We are suffering some to-day for want of quicker vessel service between Halifax and the West Indies. We are told that we have a fortnightly service, and in one sense this is correct. Vessels of the Pickford & Black line leave Halifax or St. John twice a month, but they go to different groups of islands. The service is only once a month to each section of the islands. If a miller is shipping to Demerara, for example, and his supplies are a few days late in reaching Halifax, the goods must be held until the next monthly boat leaves. With a regular weekly service from New York our exporters are necessarily handicapped, depending on the Canadian line. Merchants in the islands would tell me they could order flour through New York with the certainty of receiving it promptly almost to the day. This could not be done ordering from Canadian millers. Their flour is shipped chiefly with draft attached to bill of lading, payable at sight. I have known the draft to be presented by bank, before the flour had actually left Halifax. Merchants do not relish doing business in this manner, and this circumstance has operated against a greater expansion of Canadian flour trade with the Indies. It would be helpful to Canadian trade in all its interests if Canada would become an importer of the natural products of the West Indies. It really seems too bad that with a sister colony within comparatively easy reach of ourselves, that the rich resources in the line of fruits grown there come to us by way of a foreign country. A development of trade that would permit of frequent return cargoes from the Indies would materially

strengthen trade, and the flour trade, of course, would feel the benefit. Vipond & Co., of Montreal, are doing something in this line, but we want a good deal more done.

"During my stay in Jamaica I talked constantly from the text, 'Blood is thicker than water,' and I tell you it has had, and can be made to have, a large influence in directing West India trade to Canada. It is more than a mere sentiment to say that, 'Trade follows the flag.'"

THE SUM OF THE WHOLE MATTER.

"In connection with this whole affair I cannot conclude better," said Mr. Brown, "than in a word to say that with quality of flour kept up to the standard that was established when I was in Jamaica; all stocks sent in round hoop barrels; prices, as can easily be done, made to rule as favorable as those of the United States; and with shipping facilities strengthened, we can control the West India trade. I speak knowingly, when I put the matter so plainly. Added to this an effort ought to be made by Canadians, or their representatives, to visit the Indies, say twice a year, and thus keep themselves in touch with the people there. No better class of business men are to be found anywhere than in the leading islands of the Indies, and it only needs the relationship, both natural and business, to be cultivated rather more than at present to substantially increase our trade.

"Now good-bye," said Mr. Brown, "if I can do anything further at any time to advance Canadian trade command me."

WHAT SOME CANADIAN MILLERS SAY.

WE are in receipt of a number of letters from millers in different parts

of the country, regarding what was said in last month's CANADIAN MILLER on the question of our flours in the Indies. Mr. Robt. Noble, of Norval, Ont., who has shipped more or less flour to the Indies, and whose son paid a visit there about a year ago, expresses his pleasure at the interest the CANADIAN MILLER is showing in West India flour trade, and makes the significant remark, "I hope you will be the means of creating more interest among Canadian millers." We have reason to believe that millers themselves, as Mr. Noble's remark suggests, have not shown the interest in this matter that, from a personal point of



CANADIAN COURT, JAMAICA EXPOSITION.

view, one would expect them to show. Messrs. Clark & Son, of Glencoe, who claim to be the pioneers in West India flour trade, are disposed to view our articles and letters of last month from a variously critical and favorable point of view. They tell us that, "A portion of our comments is far from the mark, whilst other points bearing largely upon the developments of our flour trade in the West Indies must be corrected right at our very doors. There is want of proper system in the buying and handling of wheat." Unfortunately the proprietors of the Aberdeen mill are not over explicit as to what "points" call for correction and improvement. The Messrs. Clark, like Mr. Brown, in his interview, have a suspicion that the Georgetown analysis of flours, placing the St. Lawrence (a United States brand) at the head of the list, may not be an impartial document. They would like to see an analysis made by a government analyst at Ottawa. This is a suggestion that might be taken into consideration by the government. They facetiously conclude their letter by saying: "We have seen exhaustive reports of Canadian flours that would cause a Canadian cow to laugh." Mr. T. O. Kemp, the clever manager of the Ogilvie mills at Seaforth, believes that our flours are highly appreciated by

West India consumers, as compared with American flours. He says: "I have no doubt Canada would do a good business in the Indies under such conditions as I think could be easily established were they more in sympathy with one another. The greatest obstruction I find to doing a trade there is the inconvenience of connection and having to work too much in the dark on this account." This is a view of the case that gives strength to the suggestion mentioned elsewhere that Canadians should visit the Islands from time to time and get to know from personal contact the methods, manner, and character of the people they want to do business with.

The opinions quoted here will, perhaps, give the keynote to the thoughts that Canadian millers have on this question. What are the thoughts of others from whom we have not heard?

STEAMSHIP SUBSIDIES.

THE matter of steamship subsidies was introduced in the House of Commons a few days ago by Mr. Kaulbach. He asked that the system of subsidizing steamers

to the West Indies be discontinued in the interests of the sailing vessels. His particular reference was to the line managed by Messrs. Pickford & Black. Mr. Campbell, the West Toronto Junction miller, though a member of the Opposition, spoke strongly against discontinuing the subsidies to the West India Island steamers. He said the result of the establishment of these lines had been to largely increase our trade with the West Indies in flour and other Canadian products. From what we have to say elsewhere in the West India chapter, it is plain that any movement of the government to lessen shipping facilities to the Indies would be suicidal, if we have any notion whatever of extending trade with these islands. In fact, the necessity is clear for action by the government, that will lead to an improved service with the Indies.

Extensive repairs are in progress to the upper portion of the big Ogilvie mill, Winnipeg.

A bonus is offered in aid of a flour mill at Wawanesa, Man. About a score of persons made enquiries as to the capacity of the mill required and the conditions attached to the bonus, but all of them drew back when they found out that a 150 barrel mill is required.

BELT TRANSMISSION FOR ELEVATORS.

THIS question is discussed by A. E. Baxter, in a late number of the Northwestern Miller. He says: There have probably been as radical changes in the mode of handling grain in large quantities during the last few years, as there has been in the manufacture of flour; and no modern grain warehouse handling grain in considerable quantities is constructed in the same manner as those of but a few years ago. The in-store leg and spiral screw conveyor are things of the past in modern equipments. Perhaps the results of some experiments as to the efficiency of the screw conveyor and the belt for the horizontal transmission of grain may be of interest. These experiments were made to determine which line of machinery should be adopted in the equipment of Waterloo Dock granaries at Liverpool. These experiments were made some years ago, but the results then obtained are so nearly in accord with the best modern equipments of to-day, that they form a reliable basis to work upon. There is always great difficulty in arriving at actual results, as the equipment of no two plants is the same, and the different arrangement of machinery almost always leaves a factor of uncertainty to be ac-

counted for. These experiments, however, were both made under the most favorable circumstances, and especially constructed to determine the efficiency of the two systems, and may be regarded as the most favorable results attainable by either system. The first experiment was with a 12 inch screw of 4 inch pitch and 1/4 inch clearance and running at 60 revolutions per minute, and the result was 225 bushels delivered per hour and a requirement of 0.4 hp per foot carried; and the sectional area of grain conveyed was 49 per cent of the transversal area of the screw. At a higher speed, the grain was carried around and not propelled. A 12-inch screw with 15-inch pitch was then tried at 70 revolutions

the most efficient speed in point of economy of power and quantity delivered and 1,133 bushels per hour was delivered and .125 hp was consumed per foot traveled, or 37 per cent less than for the first screw for the same grain delivery. The sectional

area of grain carried, when in motion, was 72 per cent of the area of the screw. Another interesting feature was that the screw with the small pitch moved the grain in a compact body, while the coarser pitched screw caused it to roll and surge around, and put the grain in much better condition. These experiments clearly demonstrated the impracticability of adopting the screw for the handling of large volumes of grain. Experiments with belts showed that a speed of 480 feet per minute was the most efficient for handling grains of all kinds. Wheat, however, would easily stand a speed of 540 feet per minute. A 12-inch rubber belt, travelling at 480 feet, carried with ease 1,160 bushels per hour, and an 18-inch rubber belt, at the same speed, delivered 2,320 bushels per hour. The power consumed was .014 (or 1.70) hp per foot carried. This clearly demonstrated the superiority of belts for the transmission of grains under all ordinary conditions. Further experiment showed that the amount of power required by different devices to carry 1,666 bushels per hour a distance of 100 feet were: Common screw in stationary case, 18.38 hp; common tubular screw, 25 hp; 18-inch common rubber belt, 1.02 hp. These experiments the superior carrying capacity of belts and their greater efficiency in consumption of power.



The particular purpose of this department is to create an increased market for Canadian mill products—flour, oatmeal, cornmeal, rolled oats, pot barley, brose meal, split peas, etc.—at home and abroad. The interests of the miller who grinds the grain will have thoughtful consideration. Any matter that is likely to lead to an improvement of conditions in the local market of any of the various provinces of the Dominion will be carefully considered in this department. A close study will be made of the foreign markets with the aim of further developing the Canadian export trade. The Mill Law each month covers very effectively the field of flour handlers and buyers of mill products, not only within the borders of the Canadian confederation, but in Newfoundland, the West Indies, Great Britain and other European centres. This department will be made valuable to them in discussions of the conditions of the market in this country, reliable market data, the manufacture of mill products, methods of transportation and shipping intelligence in its bearings and relationship to the milling industry. We invite correspondence from millers, shippers and buyers on any matter touching these important questions.

MILLERS' ANNUAL MEETING.

AT a meeting of the Executive of the Dominion Millers' Association held a few days after the last issue of the MILLER had gone to press, arrangements were put well under way for the holding of the annual meeting of the Dominion Millers' Association. There were present of the Executive: A. H. Baird, of Paris, president; H. Barrett, Port Hope, vice-president; C. B. Watts, Sec.; William Galbraith, treasurer; James Goldie, Guelph; J. D. Saunby, London; W. H. Meldrum, Peterboro; J. Galbraith, Allendale; M. McLaughlin and J. L. Spink, Toronto.

It was resolved that the annual meeting be held Tuesday, August 7th, with an afternoon and evening session. On the morning of the 8th millers and their friends will leave on the annual excursion to Niagara Falls. A committee was appointed to perfect details in connection with this outing, and were specially instructed to insure good arrangements for the annual dinner on the arrival of the party at the Falls. No doubt they will look carefully after that matter.

The programme prepared for the business session on Tuesday will include in addition to the reading and discussion of the reports of the several officers, which are sure to be exceedingly interesting, a number of special papers by leading millers. Mr. James Goldie will talk about chattel mortgages on farmers' grain. Mr. McLaughlin will have something to say about the export flour trade, its losses, and why? The question of fire hazards on flour mills will be led by Mr. J. L. Spink. Car shortages and how to remedy the trouble, will form an interesting subject of discussion, led by Mr. W. H. Meldrum. Our export trade and some of its requirements, is likely to form the subject of an address by Mr. N. H. Stevens, of Chatham. Mill furnishes will have their innings in a paper on the planifter by Mr. Hodd, miller, of Stratford, and who is interested in the company manufacturing this machine. A lively discussion is anticipated here.

Messrs. Huston Bros., of Durham, were elected members of the association.

The annual meetings of the Dominion Millers' Association have never failed to be of an interesting and profitable character, and there is every reason to anticipate that the coming meeting will be one of the most important in the history of the organization.

TWO-PRICE FREIGHT RATES.

A CURIOUS state of affairs was evolved at the last meeting of the Executive of the Dominion Millers' Association. The question of freight rates was under discussion, and the information was imparted, that it was a difficult matter for a miller in the present day to say what the tariff was on flour. Cases were cited where certain quotations would be given by our railroads for particular shipments. Another miller from the same locality, who was a little better posted, would make application for a similar class of shipments and receive quotations several cents less than his neighbor. From what was said by individual members of the executive it would appear there is a tariff that is quoted a shipper, if he is willing to accept that as the rate. But let some one, who knows, state, that shipments having

been carried at a lower figure no better rate will be given, and the railroads will accept the situation. For the protection of members of the Dominion Millers' Association, the secretary was instructed to insert a note in the weekly bulletin, asking millers who desired to receive export rates for shipment, to first communicate with secretary Watts, in order that they might be fully protected in securing the best rates going. We are accustomed in the small ways of business to more or less dickering, but things have certainly taken a peculiar turn when our great railroad corporations have two, three, or more prices for carrying freight. No more vital question can be taken hold of by the Dominion Millers' Association, when they meet next month, than this one of freight rates. And millers will not only benefit themselves, but they will be fighting a battle of general interest to the entire commercial community of Canada, when they insist, to quote a familiar retailers' expression, on one price only.

NEWFOUNDLAND FLOUR CONDITIONS.

[Special correspondence CANADIAN MILLER.]

"The present outlook in Newfoundland," writes Taylor, Finlay & Co., of St. John's, "appears a puzzle. Imports of flours here to date are about 96,000 barrels, as against 110,000 barrels to same date 1893. This is owing to the general depression in trade, as well as the fact that on falling markets the people buy only what they absolutely need. The great bulk of our flour comes via Montreal by the "Black Diamond" and "Dobel Line Steamers," but it must not be concluded that this means that it is Canadian flours, though the importation of Canadian flours is certainly on the increase here and we should judge that we have four times as much Canadian arriving here now as we did four years ago. Before opening navigation with Montreal this year we received a large quantity of Canadian flour via New York, Boston and Portland. Oatmeal is almost entirely Canadian, except a little Scotch. Peas, oats, mill feed, hay and cheese all come from Canada, except some small quantity of the finer qualities of the latter, which are from Europe. Our duty on flour is 25c. per bbl., and we do not discriminate in favor of any country."

ST. JOHN'S, NEWFOUNDLAND, June 19th, 1894.

LOW PRICES A GAIN TO THE BRITISH MILLER.

By W. T. BATES IN ENGLISH "MILLER."

THE development of the wheat market during the past few years, and particularly within the past few months, leads everyone to ask his fellow the momentous question, "What is the market coming to?" Most people have for a long time been thinking that every fall is to register low water mark, but now that the bottom seems to be knocked entirely out of the market, all are anxiously wondering where it will all end. The bakers seem to be weary of low and constantly sinking prices, and many of them have given up in despair, having entirely lost faith in their speculative shrewdness, every apparent bargain having proved a burden, added to an already weighty load. If the bakers would only take a lesson from this experience, they would give up speculative buying entirely, for I feel certain that on the whole they will lose by it. Neither does the miller, as a rule, gain, as he has to cover at whatever price he may sell.

Millers are complaining of low prices; but why? I can understand farmers and the landed interest generally deploring low prices, as they are the producers of the raw material, but I fail, utterly, to see what the British miller has to complain about. We have for years, and I personally have optimistically, predicted the time when the enemy, our competitors over the water, would be delivered into our hands. Surely the time is at hand. The British farmers' misfortune may prove our opportunity. Years ago I tried to prove that India and Russia, in conjunction with other exporting countries, would enable us to overcome American competition. Argentina was then a dark horse, scarcely thought of; but the dark horse is now in evidence, and now or never is our chance of showing what we can do. There is no need to create a prejudice against our competitors; we must simply annihilate them with low prices. With good wheat, such as most River Plate is, and a plentiful supply of Russian, both several shillings a quarter below anything American, we are not only independent

of that country, but in a position to meet her in any foreign market in the world.

And this is my suggestion. Instead of pushing and squeezing each other for every little order in our own little country, would it not be better, and could we have a better opportunity to initiate other manufacturers and create a foreign trade in flour? It seems to me that South America, particularly Brazil, as well as China, Japan and other countries might prove remunerative fields for British made flour. Our cotton manufacturers are importers, like ourselves, and we see what their enterprise has done for the export trade of our country. Why cannot we imitate them? We hear of flour being shipped from north to south and south to north of our country, most of which trade is unprofitable, but why not ship this flour to a foreign country at once and meet a foreign competitor on his own ground?

If America is to successfully compete with us at home or abroad, one thing is certain, she must import some of our cheap wheat. She cannot, under existing economic conditions, grow wheat at the price, whatever exports may try to prove or interested persons to assert.

I noticed recently that a sample of River Plate wheat had been exhibited on one of the American markets and well spoken of for its apparent flour making properties, and I thought at the time that it was with a view to its introduction into that country; but this conclusion may have been precipitate, as in a country so closely protected as America, "interests" have a commanding influence. It, however, she should become an importer of our cheap wheat, we might look out for stronger and continuous competition.

Low prices ought certainly to favour us in many other ways. There is no denying the fact that the consumption of bread is increasing in this country, and that we may attribute very largely to lower prices, for poor people can now buy two loaves for the same money that a few years ago sufficed to buy only one, and considering that numbers of people exist almost upon bread alone, we may conclude that they eat more, although they have only the same money to spend. Take, again, the price of offals. It seems ridiculous that bran, the husk of wheat, should sell for as much or more than the wheat itself, but such is the fact. Indeed, until the recent drop, a farmer would actually pay more for bran than he got for his wheat. With wheat at 40s. per quarter we have seen bran at about £3 10s. per ton, and during this winter we have had farmers' wheat at about 24s., while bran has been between £5 and £6 a ton. A strange anomaly! and yet some people say that low prices do not favor the miller. Why, the low price of wheat and the high price of offals has alone enabled us to hold our own.

Some millers have done badly even this year, and they one and all blame the constantly-falling prices; but ought this to be an excuse? Is not speculative bargain-hunting a better explanation? By cautious dealing and management a falling market should prove advantageous to the miller. At a time like this heavy stocks are a mistake; a parcel of flour sold this week may be worth 6d. a sack less next week, which is the buyer's loss. If the seller could just manage to keep his sales a little in advance of his purchases he would not be wrong at the end of such a year as we have just passed through.

One of the greatest evils of to-day affecting our trade is what I shall term the immorality of unprofitable competition. Some of us work for profit, and manage to make one, but it seems there are some who work for honour and glory. Competition is all very well, but how are you to compete with a man, or set of men, willing to lose 1s. on a sack of flour? In a late report by the directors of a certain mill, I read the old familiar tale of falling prices and consequent loss; but the report also states that they could sell more than they could make. I should think so! Fancy giving your customer 1s. with every sack of flour! It occurred to me that it would be better to do a small trade at a profit than a large one at a loss. Honour and glory do not pay in flour making.

There is no doubt that every mill has a legitimate profitable trade in its own locality. It may be small or otherwise, but in any case if content with that trade it could all be done at a profit; unfortunately, the miller

who can sell 500 or 1,000 sacks at a profit at home must enlarge his mill and make an extra quantity, which he cannot so dispose of. Consequently, he must push out and displace some miller at a distance, and generally without profit. That miller in turn must find a market for his displaced goods, and consequently, returns the compliment or goes into some other district with like result. This is how we find Liverpool flour in Cardiff and Cardiff flour in Liverpool, and every other town and village throughout the country imitating this example to their own loss. The large mills are, I consider, chiefly to blame for this state of affairs, and for cutting prices to an unprofitable level, particularly when they work at a loss.

Many people fall back on the old familiar cry of American competition. I do not deny that it would be in many ways to our advantage to import wheat and manufacture it ourselves; but there are compensations even to the miller in this competition, and many advantages to others connected in various ways with the trade. It is idle to imagine that this trade which is now done from America would greatly benefit millers, who now find a difficulty in making ends meet, except, perhaps, temporarily. We have only to point to America as an instance. They have no outside competition, but we know as a fact that American millers are far worse off than we are. Could we, as we now ought, entirely overcome American competition, we should each benefit temporarily. The milling engineers would reap a rich harvest, for well situated mills now making 25 sacks an hour would make 50, and those making 100 would as soon as possible double or treble their capacity. It would be a repetition on a small scale of the late milling revolution: probably all would make a profit for a time, but inevitably supply would overtake demand, and the large millers would obtain even a stronger grip than they now have upon the trade. Besides, think what the offals trade would come to. With a prospect of plenty grass offals drop 30s. per ton. If we made all the flour we might expect to see offals somewhere in just proportion to the price of wheat—about £2 a ton. This, I feel, would be a national advantage, but not a miller's. The farmer pays far too much for all his raw material. Cheaper bran and sharps might help him out of his difficulties, but in that respect alone do I look for very much benefit. I believe that at the present moment some millers are using American flour simply because they find their offals a drug, practically unsaleable.

If this is the state now, what shall it be in the future, when what we are taught to regard as a curse shall have disappeared.

Low prices! What is the cause? I know what our friends the bi-metallists would say—the demonetisation of silver. It seems to me that Sir W. Harcourt hit the nail on the head when he said that all the professors were bi-metallists, and all the business men mono-metallists. Especially do I believe this to be the truth, because we find the old protection theory almost dead, and the bi-metallic theory occupying its place, and advocated by the former champions of protection. Their doctrine is that the world is suffering from a scarcity of money; consequently the price of things is abnormally low. Certainly we have long been accustomed to higher prices, but those may have been abnormally high—inflated, in fact. We have been regarding 40s. per qr. as a normal price, but why not 20s.? Supply and demand determine prices, and if supply keeps above demand we may find that 20s. per qr. will be the normal standard, but of course other things must be brought into harmony therewith. At present, owing to the rapid decline in the value of cereals, land is decidedly too high. Land must meet wheat, and other values must also be brought into harmony with the new order of things, so that none suffer. But to return to the bi-metallic theory.

Everyone may not be aware that silver is not a legal tender above 40s. If I take a £5 note to the Bank of England it must be redeemed in gold, five sovereigns. In issuing notes the Bank is bound to keep a reserve of gold sufficient to meet any number of these notes. The reserve is usually about 40 per cent., but varies according to trade demands and the money market generally. At present money is a drug, and the Bank allows only 2 per cent., its reserve being over 60 per cent. When

trade is brisk and money is in demand the reserve sinks down, and just as it does the rate of interest goes up. This is done to attract gold from other countries, which it does, and this is the explanation for a fluctuating bank rate, which puzzles some people. Money, being a drug, seems rather to contradict the theory of those who assert that all our ills are the result of shortness of money. Although the production of gold has been enormously augmented by the recent developments in the Transvaal there is no doubt whatever that were all transactions carried out in hard cash, we should not have 1 per cent. of the required gold, and to make up the deficiency in silver would entail a great hardship. Business is, and always must be, carried on by mutual credit and confidence. Paper represents money, and so long as money lies behind it, all is well. I, at least, fail to see in what manner silver would help the British farmer. If I had ten times as much money I should not give one penny more for wheat or bread, and I should pay just as much as if I had less. In the case of wheat it is not a question of money, but of buyers and sellers. If there were more buyers than sellers, the price would speedily go up, just the same as a preponderance of sellers has caused it to go down. I know the argument is that the gold premium helps other countries—Argentina, for instance; but the real truth is that the premium of over 300 per cent. on gold in Argentina is the surest proof of the rottenness of the financial situation. As the premium goes up the credit of the country goes down—in fact, the latter is the cause of the former. It is argued that with a high gold premium the farmer sells his wheat for, say 20s. per quarter for English gold. That 20s. immediately quadruples itself—that is, it represents about 20 dollars silver, or paper, instead of its normal value 5 dollars. This is all very well, but the fact is it is not the gold which has appreciated but the paper which has depreciated, and it will require those 20 dollars or more to purchase a sovereign's worth of goods. In other words, the farmer would be just as well off with his five dollars at its natural value as he is with his 20 dollars depreciated currency, for in both cases they stand for a sovereign and will pay for that value only. Of course it would be a very good thing if the Argentine farmer could get a gold sovereign for his wheat and then buy four sovereigns' worth of goods with it, but this is just what he cannot do, and for that reason is no better off, though more contented, than his British confrere.

I can understand silver producing countries wishing to monetise it, and also other countries, like those of the Latin Union, who have enormous quantities of depreciated silver on hand, wishing to form a bimetallic bond or union with England. It would doubtless be to their advantage, but not to ours. We are not suffering from a scarcity of bullion, neither is our credit impaired. Let silver find its natural level like wheat, and blame wheat for it if you like; but if we suffer little ills it is better for us to bear them manfully than to fly to greater, or to those which we do not understand.

I have gone astray from my subject, although the digression has some relation to it. I maintain that low prices are beneficial to the miller, but that a cut-throat competition, carried on at a loss, is injurious to all. It is, I suppose, useless to hope for any cessation. Low prices have certainly played into the hands of the millers situated at the ports, and from all appearances the future is with them. When English wheat was cheaper than foreign, inland millers did well; now the tables are turned, but let us hope not irretrievably.

SOME amusement has been caused by the settlement a few days ago in Toronto of an arbitration case. About two years ago a transaction in grain was made between J. B. McKay & Co. and J. Carruthers & Co. Owing to a shortage in weight, etc., the first named firm claimed \$550 from Carruthers. The latter, whenever approached by a representative of McKay & Co., always said he would allow \$28 for the damage done, but the McKays would not entertain such damage; they claimed \$550. The award is as follows: That James Carruthers & Co. pay J. B. McKay & Co. within three days from date of this award, the sum of \$28. The costs, amounting in all to \$14, to be paid by J. B. McKay & Co. The arbitrators were Messrs. J. L. Spink, J. H. G. Hagarty and William Galbraith.

CORRESPONDENCE

Letters received from our readers on matters of practical and timely interest to the milling and grain trades. To secure insertion all communications must be accompanied with name and address of writer, not necessarily for publication. The publisher will not hold himself responsible for opinions of correspondents.

MONEY IN WHEAT

To the Editor of the CANADIAN MILLER.

Sir, The man who talks about wheat reaching a price that will pay anyone for touching it, is apt, in the present state of the market, to be set down as insane. But I venture a prediction, all the same, that wheat is going to reach at least \$1.00 a bushel before long. It will be found, I believe, when the new crop commences to be marketed, that there is a scarcity of wheat that no one just now believes exists. India has all along been conceded, as a competitor in wheat, and yet the records of the past months show plainly how this country has dropped out as an exporter of wheat. We have had so many good crops that growers of wheat have been frightened off the field and things will take a turn when everyone will curtail the growth to that extent, that all round the crop will be found to come out at the short end. Stranger things have happened before. As the New York Journal of Finance has remarked, members of the Board of Trade have seen corn sell at 25c. a bushel, and a year afterwards at 80c. a bushel. A despatch from Duluth of the past month has said that there is good ground for the belief that there will not be wheat enough at the head lakes to supply the mills. Mark my words for it, wheat is going to touch a dollar a bushel.

Yours truly, A LOOK AHEAD.

FREIGHT RATES MUST COME DOWN.

To the Editor of the CANADIAN MILLER.

Sir, It may seem like fighting the air to attempt a criticism of the contention made by President Van Home that the rates for carrying freight to-day are as low as the present conditions of trade will permit. For one, I am not prepared to accept any such statement. Facts are contradicted by the various rates now reported by the railroads. There is simply no uniformity whatever in the rates of our two leading railways. It looks like a case of get all you can. When pressure is brought to bear upon the roads, concessions will be made, but the shipper who has not got the inside track will be charged a higher figure, though the very next day a neighbor may have received a quotation that would vary several cents. We have the same kind of thing shown in the difference made between rates from certain points in the west to some near point further east contrasted with the rate charged for freight, say from North Bay to an ocean point. From the railroad standpoint it seems to me it ought to pay the C. P. R. to reduce rates and thus encourage emigration to our Northwest.

Yours, etc., CANADIAN.

ARE MILLERS SLOW?

To the Editor of the CANADIAN MILLER.

Sir, The necessity for hustling business in the present day ought to require no demonstration with any business man. We live in a day of the keenest competition, and where more than at any other time in the world's history the doctrine of the survival of the fittest prevails as an existing condition. I am commencing to come to the conclusion, however, that millers have not caught on to affairs, as they exist to-day. Rip Van Winkle like, it appears to me, they are sleeping. Perhaps a continued spell of dull times has had something to do with this lethargy, but this condition should point out the necessity for being more wide awake than ever. It may be said with a good deal of truth, whether we look at home or cast our eyes to export fields, that everything is so slow that push has no chance to make headway. If my observation, however, as a practical miller is worth anything, it teaches me that we might be further ahead in our export trade were we to show more interest in the question. You devoted a good deal of attention in your columns last month to the West India trade. I know something of that business and do not hesitate to say that the milling trade of Canada, as a whole, is showing altogether too great indifference on the question. If a foreign rival has captured the field the fault is ours. It is time we had, in the slang of the day, "got a move on."

Yours, etc., PUSH.



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The only paper of the kind in Canada, containing full and reliable information on all topics touching our patrons, and unobscured as an organ with any manufacturing company, we will always be found honestly and earnestly endeavouring to promote the interests of our subscribers. Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling of the grain and flour trade.

NOTICE OF REMOVAL.

SUBSCRIBERS, advertisers, and others concerned are particularly requested to note that the offices of THE CANADIAN MILLER have been removed from the Canada Life Building to the CONFEDERATION LIFE BUILDING, Richmond and Yonge Streets. All communications should in future be addressed to C. H. MORTIMER, publisher CANADIAN MILLER, Confederation Life Building, Toronto.

CAN GREAT BRITAIN EXPORT FLOUR?

It is commencing to be accepted as something more than a mere abstract opinion, that British millers are to-day developing a strong position as manufacturers of the better grades of flour. The evidence is clear that the mills of the Mother country are fully equipped for first-class work, and a first-class product is being produced. What developments in this direction may mean to the future of flour production on this side of the Atlantic remains to be seen. We look to Great Britain as an important export field for our flours, though for the past year it must be admitted that much good has not come of it. But what, if besides becoming an important manufacturer, thus closing what in the past has been a large field for our output, Britain should carry the war into Africa, and meet the Canadian beaver and the American eagle in their own nests, and become an exporter of flour?

This is a possibility that forms the subject of an interesting article from the English Miller, which we publish on another page, written by Mr. W. T. Bates, a well-known English miller and writer. The argument is that the British miller has advantages in securing good wheat at the lowest price. The thought takes hold of Mr. Bates with greater force because of the low prices at which the British miller is just now, at least, able to buy Argentine wheat. The contention then is that Britain might export flour to Brazil, and also to China and Japan, though in the case of the former point our contemporary fears that the British miller would meet a host of formidable foes from the United States, Hungary and Argentine, remembering at the same time that some well equipped merchant mills are to be found in Argentine.

Consolation ought to be found, Mr. Bates thinks, in this possibility, for the present low prices of wheat. In fact, he argues very vigorously that the low price of wheat ought to be a decided advantage to the British miller, in place of a source of worry, as he takes it to be just now.

The whole subject is suggestive of possible changes in the economy of milling and wheat growing the world over in the near future; and in these changes Canada is very considerably interested.

ARE MILLERS SLOW?

THIS is a question suggested by the letter of a correspondent on another page. The inference is that millers are lacking in that push and "go," common to almost every branch of trade in the present day.

Let us investigate. The miller of tradition has been

pictured as an easy-going individual, a man of unusual evenness of temper, and possessed of a placidity of disposition, that was remarkable compared with that of his fellowmen. Where other mortals would worry over the "thousand and one" disturbances of life, he took things as they came to him, and whatever turn the wheel of fortune might make, he was satisfied to accept the situation.

But the miller of tradition only lives in memory to-day. In the hurly-burly of the 19th century there is a sort of poetical rest in thinking of this old representative of the trade. We are not so sure, however, that he has not left behind him a race of followers, who, though they may have changed their style a little, as has the Quaker of to-day when contrasted with his brethren of the broad-rimmed hat, have yet failed to nearly catch up in the procession.

We are warned to be careful, or we may be libeling some very worthy tradesmen, for whom we have the most perfect regard. To come down to particulars then, it may be asked, do you consider a trade that embraces such liberal, progressive and thorough-going business men as W. W. Ogilvie, M. McLaughlin, J. L. Spink, Pres. Baird, of the Dominion Millers' Association, N. H. Stevens, of Chatham and several scores of others, whose names are at our tongues' end, as lacking in either enterprise or intelligence? We are prepared to admit that one would travel far to find able representatives of any trade than those whose names we have named. But to make an application right here. A minimum estimate of the number of men engaged in the milling trades in Canada is 1,000, and the figures are variously placed by others at 1200 and 1500. There is in existence in the Dominion an association of millers, the sole purpose of which is co-operation and union in the interests of the individual members of the milling trades, and the trade as a whole. Entrance to this association is easy and inexpensive. The men who comprise it admit that it pays to be a member, and yet of the thousand or fifteen hundred millers in the Dominion only some 250 are enrolled as members of the Dominion Millers' Association.

We have no brief for booming this organization, and we simply use the case in point as an illustration, that gives color to the view of our correspondent, that millers are slow. The gain is to every miller who is a member of this Association. We believe that a large percentage of the enterprising men of the trade are in the association, but if we are to limit the go-ahead men to twenty or twenty-five per cent. of the whole, we are admitting about as much as our correspondent contends for.

Take another case. It is absolutely necessary to the success of milling in Canada, that a large portion of the product of the mills should be exported. Even allowing for all the discouragements in export and home trade during the past year or two, have millers been as alive, as they might have been, to catch all the export trade that was coming their way? We have gone to some trouble recently to enquire into the nature and conditions of flour trade with the West Indies. Considerable matter was published in these columns last month, and we have something more to say on the question this month. This enquiry has brought to us information and correspondence from different points. Some of this correspondence has indicated, where it might not be expected, a large measure of indifference, and to use an expressive business term of the day, a want of "snap" has been most noticeable. In other cases correspondents who have had a good deal to do with the India trade have plainly stated in their letters to us, that Canadian millers were not to-day enjoying that large share of trade with those colonies that rightly belongs to them, because they did not seem to care to trouble themselves to secure the trade.

The analysis of Canadian flours, published in the last issue of the MILLER, ought to have aroused, one would have supposed, considerable interest in Canadian milling circles. This was the opinion of a number of the progressive millers who had seen and studied the analysis. They anticipated, so soon as it was made public, that it would have put our millers on their metal, and they would have been quick to disclaim the inference of that analysis, that they are unable to make as good a flour for the West India markets as what comes from some of the United States mills. We, ourselves, opened up a correspondence with millers in different

parts of the country, drawing their attention to the Demerara analysis, and are free to confess that with few exceptions the response has been anything but complimentary to Canadian milling enterprise.

Are Canadian millers slow?—is the question asked. Reader, what do you think?

EDITORIAL NOTES.

A SUGGESTION has been made that it would be a good stroke of missionary enterprise to send someone to China and have them educate the Celestials in the eating of white bread. We do not know but this would be a good move with many foreign countries, as a means of creating new and improved markets for the consumption of flour. As Englishmen need to be taught to relish tomatoes, so many foreigners have to be taught how much they miss when they are satisfied with the coarse breads of their own countries and do not eat bread from wheaten flour.

A GERMAN writer tells us that "In the middle ages, millers could not go to war from the exigencies of their trade—and, as war was the only avenue to glory, they were consequently held in little esteem. In the time of Charlemagne the prejudice against millers was so great—it being thought (no doubt, erroneously) that they took too much toll—that no son of a miller could aspire to any position in the church. The town of Ulm ordered that no miller should be allowed to keep more than three pigs. In the sixteenth century millers were compelled to furnish the hangmen with gallows ladders, and only long afterward, when this connection with the hangmen ceased, did the millers come to be taken into the ranks of honorable men, where," as the writer quaintly adds, "they are still."

AS is his wont, Mr. B. E. Walker, general manager of the Bank of Commerce, in his annual address, of a few weeks ago, discussed the trade of the country in general, and in doing so devoted a large share of attention to agricultural conditions. Northwest matters received much consideration. The low price that has prevailed for wheat, has, in the opinion of this banker, seriously affected the prosperity of that country, and it becomes a question what is the solution of the problem. Mixed farming is suggested, "but the fact remains," to quote Mr. Walker's own words, "that for years to come wheat must be the main item in what they have to sell. But doubtless, as with most of the world's products the question is one of transportation." Mr. Walker is cautious in what he has to say on this question, accepting the claim of the C. P. R. that as railroad profits run now rates are as low as they can be made. "But it is also true that railroads will, year after year, be forced to lower rates, and must somehow carry wheat to Europe at prices which will be a living profit to the farmer for a series of years." A solution, however, of the transportation problem is not, so this gentleman thinks, as does Mr. Campbell and many other students of the question, to be found in more favored railroad rates, but rather in an extension of our water-ways. There can be no question that we must face as a people, this water-way question, at an earlier date than some would seem to anticipate now. It is a problem for Canada, and as we remarked a month ago the interest in it is growing apace.

It would seem that the promise given by the preparations at Niagara Falls for the generation of electric power is likely to bring the advocates of rival power systems into the field. It is not improbable that within a few years experiments on a larger scale will be possible on the relative efficiency of power transmission by compressed air and by electricity. Professor Unwin has treated the subject of compressed air as a motive power in a recent lecture. He considers transmission by it as practical, to a distance of 20 miles at least. He maintains that 10,000 horse-power can be transmitted to a distance of 30 miles in a 30-inch main at 132.3 pounds per square inch with a loss of pressure of only 12 per cent. The efficiency of such a plant is said to be 40 or 50 per cent. if the air is used cold, and 59 to 73 per cent. if the air is reheated. In order to put the system to a thorough test on a large scale it is now proposed to produce power at Niagara Falls by compressed air competition with electricity.

FLOUR MILL INSURANCE.

ONE of the subjects placed on the programme for discussion at the annual meeting of the Dominion Millers' Association to be held next month is that of flour mill insurance. Without anticipating what form the discussion may take it is not unlikely that the following able paper read before a millers' meeting at Kansas City, Mo., will be found helpful and suggestive to those who are giving thought to the matter. The writer of the paper starts off with the truism: Every millowner fully understands the need of good and effective insurance, and he generally carries sufficient insurance to protect himself if his policy be properly written, but he generally leaves the writing of the policy to the agent representing the insurance company. The agent usually does not understand how to properly distribute the insurance, and he is liable to get too much on one part and not enough on another, and possibly leaves some without any insurance at all.

If you have a steam mill with frame buildings and brick engine and boiler house, your office possibly located in one corner of the mill, with your wagon scales just outside the office, your policy usually will read something like this: So much on your 30 x 40 feet, two and one-half story and basement, shingle roof, frame mill building and 30 x 50 feet one story metal roof brick engine and boiler house; so much machinery, scales, tools, fixtures, etc., all while contained in the above described mill building; so much on engine and boiler house; so much on grain, flour, meal, feed, sacks, oils, etc., all while contained in above described mill building.

There may have been one or more additions to your building which your policies do not mention. After having met with a loss you get your policies and read them, possibly for the first time. You are somewhat surprised at their condition. You find the written portion, that part which binds the insurance company, very brief, but the printed stipulations, that part which binds you seems to almost relieve the insurance company of any responsibility whatever. Yet you think that you will have no trouble collecting your insurance. You have always been a liberal patron of the insurance company; you have paid your premiums promptly, and you think the insurance company will be pleased to pay you the full face of your policy without hesitation or delay. You notify the insurance company of your loss. They send an adjuster to settle with you. He plies you with various questions regarding the origin of the fire and gives you to understand that you, being the proprietor ought to know all about it, and winds you up by asking you for a list of stock and machinery and amount and kind of material used in the building.

This list you can only furnish in a partial way; you can't remember everything you had in the mill, neither do you remember the amount and kind of lumber and other materials used in the building. However you furnish a list and inform him that it is only a partial one. From this list he estimates that on your buildings and machinery you were considerably over-insured. He reads your policy and lays great stress upon the wording of it, and under no circumstances will he allow you anything not provided for in the policy. He informs you that your building could not possibly cost as much if new, and that by its nine years of use and decay it has depreciated 38 per cent. He tells you that the basement walls were never very good, but he will allow 20 per cent. for replacing the upper twelve inches and repairing a certain portion that has fallen down.

This he considers a liberal allowance. The engine and boiler house walls he finds in good condition. He will pay for replacing the roof, floor, windows and door. He makes the same reduction on machinery, scales, etc., for depreciation that he did on the building—38 per cent. The engine and boiler are not damaged much; he allows for some new piping, new valves and oilers and cleaning up. The smokestack, which fell down and was ruined by the fire, he informs you was not insured. There is no mention made in your policy of the pumps and heater. They are completely ruined. He will allow nothing on them. He also informs you that you had no insurance on the two-story addition, in the first story of which you kept some of your sacked products, and in the upper story of which was located your feed bins, nor on any of the products contained therein. The car of flour just loaded and the car of wheat yet unloaded are not insured. He will allow a loss on the beam of your wagon scales, but the scales themselves are without the building and uninsured. The long platform with roof over it, running the full length of the mill, is not insured, and the office furniture is not insured. He estimates that your loss amounts anywhere from 40 per cent. to 75 per cent. of the amount of your insurance, and offers to settle with you on this basis and pay you at once if you will make a reduction of 1 1/2 or 2 per cent. for the use of the money for the sixty days reserved by the insurance companies to make settlement in.

If you refuse to settle on this basis, he tells you that possibly he may be wrong, but that he has adjusted a great many losses

and has never made a more liberal allowance to any one, and that he seldom meets with a refusal to accept of his adjustment. He informs you that you are not obliged to accept his proposition; that there is a stipulation in the policy which provides for cases of this kind. He reads it. It provides that "if at any time differences shall arise between the insurance company and the assured as to the amount of loss or damage, or as to any question, matter or thing concerning or arising out of the insurance, every such difference shall, at the written request of either party, be submitted, at an equal expense to each of the parties to two competent and impartial persons, one to be chosen by each party and the two chosen shall select an umpire to act with them in case of their disagreement, provided, however, that none of the persons so chosen shall be interested in the loss as creditors or related to the assured or sufferers, and the award, in writing, of any two of said persons shall be binding and conclusive as to the amount of such loss or damage or as to any question, matter or thing so submitted, but shall not decide the liability of the insurance company, and until sixty days after such proofs, declarations and certificates are produced, and examinations and appraisals permitted, the loss shall not be payable." He now submits the matter to appraisal, asks you to sign an appraiser's bond and name an appraiser to act for you. You know if you submit to appraisal the settlement of your loss will be greatly delayed, and in the end may be settled by the courts.

Your mill has been completely destroyed. Financially you are penniless. The insurance company has in its possession all that belongs to you. You possibly have some creditors to which some of this insurance is assigned, who are urging you for a settlement. You regret very much to accept as payment in full 50 per cent. of what you were paying premiums on. You never knew before how cheap was everything and what a small amount of material enters into the construction of a mill. You now realize that you are a victim, as it were, between the devil and the deep sea. You take the list furnished him and discover that you have not included any belting or shafting and possibly some few other things. He readily adds the value of these, which adds considerable to the amount on which he offered settlement in the first place and if you could recall any other items they would be as readily added. You know the amount he offers you will not rebuild your mill, and in order to do so it will be necessary to go considerably into debt or interest outside capital. You conclude on the best course and accept his proposition, pocket your small allowance and dearly bought experience and start anew. If you have a new mill built by contract or otherwise you know just what it has cost. Should you insure it for what it costs and it should burn immediately it would hardly be possible to collect the face of your policies.

There is always a salvage. If your building is brick or stone, much of the walls and foundations are generally saved, the boiler is seldom damaged beyond the fitting, the engine seldom more than one half, the walls, foundation of the boiler, which cost about one-third the amount of the boiler, are seldom injured. The foundation to engine, which cost 15 to 20 per cent. of the cost of the engine, is never injured beyond the cap-stones. The machinery in the mill, if completely burned, is seldom worth anything to repair, yet a shrewd adjuster will find a salvage of from 10 to 25 per cent. It would be impossible to collect a loss of from more than 60 to 80 per cent., and this when the property is new and without depreciation. Insurance companies, in adjusting losses, usually estimate a depreciation of 5 per cent. per annum on frame buildings, except the roof and floors, which are estimated at 10 per cent. per annum; machinery at from 5 per cent. to 10 per cent. per annum.

The depreciation clause of any insurance policy, while only a silent phrase in your policy before a fire, proves to be the giant robber in taking from you premiums on policies you cannot collect. But why pay premiums on policies for more than you can collect in case of loss. Read your policy carefully and you will find that it will be impossible to collect for more than you lose. But how are you to estimate what amount you will be able to collect on your plant in case of loss? To determine this exactly will be impossible, but the loss is yours in any case. Every millowner should have a complete set of plans and specifications, showing in detail all the material, its dimensions and condition, every machine, scale, tool or fixture used in the plant, and when changes are made they should be marked in the plans. From these plans and specifications can easily be determined the value on your plant, and will be a means of saving you considerable money in case of loss. Attend personally to the writing of your policies and see to it that everything is insured and insured in its proper place, and insure it for no more than it is worth. Four-fifths is better. In case of loss, figure from these plans and specifications, submit to a reasonable reduction for depreciation, and you will have no trouble in collecting your insurance.

THE WORLD'S WHEAT PRODUCTION.

IN recent years there have been some striking instances of inability to approximate the year's production of wheat, in various countries, at a time soon after harvesting, the estimates then offered being subject to important modification by the subsequent evidences furnished by the recorded movement. Among the trade journals which have displayed care and enterprise in collecting data calculated to give intelligent comparisons of such supplies is the Liverpool Corn Trade Journal, which has recently published revised estimates in detail of the wheat crop for six years—its estimates showing important increases in comparison with earlier calculations for the United States, Argentina, Russia, Hungary, Italy, Germany and Spain; and decreases of more or less importance in Austria, Canada, Chili, Uruguay and India. The net addition to estimates last September is 136,000,000 bushels, or six per cent.—the early estimates being 2,213,000,000 bushels now increased to 2,449,000,000. The total for six years are shown in the following—

	Bushels.
1888	2,204,000,000
1889	2,174,000,000
1890	3,272,000,000
1891	2,452,000,000
1892	2,413,000,000
1893	2,449,000,000

The Corn Trade News has not adhered to official estimates, as for instance the crop of the United States for 1890 to 1893 are stated at 410, 660, 550 and 460 millions respectively (aggregating 157 millions in excess of official estimates, the last two estimates conforming to the basis adopted by the Price Current, while the previous two years are 35 million below the 430 and 675 millions recognized by the Price Current as the probable production for those years. The notable feature of the exhibit by the Corn Trade News is its estimate of the crop of Argentina, placed at 90,000,000 bushels for 1893, and 55,000,000 for 1892. While we cannot deny the approximate accuracy of these figures they reflect an enlargement over estimates for previous years which are difficult to reconcile with the probable increase in wheat culture in that country in recent years.

We copy the following totals from the detailed exhibit of yearly production, the figures representing millions of bushels.

	1893.	1892.	1891.	1890.	1889.	1888.
Europe	1,430	1,367	1,222	1,361	1,216	1,385
N. America	515	615	727	466	539	457
S. America	108	76	60	51	37	47
Asia	319	297	364	306	310	318
Africa	36	39	47	49	32	41
Australa	41	37	32	59	42	26
Aggregate	2,449	2,413	3,452	2,272	2,174	2,204

This statement is for crops harvested prior to September 1 of the years indicated, excepting in the instances of Argentina, Uruguay and Chili, which are crops "harvested in December and February following," the month of January being generally recognized as the harvest period for these countries.

It is interesting to note that the average yearly production indicated for the first three years of the period shown in the statement was 2,247,000,000 bushels, while for the last three years the average rose to 2,438,000, or 191,000,000 increase, which is suggestive of the cause of the world's plentifulness of wheat during the past two or three years—Cincinnati Price Current.

IN PRIMITIVE DAYS.

IN Bulgaria wheat is threshed in a primitive manner on the bare ground, but it is remarked that among three different samples of hard wheat there was not a single broken grain. The flour receives high praise. Though rather dark, each sample on being rolled between the forefinger and thumb has that gritty feel which millers so highly value. Each flour is described as of extraordinary strength. These samples do not appear to have received any elaborate dressing; but modern milling has made its way into Bulgaria, and the principality now possesses flour mills fitted with machinery of an advanced type. The enterprise which has brought these mills into existence appears, moreover, to have already met with its reward.

Advertise in CANADIAN MILLER. It pays.

MANITOBA FREIGHTS.

Mr. Nicholls, of Fort Qu'Appelle, thinks to answer Mr. Campbell, of Montreal, is very simple, as to the reason why Manitoba hard wheat is worth 90c. per bushel in Liverpool, while the farmer at home should be getting only 45c. for it. Mr. Nicholls says: "For every bushel of wheat the farmer shipped from Qu'Appelle, or adjacent stations, to Toronto, he would have to pay within a fraction of 31c. per bushel freight to the C.P.R. If the rates are anything like proportionate between Toronto or Montreal and Liverpool there will not be much left for coast handling or any speculation." Mr. Nicholls illustrates the excessive railroad rates, as he alleges, as follows: "A first-class ticket from Winnipeg to Vancouver costs \$45, but a ticket from Regina (nearly 400 miles less distance) costs \$56.15. The Qu'Appelle Vidette last September stated the case of a party coming west on the same train as the editor, and who got a ticket from Detroit to San Francisco for \$37.50. A lady, Mrs. Crawford, took a return ticket from Winnipeg to Qu'Appelle, and wanting to go to Kamloops, found she could save \$11 by returning to Winnipeg and taking a ticket to Vancouver. A ticket from Qu'Appelle to points in Ontario costs nearly twice as much as a ticket from the same points to Qu'Appelle." Take the local freight rates: One half a car of binding twine, from Brandon to Grenfell, 150 miles, last year the Grand Secretary of the Patrons of Industry paid \$62.50. The Edmonton Bulletin last fall stated that it cost 42.30 cts. per bushel to ship potatoes from Edmonton to Lethbridge, 490 miles. Potatoes were scarce at Lethbridge, and plentiful at Edmonton at the time, but the rates effectually prevented their exchange between the two places. At a meeting at Moosejaw, at which Mr. Davin was present and made a speech, a Mr. Baker spoke on the freight question, and said that coal was carried through and sold in Winnipeg for \$7.50 per ton, while at Moosejaw, 400 miles nearer the mines, it cost \$9.60. Our local millers tell me the railway company demanded \$112 from them to ship a car load of flour from Qu'Appelle to Maple Creek, while carrying a car load of horses from Maple Creek to Qu'Appelle for \$56, and that by rebates and passes large milling firms to the east are enabled to buy wheat here, carry and grind it in their mills, and then ship the flour west to Calgary and other points, and sell it for less than millers here could possibly do. Then the export rates. We can raise the finest oats and barley in the world, but the rates are absolutely prohibitive, so far as their profitable export is concerned, and we are cut off in that respect altogether. In order to save middlemen's profits, settlers sometimes ship their own wheat, paying 30.6-10 cents per bushel, from Qu'Appelle to Toronto, or at present prices, nearly one-half of the entire exportable product is taken to ship the other half. If wheat is anyway damaged the case is still worse; the whole loss must fall on the settler, no reduction of freights or profits by the railway."

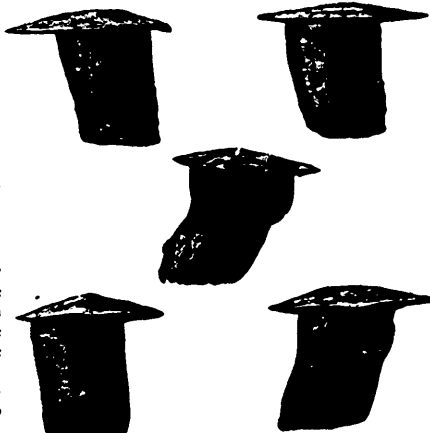
ECONOMY OF SUPERHEATED STEAM.

THE economical advantages of superheated steam in small motors were shown by tests of a Serpollet motor conducted by M. Seguin. The motor had a horizontal cylinder, 5.1 inches in diameter by 5.1 inches stroke. The cut-off was fixed at 66 per cent. of the stroke; the admission pressure was 58 pounds per sq. inch, and the revolution: 284 per minute. The brake horse-power on a four hours' trial averaged 4.57 horse-power, and the steam consumption was but 29.87 pounds per brake horse-power per hour. Comparing this result with those obtained with somewhat similar sized motors at the Plymouth trials of the Royal Agricultural Society, it will be found that the best engine there, a compound one, took 35.75 pounds of steam per indicated horse-power, while the best of the single cylinder engines took 57.75 pounds of steam per indicated horse-power. Practically the whole of the advantage shown by the Serpollet motor must, says Engineering, be credited to the boiler, which supplies superheated steam. This boiler consists of a stout tube flattened so as to deform the passage through into a narrow slit. This tube is coiled and has one end connected with a feed pump, and the other with the engine to be driven. The boiler used in the above tests had a heating surface of 26.8 square feet, and the grate area was 2.9 square feet. The

steam, though showing on the gauge a pressure of 58 pounds per square inch only, had a temperature of 1009° F. on issuing from the coil, which had fallen to 571° F. at the steam chest. The temperature of saturated steam at 58 pounds pressure is about 306° F., so as used in the engine the steam was superheated by some 266°. The output of steam was just 4.9 pounds per square foot of heating surface per hour. The fuel used was briquettes having a heating value as tested in the calorimeter of 8.28 pounds of water evaporated from and at 212° F. per pound of fuel, and as used in the boiler the efficiency was 67.3 per cent.

A CASE OF DEFECTIVE RIVETING.

THE driving of rivets, says The Locomotive, is such a comparatively simple operation that it might be supposed that it would be almost always well done. This is far from being the fact, and bad riveting is one of the commonest defects reported by our inspectors. The rivets may be too short, or too long, or too small; they may have heads that are too flat, or they may have projecting "fins," or they may not fill the holes, or the holes may not come "fair" with one another. There are many ways in which riveting may be bad. A case that recently came to notice seems to deserve special mention. The rivets in question were in a vertical pulp-digester, 10 feet in diameter and 30 feet high, which was to be so constructed as to be safe under a pressure of 90 pounds to the square inch. The plates were of steel, 3/4-inch thick, united by lap joints which were triple-



SOME DEFECTIVE RIVETS.

riveted on the straight joints and double-riveted on the girth joints. The pitch of the rivets in each case was 3 1/2 inches, and the distance between the parallel rows was 2 inches. The rivets were 3/4-inch in diameter. Before the digester was accepted, we were called upon to inspect it and pronounce upon its safety. The inspector found the rivets "driven very low," that is, the heads were entirely too flat, as shown in the accompanying cuts, which are made directly from photographs of the rivets. He had a number of these taken out and found that the holes in the two sheets did not come opposite one another fairly. This defect is a common one, and it is very serious, both because it reduces the shearing area of the rivet, and because it greatly increases the difficulty of making the rivets fill the holes perfectly. A shop that turns out work of this kind is particularly censurable, not only because the work itself is poor and weak, but also because the defect is not easy to discover, after the rivets are in place, and the owner of the boiler is therefore likely to be deceived by a fair external appearance and to carry more pressure than the boiler can safely withstand. The inspector also found that the heads were not driven evenly over the holes, the centres of the heads often lying well towards the side of the rivet. This defect, although not so dangerous as the unfairness of the holes, would not be tolerated in a good shop having any pretensions to turning out first class work. It is very easily detected, even by one who has little experience in inspecting, and there is no excuse for it, whatever. The rivet holes were not countersunk, as they should be in all good

work, and, taking everything into consideration, we think this case presented the finest example of notoriously bad work that we have seen in some time. The only thing that could be done to it, in the way of improvement, would be to cut out all the rivets, ream out the holes until they should be true, and rivet them up again with larger rivets. The most reprehensible thing about the job, perhaps, is that the builder used rivets that he knew to be too short. At least, we presume he knew them to be so, for any one who had the smallest idea about the business would know it. A boiler ten feet in diameter, to carry 90 pounds of steam, and with five or six men working about it, cannot be built too carefully; and any such reckless performance as putting in rivets that are too short and too small comes very near being criminal negligence. The joint used in this digester is far from being beyond criticism. To begin with, a lap joint should not be used at all; a butt joint would be much safer and better in every way. Taking the tensile strength of the plate at 60,000 pounds per square inch, and the shearing strength of the rivets at 38,000 pounds per square inch, a little calculation will show that in the joint that was actually used the rivet area is far too small, so that with 3/4-inch rivets and a factor of safety of 5 the safe working pressure is only about 56 pounds. If a triple-riveted lap joint were used at all, the rivets should be an inch in diameter (holes 1.1-16 inch), and the pitch should be about 3 1/2 inches. This joint gives an efficiency of 72 per cent. and a safe working pressure (with a factor of 5) of just 90 pounds per square inch. But a double-welt butt joint is the proper thing for this case.

THE COMMON-SENSE WAY.

THE common-sense way of preventing the slipping is really the only one object to which we ought to direct our attention; there is the relation of the pulley to the belt, the method of placing a belt on a pulley, the question of speed, tightness of belts, all of which, with other points, require careful consideration. Oak tanned leather belts are best for general use. Cotton belts are best for dry places. It is economy in put on a wider belt rather than a narrow one too tight. Vertical belts should only be moderately tight.

USE LOW GRADE FLOUR FOR FEED.

A GENERATION ago, says a correspondent of the Northwest Miller, millstuffs were so little in demand that bran was run into the mill ponds, or a farmer was told to help himself from the pile. The Minneapolis mills spent time and money in proving the good feeding qualities of mill feed, and without such sales to-day of their offal, they could not hope to compete abroad on their flour. The united efforts of the mills and the systematic distribution of circulars and pamphlets to farmers and others, showing the value of the lower grades of flour, and encouraging them to use it, as they would be benefitted by the increased price of wheat, would surely result in doubling the consumption of all mill stuffs below a patent flour. The use of black bread for feeding purposes is quite common in Europe, and it is a common practice of the bakers here to use up their old bread by feeding to their horses. These points are not new to a great many, but to others they are new, and in order to make the use of the low grades of flour more common, it is necessary to bring it before the attention of the farmers and others, not once, but many times.

TRANSMITTING POWER.

IT is generally known that a shaft will transmit power in proportion to its running velocity, and therefore, the faster the shaft runs the lighter it should be within reasonable limit. The use of extremely heavy shafting is not advisable under any circumstances, unless actually needed to perform the work required. Some imagine that a large shaft, affording a very strong margin of safety, is the most economical and tenable mechanical position, unless tempered with sound judgment and much wisdom, sufficient of both to select properly. That there should be an ample margin of strength no one will attempt to deny, but shafting multiples in strength so rapidly as sizes increase that the unlightened are apt to make the selections much too large when aiming at only ample strength margin.

VIEWS AND INTERVIEWS.

The famous French novelist, Zola, who was three times rejected by the "Immortals" of France, has been changing off from sensational novel writing to having something to say on so weighty a question as wheat speculation. Perhaps he goes on the principle that a change of occupation is as good as a dose of medicine. In a recent newspaper article he writes: "It is alleged that speculators today are constantly striving to reduce prices, while their predecessors only strove to advance them. Yes, the speculators are accused of very Machiavellian plans tending to cause advances and declines in turn, in order to rob both producers and consumers. Apparently, nothing is easier. In the months immediately succeeding the harvest, prices are reduced, and the farmer is compelled to sell at the lowest values. As soon as the crop is in the hands of the speculators, prices are advanced. In these allegations one thing is always forgotten, and that is competition. According to this, the most remarkable harmony must exist between all speculators. In truth, however, they are the ones who fight each other the most bitterly, and it is the generally beneficent competition which keeps prices at their proper level." He then gives figures of wheat values for the first and last months of each year from 1886 to 1893, to show that the variations have not been very great, and that the prices in months immediately after harvest have not been lower than the prices in later months, when the wheat is supposed to be in the hands of the speculators, from all of which he concludes that, if the speculators try to manipulate prices, as claimed by the farmers, the speculators are the ones who suffer most in the game. We guess Zola knows all about it. Oh yes!

Both the French and English milling journals, says the Northwestern Miller, are full of advertisements of wheat-washing machines and systems of wheat-washing and "conditioning" seem to be all the rage. This treatment does not seem to be confined to those wheats that are dirty and full of stones, or extremely dry, like some of our Pacific coast wheats. As is well known, before the days of the roller process, the "Darblay" flour made at Corbeille, France, had a large sale in England. The mills at Darblay made a very choice flour, and they washed their wheat, though in machines that were very cumbersome and imperfect, compared with the present apparatus, and the French millers still seem to practice washing, even for soft wheats. Mr. Masset, a millowner at St. Omer, writing to Louis Demaux—the Demaux is one of the oldest and best French washers—after stating the satisfaction the washer gave him, says that one great advantage of the improved washer is that the wheat is only in water a very short time, and is dried at once, hence the wheats from northern France can be washed to advantage. Another firm of French mill builders says: "With our new washing tub, we can give a complete guarantee for the washing of tender wheat, as well as hard wheat. The tests made the past year leave no doubt on this point, as they have been made in all parts of France."

Reminiscences, as Artemus Ward has said, are sometimes quite amusing, though they may be a little more serious, perhaps, in their recollection to some, than this whimsical humorist would want to intimate. One of the encouraging reminiscences to holders of wheat, says the Montreal Trade Bulletin, is to know that six years ago Manitoba and Duluth wheat was selling here at 90c, and three months afterwards the price had advanced 50c. per bushel to \$1.40. Commenting on this a shipper said:—"The price of No. 1 hard Manitoba wheat is worth about 70c. for export, or 64c. about Fort William; and if the prediction of Logan of Chicago, to the effect that the price of wheat will be 30c. higher within the next three months, is fulfilled, it will then be small compared with the advance of 50c. per bushel in 1888." He also stated that cable limits were being gradually increased, and that English buyers were asking shippers here to make firm offers, which reminded him of the similar conditions which existed at the com-

menement of the big rise in 1888. Of course, what happened then is quite within the range of possibilities now, although if an advance of 15c. be scored within the next 3 months, shippers and dealers may consider themselves fortunate. A lot of No. 2 Upper Canada wheat was bought in this market a short time since at 55c., and at time of writing the purchaser is offered 62c. for it, and strange as it may seem, a lot of feed wheat was sold two or three days ago at 62 1/2c., or 5c. per bushel more than could be realized for sound No. 2 white winter. The reason is to be found in the great scarcity of feed wheat, which of course, answers better for grinding for feed than the sound article. It is a singular occurrence, however, when the poorer quality of wheat brings the higher price. On the other hand, considerable feed wheat has been sold in this market during the past three or four months at very low prices, in some instances the proceeds failing to cover freight and charges.

"BOTTLING UP STEAM."

ANOTHER miller revealed frequently by the recording-gauge chart is the practice indulged in by many attendants, of "bottling up steam." Its time of most frequent occurrence is a few moments before starting time in the morning and at noon, and in some cases just before clearing fires. Of course it is the simple outgrowth of ignorance concerning the limited amount of steam in quantity they can so bottle up, and the very small service it can render, compared with the injury which the practice, when persisted in, ultimately does the boiler. Aside from this objection, the habit is exceedingly pernicious, because only a few moments' neglect would cause the pressure to accumulate to the point at which the safety-valve is supposed to open; and then, if it happens to be inoperative, an accident is almost certain to follow. No excuse should be taken in any shape, under any kind of reasoning, for "bottling up steam." If the generating capacity of the boiler is not equal to the current demand, it cannot be helped by simply bottling it up. In fact, it has been my experience that where the recorded line has been extremely crooked upon the first introduction of the recorder, the effect of such introduction has been to cause a much more uniform line from day to day, until the nearest approach to uniformity had been reached, consistent with the vicissitudes of the demands for steam. A steam-user once apologized for the appearance of his record, saying that the steam was drawn from the boiler at irregular periods by persons in the mill, and consequently the firemen could not carry any very regular line; that this use of steam was different from that in most places, etc. Noticing, apparently, my incredulity, he asked if I disagreed with him. My reply was: "Do you suppose that the steam necessarily falls as low as this record indicates?" In other words I called his attention to the fact, that, where a fireman is on the keen lookout for his boiler pressure and water level, he will readily detect the pointer-hand of his gauge the moment it begins to rise or fall, and govern himself accordingly. For instance, if he sees the hand indicating that the pressure is falling he will avail himself of the opportunity to slow down his feed, and perhaps open his damper wider, and if his fires are in prime condition, without fresh coal for a few moments; then when the onslaught upon his boiler has ceased, and the hand of his gauge is stationary, or starts to move upward, he will at once set about to replenish his coal and water, and so have his conditions favorable in a few moments for another attack upon his steam supply. When his steam is raising, he can afford to feed and to fire, and his thought should be to have everything in prime condition while he had surplus power and opportunity. Then he will not be caught so badly when these extreme attacks were made upon him. These extreme fluctuations, then, are largely due to the fact of his being unprepared to meet such emergencies; becoming alarmed when his steam has fallen 20 or 30 pounds, he attempts to get up by replenishing his needy fire with coal, which only tends for the time being to reduce the pressure still more, until it has become capable of delivering its gases, ready for combustion.

After this little explanation the proprietor shook his head, and said he had never thought of it in that light, and that he would have to call John to him and have a

talk with him. Now, the result of this was, that from that time on, the man's record never fluctuated in the same manner again, and the average steam line maintained was one which showed constant firing frequently in small quantities, and keeping himself in shape to meet these emergencies. Undoubtedly the man had to work a little harder at first, but afterwards it was easier when he properly understood the matter and manipulated his fires accordingly. The suggestion from the proprietor was exceedingly valuable. It resulted in teaching his man, and in mutual regard between them afterwards, because it showed that the man was capable of being taught, and willing to be, and that the proprietor had evidence of resulting fidelity. The dissemination of knowledge among firemen can certainly do no harm, and when it reaches a man who desires to hold his position, and give satisfaction, it will do much good.

SOME CONSIDERATIONS ON GLUTEN.

IT has long been recognized says Wm. Jago, in the British Baker, that the gluten of flour is a most important factor in determining its quality. Unfortunately, the absolute percentage of gluten does not necessarily indicate in terms of direct proportion the value of the flour even in those particulars which are closely associated with the gluten present. Not only does the amount of gluten affect the result, but so do also its character and quality. To give examples: Flour from the finest spring American and Manitoba wheats, yields roughly, an average of 40 per cent. of wet gluten. Flour from what is known as "goose wheat" may yield as high as 55 per cent. of gluten in the wet state, and a corresponding amount when dried. This goose wheat, by-the-by, is stated to be a degenerate Kubanka, grown from original Kubanka seed which has deteriorated by repeated cropping under conditions unfavorable to the maintenance of the original good qualities of the wheat. So, too, occasionally, Russian wheats imported from and grown in that country produce flours of similarly high gluten, and yet of very inferior quality. On the other hand, Hungarian flour with a much lower average of gluten than is possessed by Spring American, absorbs far more water, and is a very much higher-priced flour. Quantity of gluten alone has therefore, without reference to other considerations, no absolutely direct bearing on the quality of flour.

With such marked differences as exists in the physical characters of flours containing perhaps approximately the same amount of gluten, one's attention is naturally directed to the nature of the gluten itself. Variations in its character may be due to two causes—first, to actual physical differences in the chemical substance; second, differences in the chemical composition of gluten itself.

There is abundant evidence to be drawn from other sources which by analogy goes to prove the possibility of differences in physical character. Every one knows that white of egg is coagulated by heat, and, further, that the degree of hardness depends on the length of time during which heat is applied. The most remarkable physical alteration is not essentially accompanied by chemical change. So, too, pure india-rubber may become hard and almost brittle, and yet be very simply restored to its soft and elastic condition again without undergoing chemical change. So, too, the character of gluten may be governed by conditions which have affected its physical character.

But in addition to all this the fact that gluten is not one chemical compound, but a mixture of several compounds, leads us to the inquiry as to how far complexity of composition governs the quality.

Readers are probably acquainted with Rutilausen's views of the composition of gluten, namely, that it consists of three separate albuminoids, termed respectively gluten, mucin, and vegetable fibrin. These are separated from each other by digestion with alcohol, in which the two former are soluble, the fibrin remaining behind; the mucin is also viewed by Gunsberg and others as not being a distinct body, but rather fragments of fibrin separated in a flocculent state.

Rock emery millstones are said to be rapidly coming into use. It is claimed that they are wonderful grinders and it seems quite natural that blocks of rock emery should cut faster and last longer than anything else.



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THE GENERAL SURVEY.

AN advance of 3/4c. in the price of Chicago wheat a few weeks ago, gave something of a stimulus to wheat trading. The opinion was quite strongly held by some that this advance augured a general strengthening of the market, and the turn was supposed to have really come. It was only another case, however, of disappointed expectations, for the market drags along again as disorganized and uncertain as ever. General indifference pervades every branch of trade, and the wheat market seems to have imbibed the infection.

Saying this much, which is not any more encouraging, than what writers on grain topics have been compelled to admit for a long period of time, there is nevertheless the opinion afloat, and with those who are considered authorities on the question it does not down, that a better price for wheat will be the record at no very late date.

This will be ascertained with more accuracy, so soon as the new crop commences to be marketed, for the view of advanced prices finds its chief argument in the belief that the average of wheat sown this year is much smaller in all countries, than had been expected. Grain growers are said to have been scared off extending the cultivation of wheat, with such a terribly overstocked market as has existed for some time. But we shall see.

The following are the figures given at the dates named or visible supply of grain in the United States and Canada, east of the Rocky Mountains.

	Wheat, bushels.	Corn bushels.	Oats, bushels.
July 1, 1894	24,057,000	6,441,000	2,177,000
Increase	1,166,000	743,000	221,000
July 1, 1893	22,891,000	5,698,000	1,956,000
July 1, 1892	21,725,000	5,841,000	1,973,000

Ordinarily these figures would favor better prices, for they show the immediately available supply to be 14,000,000 bushels less than at a corresponding period last year. We can have no assurance, however, taking one cue from recent experiences, that prices will square themselves with any figures or calculations that are made these days.

What the new crop will bring forth is an uppermost question with everyone interested in wheat. In fact, weather conditions are largely responsible for whatever fluctuations take place in the market. The report comes favorable from some leading centre of wheat growing operations and prices are depressed. It may only be a few days when unfavorable weather reports will be printed and prices show a tendency again to advance. Without discussing the question of size of crop to acreage, as compared with other years, the reports generally of the conditions of the growing crop are favorable.

To give home affairs first mention. On another page we publish in full the crop report of the Ontario Bureau of Industries, which brings conditions up to June 15th. This is favorable to a good crop of wheat in Ontario. Reports from all leading centres, which bring conditions up to date, do not alter the reports of a few weeks ago. Things look favorable for a good average crop for the province. Official crop news from Manitoba places the wheat area this season at 1,010,186 acres, which is about 7,000 acres greater than that of last year, and marks the largest area ever sown of wheat in Manitoba. This does away with the opinion that had been held quite strenuously by some that the wheat acreages in those provinces would be lighter this year. It is not so easy a matter for those who officially watch affairs to tell as what is likely to be the outcome of the crop. The situation is reported to be a mixed one: reports from the same sections being of a very contradictory character. There is nothing to indicate that

there can be anything better for the Northwest than a moderate crop.

There seems to be hardly any doubt that United States crops will turn out well. Of course, there is time enough yet to see a very considerable change in any figures that may be given to-day. The Cincinnati Price Current of recent date names the wheat crop of the Republic at 475,000,000 bushels. It may be interesting to note just how far these conservative figures will be altered. The latest official account from Russia places wheat and rye above the average crop. No doubt Argentina will cut a greater figure than ever in the market this year, with a crop just far enough in excess of previous years to knock out any calculations that may be made on this side. On the other hand, certain reports, both from Germany and France, tell of weather conditions that are quite unseasonable, and that must have an unfavorable influence on the crop. But after all, at this time of writing there is a great deal of conjecture in anything that can be written of the coming harvest. Everyone interested must simply "watch and wait."

CURRENT PRICES OF BREADSTUFFS.

WHEAT—Toronto—White, 58c. to 59c.; red winter, 58c. to 59c.; goose, 57c.; No. 1 hard, 73c.; No. 2 hard, 71c.; winter wheat on the northern, 59c. to 59c. Trade Bulletin, Dominion Millers Association, says: "Buyers car lots Ontario fall wheat, 57c. to 58c. on G. T. R., demand light. Holders asking 58c. straight, and 51c. for spring on G. T. R., and 59c. to 61c. on C. P. R." Montreal: Local market quiet. No. 1 hard quoted at 74c. to 75c.; No. 2, 71c. to 73c. Chicago: For cash—No. 2 spring wheat, 56c.; No. 2 red, 56c. September opened 57 1/2c., closed 58 1/4 to 58 3/4c. Buffalo: No. 1 hard, 67 1/2c.; No. 1 northern, 65 1/2c.; No. 2 red, 58c.; No. 1 white, 61c.; No. 2 extra white, 60c. St. Louis: 53 3/4c. for cash; 54 1/2c. for July; 52 3/4c. for August; 53 3/4c. for September; 57c. for December. Duluth: No. 1 hard, 63c. for July; No. 2 northern, 62 1/2c. for July; No. 1 northern, 55 1/2c. for September. Toledo: 53 3/4c. for cash; 56 1/2c. for August; 57 1/2c. for September; 61c. for December.

BARLEY—Toronto: No. 1 (outside), 43c. to 45c.; feed, 39c. to 41c. Very little doing in Canadian barley in American markets. Montreal market quiet, but steady. 50c. to 53c. is quoted for malting grains, and 45c. to 46c. for feed.

OATS—Toronto: Market is easy. Car lots on track quoted at 38c. to 39c.; white offered at 36c. Montreal sales of No. 2 at 42c. to 42 1/2c.; No. 3, 38c. to 38 1/2c. Buffalo: Offerings light; No. 2 white, 50 1/2c.; No. 1 white, 51c.; No. 3 white, 50c.; No. 2 mixed, 49c.

PEAS—Toronto: Offerings very light. 56c. bid for No. 2 by exporters. Montreal: 73c. per 56 lbs. is obtainable afloat, with 73 1/2c. asked, says the Montreal Trade Bulletin.

RYE—Toronto: Trade is only nominal. In Montreal sales are reported at 52 1/2c.

THE FLOUR MARKET.

If anything, there is a slightly better feeling in regard to flour, though it may require some effort to perceive it. Export trade with the United Kingdom looks a little more hopeful. W. J. Stockman, the well-known flour handler of Leith, writes us: "Flour trade has been very bad, no chance of escaping losses in importing. The sale, however, has been better within the last fortnight and I think we have passed the worst. Prices, however, are practically unchanged." Reports from Minneapolis are of a dull domestic and export flour trade. A higher price being asked for flour, foreign importers are not disposed to accept this. At Duluth the output of the mills is largely circumscribed the past few weeks. At the same time the expectation is that the mills will, almost right away, be running at their full capacity. Trade with local millers continues of a very hand-to-mouth character, and it is the exception when millers get anything that might be termed a handsome order.

PRICES OF FLOUR AND MEALS.

TORONTO—Flour: (Toronto freights) Manitoba patents, \$3.70 to \$3.75; Manitoba strong bakers, \$3.45 to \$3.50; Ontario patents, \$2.90 to \$3.00; straight rollers, \$2.60 to \$2.85; extras, \$2.50 to \$2.60; low grades, per bag, 85c. to 90c.; bran, \$1.00; shorts, \$1.50. Trade

Bulletin, Dominion Millers' Association, says of Ontario flours: "Sales of straight roller, \$2.75, and 90% patents at \$2.85, f. o. b. Bran \$13.00; shorts, \$16.00 and \$17, f. o. b."

MONTREAL—Flour: We quote: Patent spring, \$3.40 to \$3.50; Ontario patent, \$3.10 to \$3.20; straight roller, \$3.05 to \$3.10; extra, \$2.50 to \$2.70; superfine, \$2.25 to \$2.45; city strong bakers, \$3.40 to \$3.50; Manitoba bakers, \$3.25 to \$3.40; Ontario bags, extra, \$1.30 to \$1.40. Oatmeal: Rolled and granulated, \$4.60; standard, \$4.45 to \$4.50. Pot barley is quoted at \$3.75 in barrels and \$1.75 in bags; split peas, \$3.50 to \$3.60; bran, \$16.00 to \$16.50; shorts, \$18.00 to \$19.00.

DOLLAR WHEAT.

"We will never see dollar wheat again," is the way many disappointed ones express their views on the price situation. Such views have existed many times before. When there are long periods of depression it is common to feel that depression is to be the normal condition for all time. But experience teaches that prices are elastic and advance quite as easily as they decline, when conditions favor it. Cost of wheat raising has been reduced by more scientific methods, it is true, and to that extent prices are permanently reduced, but beyond that there is no less reason to look for better markets than during other periods of depression. Too much has been produced in the last few years for the demand, and that is all there is to it.—Market Record.

NEWS AND NOTES.

Mr. Drury, of Colborne, is about to commence the erection of a new mill to cost about \$13,000. Foundation and first story will be of stone; second story, wood. It will be run by water power, the water being brought to the mill a distance of 2000 feet, through a wooden conduit, and having a fall of 60 feet. The power will also be employed to drive the electric plant.

A special meeting of the Montreal Corn Exchange was held a few days ago for the purpose of protesting against the irregular inspection of grain which has been going on. It is claimed that one of the Toronto inspectors has been granting certificates for grain shipped from Montreal, contrary to the act which limits his jurisdiction. The meeting decided to communicate with the Inspection Committee of the Toronto Board of Trade about the matter.

At the last quarterly meeting of the Winnipeg Board of Trade the following boards were elected under the provisions of the Dominion inspectors' act: Grand examiners, S. H. McGaw, J. A. Mitchell, Stephen Nairn, S. Spink and D. G. McBean. Flour and meal examiners:—S. Nairn, R. Muir, S. Spink, F. W. Thompson, C. H. Steele. General grain committee—A. Atkinson, N. Bawlf, J. A. Brady, S. P. Clark, W. A. Hastings, G. V. Hastings, D. Horn, E. L. Drewry, D. H. McMillan, A. McBean, G. McBean, S. A. McGaw, G. J. Maulson, R. Muir, J. A. Mitchell, S. Nairn, W. W. Ogilvie, W. Martin, C. H. Steele, F. W. Thompson, A. G. McBean.

A cereal story from the wheat kernel to the flour barrel.

Too much tension tends to destroy the elasticity of a belt, and when its tension is gone the belt is useless. Then, too, useless tension makes useless friction, and friction wears out journals and boxes, while it consumes more power.

The advantages of electrical transmission of power are largely those of the relation of the position of the machinery with the motive power of the establishment. Each room is entirely independent from other rooms, and any motor is always ready for service as long as the machinery from which it derives its electricity is in operation.

The old head miller and the newly acquired scrub got into a heated discussion regarding the flow sheet on the second day of the said scrub's arrival. "You don't know the first elementary principle of milling," shouted the head miller. "There's no use arguing with you; you don't even know what a sylligram is." "I'll bet \$50," shrieked the scrub, purple with rage, "I'll bet \$50 I've milled more of 'em in one day than you have in three months."

COOPERAGE D'PT.

There is a close affinity between the work of the cooper and the business of milling. The miller is either his own cooper, having a cooperage as an adjunct to his mill, or else he rests for his supplies on an outside cooperage. The cooper in any case finds one of his best customers in the miller. The object of this department is to bring each in closer touch with the other and to materially advance the interests of both trades.

MARKET REPORTS.

The Mississippi Valley Lumberman says of cooperage conditions in Minneapolis: "There seems to be a continual effort among the flour millers to reduce the price on barrels. If this is insisted upon, it will eventually result in the coopers using an inferior grade of stock in their manufacture. Barrels are about as low now as they can be and leave any profit, and any attempt to bear the price down much below that of the present time, could only result in the manufacture of a lower grade of goods. This would be unfortunate, as the coopers of Minneapolis have always made the best barrels on the market. The fact that none of the coopers are making contracts for barrel stock, but are buying what they need as they need it, makes the market a much steadier one than it was at this time last year. There is a probability of a raise in the price of elm staves in the near future. For several weeks they have been about the weakest thing on the market, and there are now a number of concerns that are making an exceedingly low price on them. Those who are interested in putting the price up, are at the present time, forced to meet the low prices. But it is thought that the low price men will soon be low stock men, and then there will come the time to make an advance. Canadian dealers say that the removal of the duty on staves will make no difference in the price, and when the coopers are sure that such will be the case, they will probably begin to think about contracting at the low price at which they are now able to buy. It is said that the Minneapolis shops are buying all the heading they want at 34c. per set, but they must be getting it outside the association, for there is no indication that any member of the association is going back on the agreement. Prices on hickory hoops are so low that those who have them for sale are not pressing them on the market, for fear they will be forced still lower."

Prices for cooperage stock at Chicago are reported unchanged. Pork barrels are selling at 75 to 80 cents the range being slightly lower than a week ago. Hoops are arriving a trifle more freely, but are still scarce, and prices remain firm. Heading and staves are in ample supply. Prices on flour barrel stock remain nominal and the demand light.

COOPERAGE STOCK MAKING.

By F. R. PATT, JR., WINDY WORKER.

WHAT is a day's work for a stave saw? I give you my experience as not the greatest result. I think a twenty-four inch saw, with thirty horse power, running 1,500, will make, with good bolts, well heated, about 5,000 to 6,000 daily, but I have made 8,000 and 10,000, and I am told that where the class of labor is the very best, with a first-class sawyer and saw filer, there is such a thing as making 12,000 staves per day with one saw. It is customary for the men who make staves to list them with a jointer. A double jointer will require two good listers to do this much work and keep up with the saw. I must confess that I have never had such success, but I also confess that the quality of labor, speed of saw and condition of timber, to say nothing of the filer's work being partially in fault, may have contributed to my difficulties.

What is true of stave sawing is also true of heading, and what is a difficulty in producing one is also a trouble with the other. Drying heading has difficulties and obstacles that no stranger to the business can imagine. The waste in getting the average out of a large yield is one of the most surprising things in the business. To the man who makes heading and never learns the art of matching, will say it can be done to some extent by the bolt makers for staves or heading getting bolts of average width. So far has sawed staves supplanted the old way of making by splitting them out, that with few exceptions all grades of work now are made of them. Care must be used in sawing the staves with the grain of the wood, not cutting bastard. As good a stave is pro-

duced by whisky work with a saw as if split and run through a buckler, or entirely made by hand.

If staves are uniformly straight they will all work with machinery, but if very winding a good joint can not be made, and the work of putting the stave in the barrel must be left to the hand cooper to do the whole job, as time in running machinery is what makes the average expense great. This is why the sawing of staves for butter firkins, churns and fish packages has increased so much. The syrup barrel of to-day is seldom anything but a sawed stave. Pork and lard packages are universally sawed staves, and pickle packages also come within the line of its service.

I notice stave men are learning new methods of saving the bad stock in their staves by the use of the stave planer. There is a quantity of stock made by a stave saw usually thrown away. Some cut off the odds and ends and sell them as "cut-offs," all lengths from 17, 18, 24, 26 and 28 inches long (30 inch staves being a pork barrel length, are a special make). The stave planer, by the use of beds and knives the right circle, changes the circle of the stave. While it is a good thing to do this cutting down of the weight and saving such a great amount of work to the hand cooper, it is not so good as if cut on a saw to the right dimensions; yet it answers for most purposes, especially where something to fill the deficiencies or leaks caused by the timber being cut cross-grained in obtaining a circle, is used. The planer is a machine that will come rapidly to the front in full dressing any stave that needs rapid drying; it is especially adapted to backing beer staves preparatory to hollowing them while green, with a hollowing machine. It was not the intention to mention this machine here, but it has presented itself for this kind of work and is well adapted for it, so we give it a passing notice.

Cypress timber has never been cut to any extent with a saw. There is a good reason for this. The timber will not split well for the purpose, and if sawed would have to be sawed just the opposite way to sawing oak, so the cypress is universally a rived and bucked or hand dressed stave. They are used only for molasses and kindred goods. A cypress stave is always straight; the wood, fresh cut, is soft and easily worked.

Cypress will most likely always be rived; being difficult to get the timber out of swampy localities, would naturally make it necessary to do this. The whiskey and wine men are using staves every day that are dressed with a planer on both sides. If the cooper knows it, he says nothing, but keeps on sawing. The fact is, it is much cheaper for him and he is getting to understand that prejudice against such things does not pay. Parties who make staves for the California trade are having them sawed with the grain of the wood, then planed on both sides so no saw marks appear to give evidence against them.

Large cooperage plants sometimes own the timber they work in, often keeping a gang of stave makers in the woods the year round. Oil refineries often make their own barrels, but don't undertake to make heading as a general thing. Heading men make nothing but heading, taking it in the tree, sawing their staves and kiln-drying them to perfection before working them. As a general thing this is the most successful and cheapest way to make heading.

Many oil dealers on a large scale use but very few barrels now; tank wagons deliver oil to wholesale and retail buyers in cans. A stock of old barrels is always kept on hand to meet any rushing demand for oil in barrels. Any kind of an old barrel, coopered up, will answer for black oil, as this article is cheap and heavy, and is seldom put in a good, new barrel. An old tierce, with the wood hoops cut off and hooped off with iron, will answer for common black oil. Style in cooperage does not apply. The price is the thing. If it is only cheap, that's the thing for petroleum.

We have reached a point where a word is necessary about hoops. I have tried to be progressive in the line of cooperage all my life; have sought out all theories and systems, and usually have been in the advance on all points in the line of wood-bound work. The hard labor of splitting hoops to hand shave has been a thing difficult to avoid; many plans have been adopted of sawing the hoops, but with only the success of making a poor hoop, unless the material is exceptionally good. The man who selects a pole to split usually will select a

good one, easy to split, but the man who cuts a pole to saw takes knots and short crooks to an extent that the sawed hoop when done is but little better than an apology for a good, strong hoop. A hoop made of good second-growth, with a saw, sawed heavy enough, can be used very well, but a planer to make the hoop of uniform thickness is necessary, or the cooper is compelled to sit down at his shaving horse and shave the hoop over by hand, before working it. This causes him to curse sawed hoops. I have had sawed hoops from some localities that were splendidly made, and of good, tough stock, but let a lot of green men get to making hoops with a hoop-sawing machine, and when you go to use them you have not more than the value of freight on the car, unless they happen to have wood enough in them to bear planing; in that case you get something over width usually, which partially compensates for the additional expense and trouble of planing them.

The day for high-priced cooperage has gone by; the day for poor new cooperage is also a thing of the past, except where it comes in competition with cooperage made by prison labor. There our pork packer will buy it, and succeeds in making one the basis of value for the other. Country cooperage, made in the one-hand shop in a dozen different places, is bought up by a country dealer until car load lots are obtained, then they are shipped in on an open market and sold for whatever they will bring. This makes the market; some of it is good, some good for nothing, nearly all made of oil-barrel culls in the timber-producing districts, and often made of timber that is not half dry, such as oil-barrel stave-cutters throw away. But they sell when made into a barrel for pork, or lard tierces, pork half-barrels, etc.; no two packages are alike, even though they are made by the same men. I know packing houses which keep all kinds of new packages on hand in the thousands, shrinking up and drying away. They test them with one blow on the head with an adze; if it's a stiff head, they pass it; if slack, reject it. Of course, a stiff head can be flagged until it is tight; so when cooperage is loaded for market the honest cooper always is thoughtful enough to put in a little water to keep the package swelled tight until the test is passed.

THE GEAR BUSINESS.

THE gear business has grown to be quite extensive, so much so that one of the firms in this line has decided to secure a patent on bevel gears with plain surfaces for the flanks of the gear teeth. It may be that this firm has a special curve of their own to run with a straight flank tooth, but if they will look into the theory of the matter they will find that there is only one form that will work properly with a straight flank, and that form is determined by the flanks themselves, without any discovery being needed from any source.—Journal of Commerce.

FROM OTHER CAUSES.

IF a certain brand of oil has been used in a cylinder for several years and for any reason it is desired to use some other kind, the new oil may not give satisfaction at first, but this does not necessarily prove that it is not good oil, writes W. H. Wakeman in the American Machinist. After using an inferior grade of oil for a long time, I commenced to use one of the best brands of oil in the market, but there could be no doubt that there was something wrong, as the engine could not be run with it. It was of the automatic, disengaging type, and as soon as the valve gear commenced to open the valves the vibration was so great as to cause them to be released at once, thus shutting off the steam before enough had been admitted to do the work. The remedy was to mix one gallon of the new oil with four of the old, and when the lot was used up mix another one, using two of the new and three of the old, and so on, until the new oil could be used without trouble.

TRADE NOTE.

THE exclusive right to manufacture in Canada the Wilson tubular dust collector, for which patents were granted in April of the present year, has been given to the Goldee & McCulloch Co., of Galt, Ont.

BANKS—"That young Wheatley is sowing wild oats at a fearful rate." Rivers—"And yet that young man to my certain knowledge was raised on good oatmeal."

CURRENT COMMENT.

WHAT constitutes good oats? According to the Mark Lane Express good oats are clean, hard, dry, sweet, heavy, plump, full of flour, rather like shot, and have a clean and almost metallic lustre. Each oat is a well-grown sample, should be nearly of the same size, and there should be a few small or imperfect grains. Then again, the hard pressure on an oat should leave little or no mark, and the kernel, when pressed between the teeth, should leave little or no mark. The skin should be thin, for it will be found that the size of the kernel will be less in proportion than when the skin is thick. The color of the oat is not very material, but white oats are generally thinner in the skin than black. Again, black oats grow on inferior soils. Short, plump oats are preferable to large, long grains. In all bearded oats there is an excess of husk, but oats are not necessarily bad because they are thick-skinned and bearded. They must, however, contain a less amount of flour per bushel than thin-skinned oats without beards, and so are worth less money. It is a question of degree in value received, rather than of badness of quality.

Of the 19,000,000 bushels of wheat held in Chicago elevators, the statement is made that a large proportion of this is out of grade, and the matter is to be investigated by the Chicago Board of Trade. The Chicago Tribune says: "One cites that it is currently reported that a considerable quantity of spring wheat stored here has been mixed with hard winter, making a mixture which is undesirable; that, as a result, it is almost impossible to sell spring wheat stored in such warehouses except by sample. The other reason assigned is the report that a large quantity of winter wheat has been kept in store for an unusual period of time, thus giving rise to the suspicion that it may be infested with weevil. The petitioners named a dozen members supposed to be experts, and asked that they be formed into this special committee. The request of the petitioners, of course, aroused immediate and bitter opposition on the part of the Warehousemen. The Elevator Association held a meeting in the afternoon, and prepared a protest signed by all members, and this was presented to the Board of Trade directorate in special session by Messrs. Ware, Murray, Nelson, Harper and Hannah. As a means of remedying the evil certain changes are proposed in the elevator grain system in Chicago. It is intended that the proprietors of elevators, or regular warehouses "are not to be engaged on or after July 1, 1894, either directly or indirectly, in the business of buying or selling, receiving or shipping, cleaning or mixing grain, and are carrying on, and intend to carry on, the business of public warehousemen under the laws of the State of Illinois."

The Hatch Anti-Option Bill, which has been before the Washington Congress for upwards of a year, has finally passed by a very large majority. Various amendments were made to the bill, but in its present form it is directed particularly towards the suppression of short selling, and its principle is that no one shall be permitted to sell products named in the bill, unless he has the ability to deliver at the expiration of the contract. In order to regulate short selling, it was found necessary to impose a more nominal tax on all sales. The bill includes raw or unmanufactured cotton, hops, flour, wheat, corn, oats, rye, barley, pork, lard, bacon, dry and salted meat or pickled meat. A tax of 1 cent upon every thousand bushels of wheat, corn, rye, oats and barley is imposed, and upon every thousand of raw unmanufactured cotton, hops, pork, lard, bacon, dry or salted meat and pickled meat: a tax of 3 cents upon every bushel of wheat, and of 2 cents upon every bushel of corn, rye, oats and barley. Provision is made in the bill exempting the dealer from the payment of this tax provided the property may be destroyed in transit by fire or by any unavoidable means. If, however, the party is detected in the act of evading the law by any fraudulent means he is made subject not only to the payment of the tax, but is also liable to a fine not exceeding \$1,000 or punishment by imprisonment and confinement at hard labor not exceeding five years, or by both in discretion of the court. The same provisions as to the cancellation of stamps are mentioned as those in force generally in the internal revenue service."

Canadians have a substantial interest in the matter of wheat speculation in Chicago. On the authority of a Montreal journal we stated before in these columns that many thousands of dollars of Montreal money had been lost in the Chicago wheat pit, and the president of the Bank of Commerce, at the annual meeting, made the statement that millions of Canadian money had been lost by grain speculation last year.

BANKER WALKER ON THE TRANSPORTATION PROBLEM.

GENERAL Manager Walker, of the Bank of Commerce, in his annual address to the shareholders spoke as follows, touching wheat matters and the question of transportation, as affecting Canadian trade, past, present and future: The year has been, as we all know, particularly hard on our people in the North-west, in common with the districts in the United States where wheat growing is the leading feature in agriculture. A very low yield per acre and prices lower than ever before to a country depending mainly on grain means something uncomfortably near disaster, and there is no use in disguising the fact that in actual power to pay debts out of the current season's products, the farmers of the North-west were worse off during the past year than ever before. But it would be a mistake to conclude therefrom that the people of that part of Canada are doubtful as to their future.

In the course of their progress to material wealth our North-west provinces must expect the recurrences at intervals of such vicissitudes, and the question is, what are they to learn from the present experience? That they must raise everything for which there is a market other than wheat is clear, and in this they will only reap the experience of what were once great wheat-growing states in the United States, but which may have many years since passed the maximum of wheat acreage. That they must farm more within their own means, both as to capital and the employment of labor, seems clear, but they have in the past only displayed the same expansive tendencies of their fellow merchants, and as all people in new countries who have not yet got their financial bearings. Hereafter, both from lessened ability and greater dread of debt, there will be improvement. But while the experiments in mixed farming are being made and the dreary lessons of enforced economy are being learned, the fact remains that for years to come wheat must be the main item in what they have to sell, and if they have to face the opening up of indefinite area of new wheat lands in the Argentine and elsewhere, they may have a hard time of it for a while. But the Argentine has again collapsed financially, and its farmers are about to learn that fancy prices for wheat in worthless paper money with gold at a premium of 325, may be quite delusive as to the profits of wheat-growing. We are not yet prepared to believe that the rude agriculturist of the Argentine can in the long run raise wheat cheaper, having regard to quality, than the farmers of the North-west.

Thrift and the highest intelligence in wheat culture, combined with an energy unknown to the mixed races of South America, must give the victory to us, unless the question be entirely one of transportation. But doubtless, as with most of the world's products, the question is one of transportation. The Canadian Pacific Railway claims to carry as cheaply as possible, and in the present condition of railroad earnings this is probably true. But it is also true that railroads will year after year be forced to lower rates, and must somehow carry wheat to Europe at prices which will leave a living profit to the farmer over a series of years. The great transportation question, however, which is agitating many people in Canada and the United States, is the possibility of a better water transit. Can we not improve upon the Erie Canal as a means of getting to seaboard? Are we to see the foreign bound traffic of the upper lakes deposited at Buffalo, or are we to try to secure that traffic, and, what is much more important, provide the necessary cheap transportation for our North-west province? We who are inexperienced in the practical aspect of such matters talk vaguely about widening and deepening the present canals, or about a new canal across Ontario, or of connecting French river and Lake Nipissing, and thus making a route by the Ottawa river.

For lack of information we do not know what should be done; we only know that something practical might be done. In such an emergency it seems clearly the duty of the Dominion Government to have surveys made and report on all the proposed routes, so that the people of Quebec, Ontario and the North-west provinces may at least be in a position to express an intelligent opinion on such a vital question. I am sure we are sufficiently free from local bias to hold up our hands for whatever route will accomplish the great end of being the cheapest from the west to the seaboard. If there are those who say we cannot afford the expenditure, the answer is that we do not know whether we can or not until an intelligent report is before us. If success in wheat growing is all important to the North-west, and if having overcome the terrors of frost, the barrier is transportation, we must in some way overcome it.

In the meantime let us remember that about 12,000,000 bushels of wheat and about 25,000 head of cattle was exported, and altogether the North-west realized about \$6,000,000 out of their products, which is not very bad return for such a small population.

Reports from forty-five districts show that the average under crop in the North-west is as large as last year, in some districts larger, and while rain is much more required in many places, prospects are quite good, and the general feeling is not at all one of discouragement.

In our own province there has been damage by rain on low lands and some replanting is necessary, but there is no reason to doubt that we will have about as good crops on the average as usual.

LOVE IN THE OLD BURR MILL.

By R. R. ELLIS.

I recall the first impressions
And remember ever will,
Of the valley and its waters,
And their music, and the thrill
Of a thought that comes unbidden
To my soul a sweet my will.
In that valley near the woodland,
'Neath the shadow of the hill,
Where the shadows briskly hastened
To the mill-dam near the mill;
There to miller ferns and lichens,
Cope and forest near the mill,
With its overshoot for driving
That old-fashioned flouring mill—
That old sentiment-inspiring,
Water driven old mill mill

This thought that came unbidden:
"Here my soul shall find its mate;
Here within this charming valley
I will find my love and fate:
Here beneath this snow-belted ceiling,
Where I meet the work of life,
I will also meet the being
Who must be my spirit's wife."
Presto! Came the lovely maiden's
Shadow 'thwart the open door.
She hehled me busy sweeping
Dust from off that "dirty floor."
Yes, she caught me really sweeping
Dust from off that old mill floor

Afterward beside the hopper,
Toll-dish in her hands so sweet;
Filled it full to running over
Of the golden, smooth-branned wheat,
'Questioning, naively, "Do you ever
'Stroke it down below the rim?"
And I answered, blushing, "Never!"
That, sweet maid's an unkind sin."

But the work was done while toying
With the dish that measured toll,
Her bright eyes had sent their love-light
Swiftly to my waiting soul.
Thus the thought prophetic widened
To a life poem we reverse,
Full of rapturous notes pathetic,
Loving, constant, pure, sincere.

AMERICAN MILLER.

It is said that "there is nothing like leather"—flour sacks are made in Mexico to a large extent from that material.

Officials of the German army and navy after exhaustive experiments have decided against the use of peanut flour for the troops and sailors or as horse food. No immediate health injuring symptoms were noticed, but the men showed an unconquerable dislike to the food.

Subscribe for the CANADIAN MILLER. \$1 per year.

THE NEWS.

CANADA.

—Becton, Ont., is agitating for a flour mill.

—A new grist mill is to be erected at Hawkestone, Ont.

—Kelly & Co. contemplate increasing the capacity of their mill at Brandon, Man.

—The big Ogilvie flour mill at Winnipeg, is undergoing extensive improvements.

—F. M. Reisbary has purchased the flour and feed business of N. Gray, Brandon, Man.

—Star flour selling at St. John, N. B., at \$3.80 per barrel, retail, the cheapest ever known.

—Improvements to S. Luke's grist mill at Bradford, Ont., costing \$6,000, are contemplated.

—Messrs. Wilson, Moor & Co., have assumed control and will operate the flour mill at Orden, Man.

—The British Columbia Milling and Feed Co., New Westminster, B. C., have closed down their mill.

—The flour mill at Arden, Man., recently advertised for sale, has been purchased by W. H. Wilson.

—A new firm seeking patronage in Winnipeg is John Donohue & Co., dealers in flour, oatmeal, grain, etc.

—The site has been selected for a new flour mill at Virden, Man., and operations will be commenced at once.

—Batchelor & Quine, millers, New Westminster, B. C., reported sold out to Brackman & Ker Milling Co., Ltd.

—Graham & Killingsworth, custom millers, St. Thomas, Ont., have been succeeded by Killingsworth & McCagan.

—The steamer Amarynhia, which went ashore near Isle Ronde, opposite Montreal, contained 60,000 bushels of grain.

—The exhibit of grain from the Canadian Northwest gained the highest award, a gold medal at the California Mid-Winter Fair.

—Corry Bros' steam grist mills at Havlock, Ont., were burned the early part of last month. Loss \$6,000; insurance small.

—An exchange says that a dollar and a half will purchase as much store goods now as fifty bushels of oats would purchase twenty-five years ago.

—A new grist mill, to cost \$9,000, will shortly be erected in Listowel, Ont. Messrs. James Gray and W. G. Hay are among the promoters.

—Atkinson & Co.'s grain warehouse at Wajella, Man., was blown over by a severe windstorm a fortnight ago. Crops in the neighborhood were also damaged.

—A new grist mill has been erected at Norwich, Ont., by a joint stock company. It has a capacity of 200 barrels per day, and cost \$40,000 to build and equip.

—Wm. M. Smith, of the Pioneer Oatmeal Mill, Prairie la Prairie, Man., has recently put in some of the latest improved machinery for the manufacture of oatmeal.

—The conditions attached to the offer of a bonus for the erection of a flour mill at Wawanessa, Man., are said to be such as are unlikely to secure the carrying out of the enterprise.

—Juliana Hainault and L. E. Dastous have purchased the mill and entire business of the Macfarlane Milling Co., of Sherbrooke, Que. The business will be continued under the same name.

—Messrs. Muir & Ross have commenced the erection of their new steam grist mill at Mattawa, Ont. The site chosen is on McConnell street, and the plans show quite an ornamental building.

—The Farmers' Institute of Napinka, Man., has passed a resolution asking the Canadian Pacific Railway to grant permission to load grain direct on cars instead of being compelled to ship through the elevator.

—The foundation for the new flouring mill at Prince Albert, Sask., has been completed, and the superstructure will be erected at once. It is hoped to have the mill fully equipped and ready for the new crop.

—The town of Edmonton, N. W. T., offers a splendid opening for the establishment of woollen and oatmeal mills. Persons desiring information address J. R. Turnbull, sec-treasurer, Edmonton Woolgrowers' Association.

—A miller named Neil D. McLaughlin, at Port Covington, on the border line between Canada and the United States has been found guilty of smuggling oats and wheat from Canada, and has had to pay \$3.50 back duties.

—W. H. Melburn has leased a large flour mill recently fitted up by the Peterboro' Milling Company, at Peterboro', Ont., and will take possession on the 1st of August. The mill is owned by the Auburn Woollen Company.

—About a fortnight ago Mr. W. W. Ogilvie exhibited on change at Montreal a stock of wheat headed out, received from Melita, Man. The crops in that vicinity are reported to be two weeks earlier than usual, and harvesting will commence about the 1st of August.

—Lequin & Co.'s flour mill at Farnham, Que., was destroyed by fire on the 16th of June. The machinery was completely destroyed, together with eight hundred bushels of wheat, besides other grain, contained in the mill. The loss is about \$11,000 and the insurance \$4,000.

—A by-law will be submitted to the ratepayers of Brandon, Man., authorizing the granting of a bonus of \$6,000, and exemption from taxes for ten years for the erection of a flour mill of 800 barrels capacity per day. It is said a United States company will accept the offer should the by-law carry.

—The flour mill of W. B. McAllister & Son, at Pembroke, Ont., was the scene of a disastrous fire on the 18th ultimo, by which the roller mill wing was completely destroyed. The building used as an elevator and crushing mill was also considerably damaged. The loss will be heavy, and is only partially covered by insurance. The firm also own a mill at Pakenham, where orders are being filled as usual.

—The committee at Elkhorn, Man., which has been working to secure the erection of a 100 barrel mill at that place, now propose to reduce the capacity of the mill to 50 barrels per day, as it appears impossible to get a practical man to undertake to operate a 100 barrel mill. It is contended that a 100 barrel mill would not be large enough to compete profitably with the large concerns, while it would be too large for gristing purposes.

—The Union Bank of Canada recently brought suit against the Kingston and Montreal Forwarding Company to recover 13,518 bushels of grain, valued at \$18,600, which, it is claimed, was the undelivered balance of a larger quantity which the Forwarding Company were in possession of as carriers. The case was heard in Montreal. According to the evidence there was a deficiency of 10,362 bushels still owing by defendant to the bank, and the Forwarding Company were condemned to deliver to the bank, within fifteen days, 6,676 bushels of grain, or in default thereof to pay \$6,676, about one-third of the sum for which suit was brought.

—The flour and grist mill recently erected at East Toronto has resumed operations, after having been closed a short time for want of coal. This mill is owned and operated by a Toronto company, Mr. S. G. Beatty being President, Mr. Chas. Builder, Secretary, and Mr. W. H. Compton, Manager. The edifice is of white brick, two stories, and cost about \$7,000. The fittings and machinery involved an outlay of about \$12,000. The plan of operation is the Case system of roller milling driven by a 45 horse-power Curtiss engine. The capacity is seventy five barrels per day. The basement contains the cleaning machinery, the line shaft and elevator works. On the centre flat are four double sets of 9x18 Case roller mills, one Richmond separator, one double set 9x18 choppings mills and one single set with smooth rollers for crushing oats, several hopper and platform scales, four packers for bran, flour, etc. On the upper story are four Inglis elevator reels, one Case scalper, one Inglis centrifugal reel, one bran and one shorts cluster, two Inglis purifiers, and the heads of the shafting and elevators. The mill is in charge of an experienced miller, Mr. E. J. Compton.

GENERAL.

—A despatch from Chicago states that good apples are held at \$50 per barrel. As there are about 400 apples in a barrel, the price would be 12½ cents each.

—Bradstreet's estimates that there will be 140,000,000 bushels of wheat available for export from the United States for the year ending July 1, 1895. This is much less than the exports for this or the preceding two years.

PERSONAL.

The death is announced of Mr. Archibald Campbell, an extensive grain dealer and ship owner of Lockport, Ont.

Miss Meighan, daughter of Mr. Robert Meighan, President of the Lake of the Woods Milling Company, Montreal, was married on the 12th ultimo.

Mr. W. W. Ogilvie, president of the Montreal Board of Trade, and family, have taken possession of their magnificent summer residence on the Lower Lachine road, recently completed.

Mr. John Brown, of the Citizens Milling Co., Toronto, is an enthusiastic wheelman. He is credited with having recently made the trip from Toronto to Oshawa—34 miles—in two hours and 40 minutes, carrying with him his little daughter, who weighs 34 pounds.

The marriage of Miss Maggie McDonald, eldest daughter of Mr. J. P. McDonald, President of the North American Mill Building Company, of Stratford, Ont., to Mr. W. A. Kutherford, of Toronto, was celebrated in that city on the 6th of June. The newly married couple will reside in Toronto.

Mr. Charles H. Fairweather, of the firm of Hall and Fairweather, wholesale flour and provision merchants, St. John, N. B., died on the 12th of June. He was one of the most influential business men of the city, and was at one time President of the Dominion Board of Trade. The firm with which he was connected had continued with the same name partners for over 40 years.

ENGINE AND BOILER FOUNDATIONS.

THE depth of engine foundations should be at least six feet, says a contributor to the Boston Journal of Commerce, unless there is a good rock bottom before reaching this depth, so that the engine anchor bolts may be anchored directly into the rock; otherwise, if there is no such rock to anchor to, and the above depth has not been made, there will not be enough weight to the foundation to hold the engine down. The writer is well aware of the fact that there are engines on the market to-day where great care and attention has been given thoroughly to counterbalance the engine, so that the engine will run steadily and smoothly, set upon four pins, and will not jar or shake off the pins, the engine not being bolted to the foundation. The above is all right so far as it goes, but will not answer for large engines, and especially when the engine is very heavily loaded. The length of the foundation on the shaft end of the bed, measured from the centre of the shaft to the end of the foundation, should be equal to the length of the foundation measured from the cylinder end of the bed to the centre of the shaft. The correct proportion of this foundation is about seven and one-half times the stroke of the engine. In a great many places this length of foundation on the shaft end of bed has been very much diminished. There is no better place to throw in a brick on an engine foundation than on the shaft end; here is where the weight is required.

The above dimensions which have been given will make the ends of the foundation equally divided on each side of the centre of the shaft in the centre of the apex of the foundation. The width of the foundation at the bottom should be equal to eight strokes of the engine. In the case of an engine 12-inch stroke this would be 96 inches.

Concerning the boiler foundations, T. F. Scheffler tells the American Society of Mechanical Engineers that his experience has found a depth of 3 feet below the floor line to be sufficient. A good, hard sandstone will give good results when brick is not used, which some people prefer. The width of the foundation should be 6 inches more on the floor line than the boiler side walls, which should be 24 inches for a boiler above 5 feet diameter. There has been considerable argument about the best height from the floor line to the fire-door opening; 22 to 24 inches is a satisfactory height, but 30 inches is considered a much more satisfactory and better height for the ordinary fireman, and in many instances where the fronts themselves do not permit of this height it has been obtained by raising them 6 inches or more above the floor line, and has been given good satisfaction. Another point that is debatable is the height from the bridge wall to the boiler. For 66-inch boiler 12 inches is a good height, as this gives an area between the bridge and I shell largely in excess of the boiler-tube area. Another point of consideration is the distance of the grate from boiler, which this writer gives as 26 inches for a 66-inch boiler burning soft coal, and this height he finds has proven very satisfactory. Such a height will evaporate more water than 30 inches.

Does boiler inspection pay? North Dakota has been experimenting with the question in a practical way, trying one year with, the next without. The year the inspection law was in force it got through the threshing season without a single explosion. The bill was then repealed, and the season just closed has witnessed seven explosions and seventeen fatalities. If human life is worth anything in Dakota, the inspection pays.—Power.

THE WHITE LOAF AND THE BROWN.*

WE now come to the finished article we are all so familiar with loaf bread. It was a Frenchman who once said that if he had the luxuries of life he could dispense with the necessities. I daresay there are a great many people besides this Frenchman who would be inclined to say the same thing. But I question very much if it would be for the good of the body, or the soul even, of anyone who was able and did carry such a thing into actual practice. No, it is the universal experience of all that plain good food is by far the best, not only where the immediate sustenance of the body is concerned, but in every instance where health and long life are looked upon as the *summum bonum* of our physical nature.

In childhood and in youth we prefer the luxuries, craving the fancy breads. But as time wears on, and a few years pass over our heads and we gain some little experience of life and living, our tastes for these fine things begin to wear off and go in for fine breads—French and Vienna breads. A few years more over our heads and we finally settle down to the good old plain loaf, common or fine, first or second quality, according to the size of our purse or our ideas as to the economy of using the common or fine types of loaf bread.

The first question that naturally occurs to us to ask is, why is wheat selected for the flour for loaf bread baking in preference to all other grains? Simply because it is the only grain which possesses in sufficient quantity, and of the proper quality, that material called gluten, which has the peculiar property of making a light and spongy loaf; not only agreeable to look at, but pleasant to the taste, easily digested, and nourishing to the body.

Wheat flour, then, is the principal ingredient in the manufacture of loaf bread. The other ingredients are salt and yeast. The yeast used may be what is called distiller's, brewer's or Parisian barm. From these in proper proportion, and used in the proper way, is turned out the finished staff of life.

A very few people, well-meaning in their way, calling themselves vegetarians, never cease to rail against the white loaf. Many diseases that humanity suffers are by them traced to the white loaf, and these diseases they say are increasing since roller milling has put into the hands of the baker an article which enables him to turn out a loaf finer and whiter than ever. To this I reply that flour made by the roller system is whiter because it is cleaner, purer, freed from all dirt that used to be ground up with the wheat on the old stone system; not because, as these people erroneously suppose, all the nutriment is ground out of it by rollers, and nothing left but pure white starch. If these detractors of the white loaf would devote a little time and study to the matter, they would find that it is not in the manufacturing of the flour or baking of the bread that any fault lies, but in the way in which the bread is consumed or rather I should say the stage at which bread is eaten. White-loaf bread should not be eaten until it is at least 24 hours old. New bread is not easily digested; stale bread is, and is more nourishing than new; properly toasted bread is more easily digested, and more nourishing than either new or stale. And to those interested in teetotalism it might be remarked that the stale bread contains less alcohol. The reason that stale bread is more easily digested, and therefore more nourishing than new, and toast more so than either, is not far to seek. Leaving water out of account, starch forms about 65 per cent. of the weight of bread. The proper digestion of starch depends upon the thorough chewing and the perfect mixing of the starch with the spittle or saliva in the mouth. Now bread is soft, full of moisture and forms into a smooth, doughy lump immediately it enters the mouth. In this state it is impossible to mix it thoroughly with saliva. Indeed, no one who eats bread in this state thinks of doing so, as it is felt to be in that state which favors the easy slipping over the throat without any particular chewing. Hence it enters the stomach in a state not only unfit for doing any good, but with the chance of doing positive injury. Stale bread, and toasted bread particularly, has lost a considerable proportion of its moisture, and feels drier; it consequently demands more mastication. It thus gets

the proper mixing with the saliva on which depend the thorough digestion of, and extraction of nourishment from, all starchy foods.

The use of brown bread is increasing and we think rightly so. It makes a good mixture and variety. But we would here put forward a word of caution to those who use it, and that is, that brown bread made from a mixture of white flour and bran should on no account be used. In fact I would even advise carefulness in the use of bread made from ordinary whole meal unless for very special reasons, and unless it was known for certain that the whole meal used was made from specially selected wheats and great care exercised in the grinding. By far the best, and that which in itself most nearly approximates to a most perfect food, is the loaf made from a pure wheat meal from which have been carefully extracted the broad particles of bran. Broad bran ought not to be eaten. It is simply a woody fibre, is of no value whatever as a food, and in the human system may, and often does, cause unnecessary irritation and trouble.

JAPANESE CEREAL CROPS FOR 1894.

IN its ninth annual report, just issued, the Japanese Department of Agriculture and Commerce has made an estimate of area, yield, and total production of the principal cereal crops of the Empire. The most important cereal crops of Japan next to rice are barley, naked barley (*Hordeum nudum*), and wheat. Barley is cultivated in almost all provinces, and, either as flour or whole grain, boiled with varying quantities of rice, is used as common food, both by farmers and other classes of people in Japan. For this purpose it is whitened like pearl barley, steeped for five or six hours in water and then boiled. One of the most common articles of food in Japan is miso, which is prepared by pounding together boiled soy beans, salt, and the koji (yeast) prepared from common barley or naked barley. Barley is also used for brewing beer, making ame and other confectioneries, and as food for horses and cattle. Its straw, bleached and plaited, is much used for manufacturing summer hats and other articles. Naked barley, is almost as important a cereal as ordinary barley, and the area devoted to its cultivation is nearly as large as that under ordinary barley; but it is chiefly grown in the western and Southern provinces. It is used for the same purpose as common barley. Wheat is cultivated in nearly all the provinces. It is simply used for preparing soy, vermicelli, onmen, undon, and several kinds of confectionery.

For preparing onmen (a kind of vermicelli), wheat flour is made into dough with salt water and then drawn out into fine threads which are cut into certain lengths. The only difference between onmen and common vermicelli is that no oil is used in the preparation of the former. For preparing undon (a kind of macaroni) 10 parts of wheat flour and 3 parts of potato starch are kneaded by hand with a certain quantity of brine, then rolled out into thin sheets, folded into layers, which are cut into fine threads and dried by the sun. Wheat straw is used for thatching roofs, litters, etc. A small quantity of both barley and wheat is annually exported to foreign countries, the former chiefly to Hongkong and Vladivostok, and the latter in the form of flour to Russia, Corea, etc., and in the form of grain to Hongkong, England, etc.

The manufacture of straw plait and other straw goods for bleached barley stalks is assuming large proportions in Japan. Some farmers bleach the straw of the barley which they have grown in the intermissions between field work and sell it to the plait manufacturers; but they generally, after harvesting and thrashing the barley, cut the upper part of the straw to the length of about a foot and sell it to the straw plaiters. Although Japanese straw is not so good as that of Italy, yet it is better quality than that of China and other countries. In Japan, articles of straw, especially toys, have been made for many centuries; but recently, on account of the increasing exportation of straw plait, to foreign countries and especially to the United States, the manufacture of plait has increased year by year.

The total area in cereals is, in round numbers, 1,774,000 square *chō*, or 4,774,000 acres. Of this, 1,042,900 acres, or about one-fourth, is devoted to wheat, and produces 3,218,678 *koku*, or 16,477,370 bushels; an average of 7.56 *koku*, or 15.8 bushels to the acre.

THE EFFECT OF ABRASION.

THE shortest route from the wheat kernel to the flour barrel, writes Wm. G. Clark, in the American Miller, is certainly the best, providing the proper manipulation is carried out. The long handling and friction of stock in elevators, conveyors and spouts will have the effect of pulverizing a certain percentage of the impurities in the flour, and reducing a small percentage of the flour granules into an impalpable dust.

It has been demonstrated by baking tests that flour with the natural sized granules preserved will make a stronger and longer loaf of bread, and will take more water and better suit the bakers' trade. How small these granules can be reduced and still not injure their water-absorbing qualities, I cannot say definitely; but I think that those will pass through a No. 14XX cloth are as small as can be depended upon to make strong bread of a quality that will suit the trade in general. In making bread the finest particles of flour will absorb the water quicker than the coarser particles; consequently, the fermentation will have gone further in the smaller atoms while in the sponge and cause an uneven working of the dough throughout the process of breadmaking. I claim, therefore, that the impalpable dust that would sift through the finest cloth made is a detriment to good flour, and that the effects of the injury will be in proportion to the amount of such dust present.

Again, when the cellular formation of the flour granules is broken, as in finely pulverized dust, the carbonic acid gas, which is formed by fermentation, cannot be retained or its benefits utilized with as good results, as these minute cells, where the carbonic acid gas performs its function of the raising of the dough, are broken. It will be plainly seen what the effect will be.

A better idea of the granular particles which make up flour can be obtained by examining some flour under a strong magnifying glass. It will be observed that the flour in general appearance resembles glistening salt or snow, and appears as if it could be easily reduced still finer by rubbing it between thumb and fingers, which is the case. The writer has taken coarse middlings and reduced it into flour in this manner. The particles are tender, and for this reason, the less abrasion or handling before purifying or grinding the better the results. This is one reason why the leading mills of the Northwest, which mill entirely for middlings, dispensed with conveyors under their purifiers and grading reels.

It is an undisputed fact that the conveyor is the most objectionable of all mechanisms handling material in a mill. It takes up valuable space and power, and should not be used where elevators and direct spouting can be adopted. However, on wheat the conveyor is not so bad. It does some good in helping to scour the grain, and it makes a good mixer; but in handling flour products it is a detriment to highest results. I think that a conveyor six feet long will do no more damage to stock than an elevator ten times the length. The conveyor is like a wagon without any wheels; it drags the stock along and wears it out.

Next to the conveyor I consider the abrasion of stock in long spouts more injurious than elevators. I think there is a field for a good belt carrier to take the place of the conveyor. A mill built with high floors, where conveyors can be dispensed with will in the future meet with the approval of advanced millers. I do not look for a radical change in the construction or plans of mill building, but there will be some changes made. In the arrangement of break rolls and scrapers, the objective point will be to avoid handling and abrasion of break stock.

The break stock being the starting point, and the nature of this stock having bran, middlings and flour present, it is, in my mind, the most important place to avoid abrasion. The result will be cleaner chop and better middlings, and the after separations will be made more perfectly, the result being better flour. The Hungarian flours, I am informed, are made without the use of an elevator or conveyor, all the handling being done by hand. This, of course, would never do for progressive America; but the nearer we can manufacture flour after this principle by the use of machinery the better class of flour can be made.

The earliest fanning mill or winnowing machine was invented in China, and in use there for centuries.

* Part of a Lecture delivered at Dundee, Scot. and, before the Dundee Institute of Mechanical Engineers, by William G. Anderson, Manager of the Dundee Flour Mills.

STEAM BOILER INSURANCE.

By W. H. WALKMAN, OF CANNERS' MAGAZINE.

WHEN the writer was a small boy he heard someone speak of getting his life insured, and if it were possible to do this he wondered why it was that everybody did not take out a policy at once. This thought was due to a mistaken idea as to the meaning of the term "life insurance," for we thought that if a man had his life insured he would never die. In due course of time we learned that it was no guarantee of long life at all, but meant only that when a person, whose life was insured, died, his or her heirs would receive a certain sum of money. This made the matter appear in an entirely different light and we were not so enthusiastic as I fore; but when we became old enough to fully understand the matter we saw that it had its advantages and at the present time we heartily believe in life insurance.

We also believe in steam boiler insurance. In some respects they are alike. If a man wants to have his life insured, he makes application to some company who are engaged in that business, and is sent to the physician whose duty it is to examine applicants. The physician orders the candidate to do certain things, in order that he may know whether it is safe to issue a policy to him or not. He thumps and pounds him in different places, asks him to take long breaths, measures the expansion of his chest, listens for any sound that indicates weakness of the vital organs and makes his report accordingly. If it is favorable, the policy is issued, and generally no further attention is paid to the policyholder, except to see that his premiums are promptly paid, and when he dies, to pay the insurance money according to agreement.

When a man wants to get a steam boiler insured, he also makes application for a policy to a company in that line of business. The company sends one of its inspectors to examine the boiler and ascertain if it is a good risk. This inspector strips the boiler and examines every part of it. He thumps and hammers it with his small steel hammer, and listens carefully for any sound that will inform him whether any of its vital parts are weak or decayed; he sounds every sheet, head and brace, and taps every rivet that he can reach to see if it is loose. If he finds any defect, orders it made good before the policy can be issued. If he is in doubt about any part that he cannot reach with the hammer, he may apply the hydrostatic test to satisfy himself that it is more than strong enough to withstand any ordinary steam pressure. Up to this point boiler insurance is very much like life insurance. But the boiler is not allowed to go without further notice when the insurance premium is paid over. The insurance company make periodical inspections of it, and note how it is cared for and managed. If any defects are found, they must be remedied at once or else the policy will be canceled. They make a point of claiming to prevent boiler explosions to a large extent; hence, if a boiler does explode while under their care, it not only costs them a good sum of money, but it injures their reputation, and thus proves a damage in two ways. Therefore, they have two objects in view when they strive to prevent boiler explosions, each one of which is enough to cause them to exercise care in placing and continuing a policy in force. It is the prevention which manufacturers and steam users prize and pay fully as much for as the idea of getting their money when an explosion does take place.

If a man dies, no one thinks of blaming the company that issued a policy of insurance on his life, for the way in which he died; but if a boiler explodes, the insurance company that was interested in it is looked on with suspicion at once. True, some of the defects in boilers are very difficult to discover, especially where the tatter are nearly full of tubes below the water line, but every boiler that does explode, shows that by a careful and thorough examination of every part of it, the defect might have been discovered in time to prevent the catastrophe. It is quite possible that some of these defects might have been brought into existence between two inspections, but it is also true that inspectors are not afforded all of the chance that they should have to examine every part of the structure. Even if it does become necessary to remove some bricks for this purpose it should be cheerfully done, as the result of it may mean much to all parties concerned. It cannot be denied that risks are sometimes taken in cases which are not wholly satisfactory, for competition in this line of business has its effects just as it has in other lines, and a company will take some risk rather than let business go to a competitor.

In a certain case, well known to the writer, the inspector wished to have some bricks removed from a top of a boiler so that it could be determined whether the iron had been weakened by external corrosion or not. The case was stated to the proprietor in a respectful manner, but he flew into a rage at once, and told the inspector that if he could not insure the boiler just as it stood, he might "get out" without delay. Both inspector and engineer might have taken the advice so vigorously given, but as neither of them knew that the plates were corroded on the outside, and as both of them knew that

they were perfectly sound so far as could be judged from the inside, they went quietly about their business. The engineer removed the bricks in question, affording access to the top of the boiler and put them back himself. He lost no time, however, in looking up another situation. In this case there was no real danger, but to one could say positively that none existed; still if danger had been imminent the action of the proprietor would have been the same, for he new nothing of the condition of the boiler.

Proprietor, inspector and engineer should all work together in striving to get at the true state of affairs, for all are interested. There was a time when boilers could be insured with some companies just as houses are, but experience has been a wise teacher, and few are now insured without careful inspection. There is no doubt that the periodical visits of the inspector act as a check on the careless and incompetent engineer. Unfortunately, however, they do not always change him into a competent and reliable person. Cases are known where the gauge cocks were carefully cleaned out just before each one of these visits were made, and after the inspector had satisfied himself that they were in good order, they were not disturbed until it was nearly time for another visit.

It is claimed by some that the practice of having boilers inspected and insured by the inspector in lowering the wages of engineers, for, with the inspector making visits every three months, a cheaper man will answer every purpose in the estimation of steam users. This, however, is probably not true to any extent, for while it may be spoken of as an excuse for lowering wages, it is apt to be done only by those who intend to reduce wages any way, and think this to be a good excuse to give for "penny wise pound foolish" policy. It is a notable fact that where the highest are paid to engineers, and where the best service is rendered in return, the boilers are generally insured. A sensible manager will always hire a good engineer and pay him fair wages, and a foolish one will hire the one that will work for the smallest amount of money. The boiler insurance problem has little effect in either case under any conditions, and usually none at all.

Steam users who have never had their boilers insured and who contemplate trying the experiment, are naturally anxious to know whether the insurance company will require them to employ a more competent man to run their boilers or not. To this it may be replied that if a man will keep sober and make every reasonable effort to give satisfaction with his work, the insurance company will offer no objection to him. Their leniency in this respect is, in fact, sometimes to be wondered at. Cases are known well to the writer where it would have been perfectly justifiable for the company to cancel the policy unless the boiler attendant was removed, because he persisted in practices that were positively dangerous. Very little trouble, however, was encountered in these instances, for the insurance company would send their inspectors around to visit such a place at frequent intervals, ostensibly for some purpose, but in reality to observe the proceedings of the suspicious man, and to remonstrate with him, and impart information as to better methods to pursue, the object being to remove the objectionable practices without depriving the perpetrator of his situation. Inspectors while going from place to place, gain much information concerning the behavior of boilers under different conditions, and the result of experiments made to determine various problems of interest to engineers and this information is always at the disposal of men who operate plants where the insurance company is interested, since obviously it is to their interest to have men who thoroughly understand their business in charge of boilers on which they carry risks.

The publication of data regarding boiler explosions in a systematic manner, as practiced by some of the insurance companies, is to be commended, but it seems as if the publication of lists of so-called defects were at times misleading, or at least of little value. Take for illustration, a report that during a single month 149 broken and loose braces and stays were discovered, and that of this number thirty cases were dangerous. The writer is of the opinion that if 149 braces were loose or broken, then 149 were dangerous, and if 149 were not dangerous then they could not be either loose or broken. All braces are supposed to be in a boiler for a certain purpose, and how can they act in the way that was intended if they are either loose or broken? We are told in another case, that 291 plates were found to be fractured, but only 43 were dangerous. If a boiler plate is really fractured, is it not dangerous? If it is not dangerous, then why is it reported? Of defective riveting 1228 cases were found, but only 66 were reported as dangerous; 328 defective water gauges were found, with only 84 reported as dangerous. The writer has always supposed that if a water gauge was not defective it would show a true water level. It cannot be imagined how a water gauge can ever be defective, and still not be in a dangerous condition. If 59 safety valves were found to be of defective condition, it seems strange that but 19 of them were dangerous; 476 pressure gauges were defective, out of which 42 were dangerous. This latter is easily

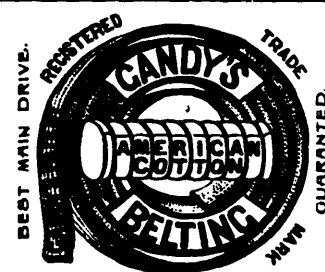
understood, for while a gauge which indicated more pressure than really exists in the boiler is defective, it cannot be said to be dangerous.

While writing, one of several points worth noting in connection with boiler inspection suggest itself. An inspector, for example, comes to a plant, examines a battery of boilers, and tells the engineer what defects he finds, making suggestions as to what might be done for the improvement of the plant, or orders some changes and takes his departure, leaving with the engineer no written report of what he finds and wants. The engineer proceeds to make such changes and renewals as he understands will be satisfactory to the inspector, the boilers are put together, filled with water, fired up and the plant is started. About three weeks afterward, a written report is sent to the office telling what the inspection revealed, and what repairs are needed. When this is referred to the engineer, he discovers that there apparently was not a perfect understanding between the inspector and himself, the report calling for things that have not been done, although there was a desire on the engineer to do all that was required. Such possibilities should be guarded against at once. All that the inspector has to do is to leave a written report with the engineer at the time the inspection is made. There can be no chance of misunderstanding.

A certain inspector came to examine some boilers at a plant where his company was interested, but found that the engineer was not quite ready for him, not yet having washed out the boilers. He started to do this at once, but the inspector objected as he claimed if a stream of water was turned into them they would be wet, and it would be unpleasant work for them. The engineer, therefore, allowed them to remain as they were but was much chagrined two or three weeks later when the report came, that the boilers were in good condition, except that they needed a good washing out. Ever since then no inspector goes into those boilers until they are washed out, without regard to polite requests made to let them remain as they are.

Concerning the recommendation of certain methods for future use in caring for boilers, the inspector should be discreet and careful, for no universal rule will answer the purpose. This is due not only to the fact that different waters are used for making steam in different localities, but also because the inspector cannot know all of the conditions found in every day practice. Usually he does not recommend any patent preparation for the prevention and removal of scale, etc., but favors the use of soda ash, crude petroleum, or something similar. But suppose that an engineer has used soda ash, for example, and found it unsatisfactory for some reason or other. He succeeds in discounting its use by showing his employer that he has good reasons for rejecting it, and secures something else that does good work and is not objectionable. The inspector comes in due time, looks boiler over, and goes away. When the report of the inspector is received, the engineer is disgusted to find that soda ash is recommended to prevent scale. Of course the engineer has to go all over the matter again with his employers, and of course he gains his point, and the soda ash is not used; still it has been the cause of much talk and some unpleasantness, both of which were unnecessary. It is better for the inspector to ask what has been used in the past, and if the article is not positively objectionable to him, let him recommend a continuance of it, or let both engineer and inspector agree on something to be recommended, and thus prevent unnecessary conflict.

A wheat pest has appeared in parts of Pennsylvania in the shape of a small green bug or louse, which it is feared is sapping the heads of the growing grain.



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FOREIGN WHEATS IN ENGLAND.

COMMENTING on the qualities of various foreign wheats used in England, "Felix Holt" says in Liverpool, England, Milling: From America to India is a far cry; from American to Indian wheat is a great descent. It would be untrue to say that American wheat is all better than Indian, or that all Indian is worse than American. Both have virtues, but those possessed by Indian are very subdued in comparison with the American. We are getting wiser with regard to wheat, and from experience we have learned that Indian wheat fills a useful function in combination with other wheats. Owing to its unprepossessing appearance this wheat has been degraded to a lower position than it legitimately deserves. Whatever may be said about it, and whatever faults it may have, it is at least honest. Some wheats are very deceptive; notably, common Azimas, some Plates, also, some western winters, with a few others, less known, but Indian wheat may generally be relied on so far as its particular characteristics are concerned.

The principal feature of Indian wheats is dryness, containing, as they do, only about eight per cent. of moisture. They are deficient in gluten, but what gluten there is is very sound and reliable. They are what are called starchy wheats, and, containing good sound, dry starch, they fulfill a useful part when mixed with weak, watery wheats, such as damp English or poor, watery Russians. When properly cleaned by washing, Indian wheat produces flour of no mean color, which will compare very favorably with that from far more expensive and pretentious wheats. Good Bombay is without doubt one of the very whitest wheats grown and, by reason of its dryness, combined with a moderate quantity of gluten, will make a fair showing in bread; but, of course, its best application is in giving color to strong wheat. Delhi wheat is very useful and comes somewhat near Bombay, except that in some cases it contains an admixture of red earth or baked clay, which is exceedingly difficult to deal with. The red variety is fine, bold wheat and fairly strong, but the strongest of these wheats is considered to be Calcutta, which is scarcely so good a color. The Kurrachees, both red and white, are very useful, although generally very foul and dirty. Of the two I give preference to the red, being, perhaps rather stronger and an equally good color when clean.

As mentioned above, Indian wheat is honest. No one would expect to get flour from Kurrachee wheat equal to that from American springs, and so would not attempt it. They might try to get strong flour from some kinds of Russian and be woefully disappointed. Some millers use large quantities, with very satisfactory results, and these, by no means, small millers. A great drawback is the very large quantity of dirt and extraneous matter mixed with it, which tends materially to enhance its cost. This season it is exceptionally foul, which may possibly be accounted for by the low price prevailing, the grower or dealer presumably, attempting to improve his price by increasing his bulk. Whether or not this is generally done, I had it from an old Indian civil engineer that he had actually seen dirt mixed with wheat to increase its weight. Some of the dirt is attributable, no doubt, to weevils. These little insects bore into the grain, releasing a portion of flour, which, mixing with the accompanying dirt apparently, swells its bulk, although in reality it is not dirt at all, but flour granules made dirty.

Whatever may be the future of Indian wheat, there is no doubt that it will always be useful and always be welcome to a great many British millers. There is nothing exactly like it, and nothing will exactly fill its place, although in some respects certain varieties of River Plate bears a slight resemblance, that is in dry granular starchiness, but perhaps a closer resemblance to it by its near neighbor, Persian wheat. This is sometimes atrociously foul, being reduced with 15 per cent. of barley admixture. This is, however, rather stronger than the Indian varieties, being, probably, grown upon more elevated land. A near neighbor is Syrian, a wheat with very little to recommend it, but its fair appearance might lead a novice into serious difficulties, in which respect it greatly differs from honest Indian. A somewhat similar wheat is Egyptian, but far superior. This comes somewhere between Indian and Syrian. It has a tolerably fair color, but very little strength, and may prove

somewhat dangerous in inexperienced hands. It is exceedingly hard, and washing does not appear materially to soften it or render it easier to reduce with rolls. On this account it may prove dear wheat, although bought at low prices.

The greater portion of Egyptian wheat imported into this country is used for sizing, for which purpose it seems peculiarly adapted, as many wheats are quite unsuitable. All clear wheats, such as Egyptian, Syrian and hard Indian, seem to come in well for this purpose, but one and all are best left out of any flour-making mixture. There may be some inducement to use the best of them when other wheats are scarce and dear; at the present time there is no need to touch them for flour-making. This warning may appear superfluous to experienced millers, but there are some who, to my knowledge, have been woefully deceived by the fair appearance and comparatively low price of some of these wheats. We may take it as a safe rule that price invariably bears a close relation to quality. If we judiciously buy good wheat, we can scarcely fail to get good flour, but whenever we descend to low-priced stuff, depend upon it, we are on dangerous ground. There is a common saying that "high interest means poor security." Even so any attempt at high profit is a trading with security. We may, if we are clear, succeed for a season on low-class wheats, but retribution will surely overtake us, for low-quality wheat is sure to be variable. Variableness in high quality wheat is not particularly felt, as there is a good margin for possible declension, but variableness in that which at best is scarcely good enough, must surely bring us into trouble sooner or later. As a matter of fact, mills using low priced wheat are the very mills that have a reputation for variableness, but let us say, in a whisper, they sometimes manage to return a good profit. Use some low-priced wheat, but also use something thoroughly reliable, so that the inevitable variation is neutralized, if not entirely overcome. Of all low priced wheats, I know none so useful and reliable as the Indian. That is, of course, so far as their particular qualities are concerned, dryness and fair color.

ONTARIO CROPS

THE latest report of the Ontario Bureau of Industries, in making conditions up to June 15, says:

Fall Wheat. This crop has stood the heavy rain and changes of weather much better than the spring crops. Throughout the entire province some low lands have been flooded, and the crop drowned out. On very heavy clays there has been some damage, but on light and loam soils very little injury has resulted. The reports for this time of the year are quite up to the average. The frost of the first week of June was felt to a very slight extent. The reports from all parts of the province are practically the same—that after the rain the wheat soon picked up and showed less injury than had been supposed. No more than usual has been ploughed up and resown to spring grain. Heading out was in progress on the 15th. In some places the growth was quite rank. With favorable weather for the next three weeks a good crop of fall wheat may be looked for. At present the conditions promise an average yield. In the Lake Erie district the crop was fair to very good except on low lands and a very heavy clay. Damage by frost was very slight. In the Lake Huron district most of the reports are for a good crop. Some attention is given by correspondents to the benefits of drainage, which were very apparent during the present season. In the Georgian Bay counties a small fraction of the crop has been lost, but on the whole it is quite up to the average. In the West Midland group the best reports come from Wellington, and the worst from Middlesex, where, however, the crop is reported fair. Along Lake Ontario the reports are also favourable for a fair crop—fully up to the average. In the Eastern Counties the amount of fall wheat is too small to affect the total, but reports are favourable. To sum up, the present condition is fair, with prospects of a crop quite up to, if not a little over, the average, with favourable weather.

Spring Wheat. As usual there is but little spring wheat in the western part of the province, while in the eastern half the acreage is declining. The low-lying lands have suffered severely, but the higher lands have fair crops. The grain was sown in fine condition and is

now recovering rapidly from the extra rain. In many places correspondents state that the rain did more good than harm. In the Eastern Counties about one-third of the spring wheat is either destroyed or is in poor condition; two-thirds may be said to be fair to good. Less than usual has been sown in the Northern districts. On the whole, present indications are for a crop about two-thirds of the average.

Barley. In the Lake Erie district only a moderate quantity has been sown, and the condition is under the average. It has suffered from rain and also from frost. In the Lake Huron district barley is not in so good a form as spring wheat; it is backward and a little yellow in places, but is now improving. In the Georgian Bay district rain and frost did some injury, but an improvement has taken place since warm weather returned. In the West Midland district the crop is reported as being uneven or patchy and backward. In the Lake Ontario district the condition is a little under the average. In the St. Lawrence and Ottawa district the condition is reported as more favourable, and with good weather a fair crop will be obtained. In the East Midland district the crop is fair. In the Northern districts nothing of any consequence is reported. On the whole it may be concluded that the barley has suffered quite extensively, is backward in growth, but at present is making very rapid progress, and with a continuance of favourable weather, will probably come up to nearly the average of the last two years.

Oats. The reports from every section of the province are practically the same, and to the following effect: The rains drowned out the crop on low-lying fields. On higher lands and those underdrained little or no damage was done. At the time of reporting the crop was making a very rapid growth, and becoming somewhat rank in straw. A few fields were baked by the hot sun, but on the whole the prospects were most promising, the only unfavourable report being as to the low lands. The crop is on the whole somewhat more backward than usual, but present conditions point to a yield fully up to the average.

Rye. There appears to be less and less of this crop sown every year. As far as reported upon it came through the winter in good condition, was favourably affected by the continued rains and now is in excellent condition, having made a very heavy growth.

Peas. The continued rains did more damage to this crop than to the other spring sown crops. Early sown peas have done well on high lands, but on low lands have suffered heavily. The rains retarded sowing, so that a large acreage has been put in late. As a consequence the yield will be a little short in quantity, but at present the quality of the crop is in general all that could be desired. The reports from the largest pea counties of the west are quite favourable.

Corn. In the south-west a considerable quantity had been planted before the rain came, and much of it had to be replanted. The crop over the province is backward, growth being checked by cool weather. The condition at present is hardly up to the average. The late start may interfere with the maturing of the southern ensilage variety. Many report the young crop as not looking very thrifty. From all parts of the province come reports of replanting, of late planting, and of slow growth. Prospects are for a crop a little under the average in quantity.

Buckwheat.—Two-thirds of this crop is grown in the Lake Ontario and the St. Lawrence and Ottawa groups. Very little had been sown before the rains came on. At the same time of writing farmers were just putting in their crops. The only report possible at this time is that quite an extensive acreage will be grown this year.

Beans.—Early planted beans, especially in gardens, were cut off by late frosts. Most of the crop has been put in late. The acreage will therefore probably be below the average. While many report that the crop is now coming on well, the general opinion is that the early frosts and the lateness of planting will cause a diminished yield for this year.

The Lake of the Woods Milling Company recently shipped a large quantity of flour to the sufferers by the recent floods in British Columbia. The C. P. R. carried the flour free of charge.

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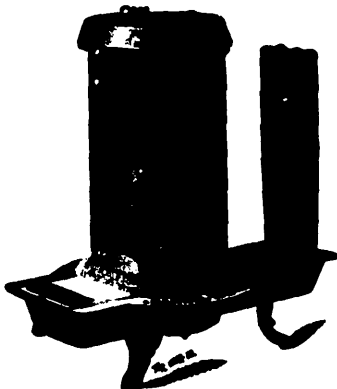
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