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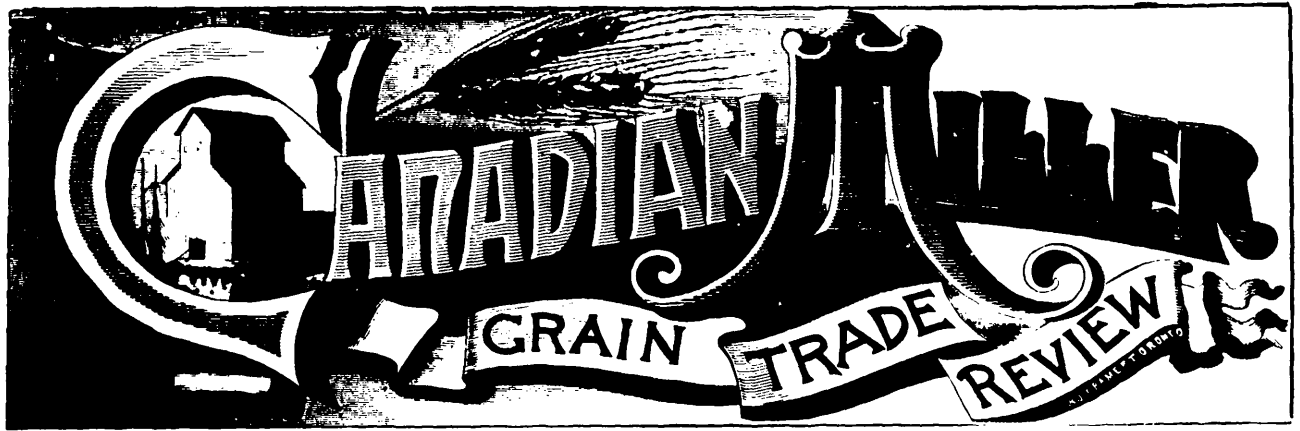
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NEW SERIES "MECHANICAL AND MILLING NEWS"

OLD SERIES, Vol. XI, Number 1
NEW SERIES, Vol. III, Number 1

TORONTO, ONT., OCTOBER, 1893

Published Six Months a Year
Subscription Lists



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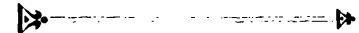
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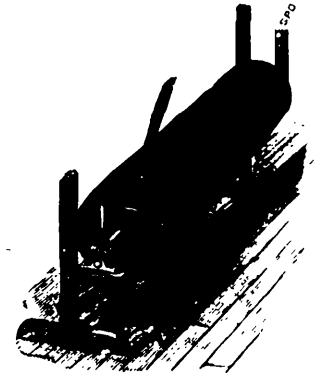
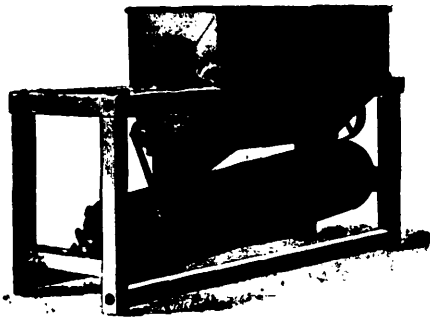
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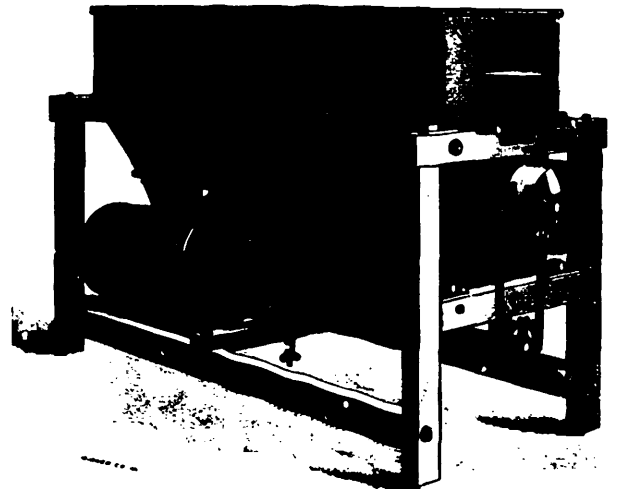
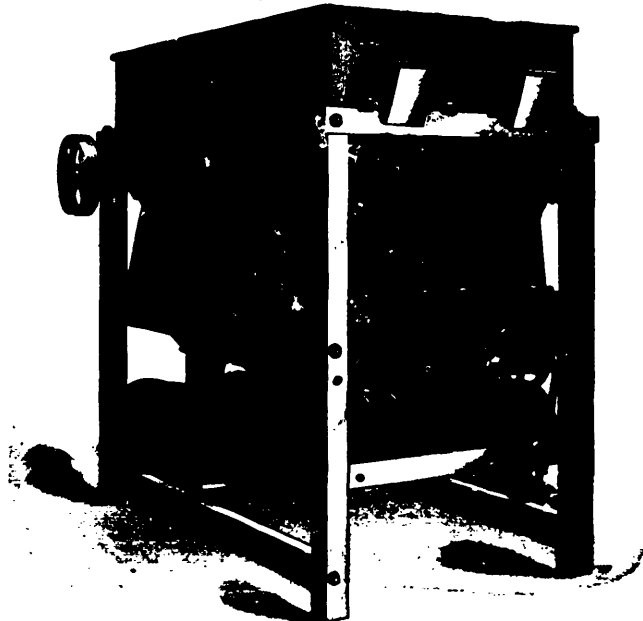
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THE CANADIAN MILLER

OLD SERIES, VOL. XI. NUMBER 10.
NEW SERIES, VOL. III.

TORONTO, ONT., OCTOBER, 1893

TERMS, \$1.00 PER YEAR
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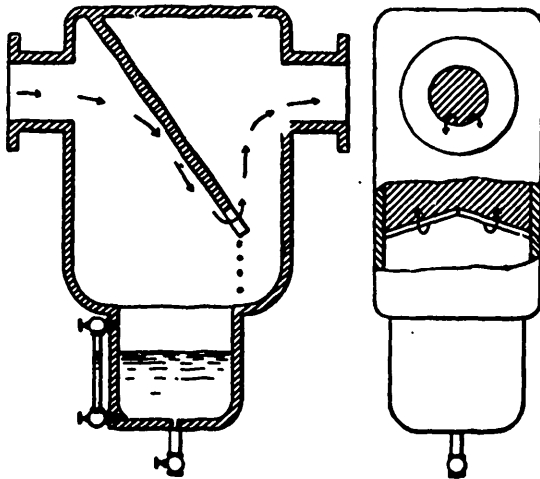
ON SEPARATORS.

THIS is a day for watching the small economies of business. The time was, as the Locomotive says, when manufacturers paid comparatively little attention to the smaller losses that occurred in their mills and factories. Competition was not severe, and it was not considered necessary to keep a watchful eye on the innumerable small leaks through which profits escaped. Competition in all lines of manufacturing has increased tremendously, and the narrow margins on which business must be done make the most trifling losses worthy of serious consideration. This studied economy shows itself in the use of steam; and we find mills fitted out with triple-expansion engines and running at pressures that call for the utmost skill in designing boilers that shall carry these pressures safely. The drips from the pipes are carefully collected and returned to the boiler-house, and heat that otherwise would be wasted is utilized for heating feed-water. As the utilization of waste is increasingly realized, new problems are continually arising and forcing themselves on our attention. Thus, in saving the heat from exhaust steam, it was soon found that, when open heaters are used, the oil particles that are carried along from the engine pass into the feed-water and give trouble in the boilers.

The action of oily or greasy matter in boilers will be understood from the following extract from the Locomotive for March, 1885: "The action of grease in a boiler is peculiar. It does not dissolve in the water, nor does it entirely decompose. Neither does it remain on top of the water; but it seems to form itself into what may be described as 'slugs,' which at first seem to be slightly lighter than the water, or just such a density that the circulation of the water carries them about at will. After a short season of boiling, these 'slugs' or suspended drops seem to acquire a certain degree of stickiness, so that when they

come in contact with the shell and flues of the boiler, they begin to adhere thereto. Then under the action of heat they begin the process of 'varnishing' the interior of the boiler. The thinnest possible coating of this varnish is sufficient to bring about overheating of the plates. We emphasize the point that it is not necessary to have a coating of grease of any appreciable thickness to cause overheating and bagging of plates and leakage at seams. The time when damage is most likely to occur is after the fires are banked; for then, the formation of steam being checked, the circulation of water stops, and the grease has a chance to settle on the bottom of the boiler and prevent the contact of water with the fire-sheets. Under these circumstances a very low degree of heat in the furnace is sufficient to overheat the plates to such an extent that bulging is very likely to occur." Of course there is greater likelihood of trouble with some kinds of oil than with others, animal oils being most troublesome, and mineral oils least so. Various means have been devised for preventing the harmful effect of oil in boilers, and one of the most

common of these is the separator. The object of this appliance is to free the steam of such particles of water, oil or dirt as it may hold in suspension. When the object is to remove entrained water, the separator is placed in the steam-main, near the engine; and when it is used to remove oil, it is placed in the exhaust-pipe between the engine and the heater. There is a great number of makes of separators on the market, but all of them depend for their action on the great mobility of steam and the inertia of solid or liquid particles. For convenience we may divide them into two classes, which we may call momentum separators and centrifugal separators, respectively. Our illustrations of these two types are to be considered merely as diagrams illustrating the principles of the separator, and in no sense as pictures of appliances that are in actual use. Fig. 1 shows the principle on which the momentum separator is based. Steam enters it at one nozzle and leaves it by the other, its general course being indicated by the arrows. Directly across the course of the steam there is a plate of iron called the baffle-plate. This baffle-plate causes the steam to deflect downward, but the oil particles, on account of



FIGS. 1 AND 2. DIAGRAMMATIC VIEWS OF THE MOMENTUM SEPARATOR.

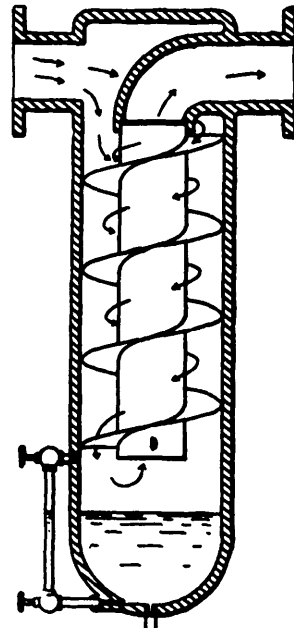


FIG. 3. DIAGRAM SHOWING THE PRINCIPLE OF CENTRIFUGAL SEPARATORS.

their momentum, impinge against the plate and collect in drops until they run down and fall into the receiver below. Usually the baffle-plate is not cut square across at the bottom, but runs obliquely across the casing, as shown in Fig. 2, so as to lead the oil-drops to one side and prevent them from falling directly through the main current of steam. The reservoir or catch-basin is provided with a glass-gauge to indicate the height of the oil and water in it, and also with a cock for drawing them off. Some provision should also be made for removing the particles of mud and grit that are liable to collect. Fig. 3 shows a centrifugal separator in which the steam is made to circulate spirally around a central core, the centrifugal action so developed throwing the particles of oil and water to the sides of the casing, where they collect and flow down into the catch-basin below, a glass-gauge and a cock being provided, as before. The principles illustrated in these diagrams are applied in practice in a great variety of ways.

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AN INDIA RUBBER SOLVENT.

THE demand for both gutta-percha and india rubber is extensive and increasing yearly, owing in a large measure to developments in telegraphy and electrical engineering, besides many uses which are being found for them in minor industries. The present supply of gutta-percha is not sufficient to meet the demand, and it is believed that unless steps are soon taken to preserve the sources of supply there will be an actual dearth of this commodity. This has had the effect of raising its value in the market, and while in 1860 the price of the best quality of refined gutta-percha was \$1,200, by 1890 it had advanced to \$3,000 per ton. An attempt has been made to economize this useful material by combining it with rubber, which is a much cheaper article, varying as it does in price from \$750 to \$1,600 per ton. In a new invention, the two materials are

blended by a cheap process, both being partially dissolved, and afterwards intimately mixed. The main feature of the invention is the employment of a substance hitherto little known or understood, but which exhibits singular properties. This substance acts as a solvent both on gutta-percha and rubber, and combines with them in such a way as to form a united and homogeneous mass, which possesses the qualities of the best gutta-percha, while being superior to it in nonoxidizing properties, elasticity, tensile strength and insulating power, besides being produced at much smaller cost.

BOILER CONNECTIONS.

IT is a pretty good plan to make all your connections with pretty good sized piping, so as to avoid the chance of having them stopped up with a little scale as is too often the case. For connecting up watercolumn, or other combinations of a similar character, use at least inch pipe, and though it may look out of proportion, it is better than having them stopped up and leave you without any means of knowing where your water is in the boiler. Steam gauge connections do not come under this head as they should come out of the steam space of the boiler and there is not the liability of being clogged that there is in water connections, still a little larger than is generally used will do no harm and might be an advantage in some instances.

In piping up boiler fixtures, or any other kind for that matter, it is a pretty good plan to make a free use of "crosses" instead of using "ells," and then plugging up the two free ends.

This gives you a chance to "probe" both ways by taking out the caps and is often very handy, indeed in keeping things cleaned up thoroughly and is a good plan to be used in all kinds of piping that is liable to be stopped up from dirt or scale.

IEWS AND INTERVIEWS.

A Pinch of Dust.

The dangers that lurk in the air form the subject of an essay by M. de Nansouton on "The Atmosphere of Large Towns and Micrography." He points out the increased pollution of the air in Paris from the factories worked by steam machinery. An analysis of dust and rain particles reveals that a remarkable collection of diverse objects may be absorbed at every breath in the street of a large city; silex, chalk, plaster, pulverized rock, charcoal, hairs, fibres, vegetable refuse, starch, pollen cells, etc. A specimen of dust collected from furniture on the third floor of a street in Rennes contained all this and nearly three million bacteria in addition. A gramme of dust about fifteen grains in movement in the street encloses about 15,000,000 bacteria.

Some Superstitions.

Mr. J. H. Macadam, an English writer, tells of various superstitions connected with the baking of bread. In the North of England there used to be prepared what was called the "Graving Cake," a slice of which was given to all those who came to see the new-born child. There used to be a custom in the Highlands of Scotland of taking a new-born child and tying it up in a sheet along with bread and cheese, hanging them all on to the swinging hook that hung over the open fire, and turning it three times to keep the evil spirits away from the child. In Asia Minor, if a careful mother has to leave her child before he is forty days old, she places beside him a bit of bread, a pair of scissors, and a little image of Christ. A custom like that once prevailed in England, for Herrick says:

Bring the holy crust of bread,
Lay it underneath the head,
For a certain charm to keep
Hags away while children sleep!

Good and Bad Milling.

Milling is rendered successful or unsuccessful in various ways, says John Metherell, in Milling. Bad mill locations and bad management lead to disaster; unskillful milling and bad management follow in the same direction; good milling, but a defective system, the milling being good only as far as system is concerned, is a fruitful source of non-success, particularly when some competitor is present. Unwise investment, coupled with waning interest, is an insidious and hidden foe to success, even when supported by good management and milling. On the other hand, a multiplicity of combinations can be enumerated to render plants successful and everything being as it should be. With reference to investment, location, management and the miller, the question of system is the one paramount of all others, and in my mind answers most of the questions involved in satisfactory and unsatisfactory milling, viewed in relation to dollars and cents, and forcibly answers it in the ratio of percentages and maintenance of qualities, with relative yields.

Wheat Surprises.

The Milling World, whose editor seldom wears gloves, sails in after this fashion in discussing the many chameleon-like changes that have marked the course of the wheat market this year: "What a year for surprises in cereals! The trade got ready for a big drop in wheat prices as soon as the new spring-wheat crop began to move. Within a week after that movement began, wheat advanced to cents a bushel in the Northwest. Then the trade got ready for a big rise in wheat prices on the United States government's very dull report for September. When that report came out, wheat dropped a cent in one day. Then the New York Sun armed its powerful intellectuals with a bull's hide, hoof, tail, horns and all, and attempted to 'kne' wheat. On that eventful day wheat dropped nearly a cent a bushel. Then the 'official report' of some Jewish money-lenders and grain-dealers in Europe came out, and it showed that Europe has practically all the wheat it needs for consumption. On top of that 'bear' report wheat advanced one or two cents. England has grown her smallest and nastiest wheat crop on record, and yet English millers to-day are getting wheat for grinding at the lowest rates

ever known. In every case the world over wheat yields are giving the lie to all estimates. The whole wheat trade seems to be out of joint, all the reporters are discredited, all the 'private' estimates are ridiculous, and all the government 'official' estimates are simply grotesque. Will the unique cereal story of 1893 ever be repeated?"

Watermill vs. Windmill.

The watermill is older than the windmill, but prehistoric corn, such wheat, for instance, as Pytheas, the first traveller from civilization to Great Britain, saw the natives of Kent drying in large sheds on account of the absence of the sun, was ground in hand mills, as is still done in the East. Querns, as the mills are called, are frequently found in the cyclopean and underground dwellings of Scotland. Their simplest form consists of two thin circular stones, the upper of which is pierced in the centre and revolves on a wooden or metal pin inserted in the lower one. The grinder dropped the grain into the central hole with one hand, while the other caused the upper stone to revolve by means of a stick inserted in a small hole near the edge. The laboriousness of this operation is illustrated by a story told of Columbia. He was studying under St. Finnian, and every night on which it fell his lot to grind the corn with the quern, he performed his task so quickly that his companions enviously asserted he had the assistance of an angel in turning the stone. Wilson thinks that at that time, the early part of the sixth century, the quern was the only mill in use. Large watermills were introduced in the thirteenth century into Scotland, and legal means had to be employed to render their use compulsory. The quern is said to have lingered in the remoter districts of that country until the close of the last century, notwithstanding Alexander III's prohibition in 1284, that: "Na man sall presume to grind quheit, maishlock or rye with hands mylne, except he be compelled be storm or be lack of mills, quick sould grind the samen."

THE EVOLUTION OF CEREALS.

EXPERIMENTS in the evolution of wheat are the order of the day. Says Liverpool, Eng., Milling: Probably what will eventually prove to have been, at least to the coming generation, the most valuable and important series of agricultural experiments ever originated and carried to a successful issue will have been those relating to the evolution of cereals. From the results of experiments which are being carried on by Messrs. R. & J. Garton at their private grounds, Newton-le-Willows, Lancashire, in the evolution of new and distinct types of wheat, oats, barley and rye, the production of the world's food supplies will at no distant date be very considerably enlarged, and this without any increase in the cost of production. The results so far obtained, after a period of 13 years of work, point in a conclusive manner to an all-round increase of from 25 to 50 per cent., and so striking are the results, each season's growths showing some new and remarkable developments, that it is impossible to say to what extent this increase may eventually arrive.

Irrespective of any increase of population over food supplies, the evolution of the cereals is rendered all the more necessary when a knowledge of their productive organs is understood. What Messrs. Garton maintain



and demonstrate is that the cereals are a class of plants which are strictly self-fertilizing, whose reproductive organs are so placed in combination with other parts of the floret that artificial fertilization by insect or atmospheric aid is rendered practically impossible. We have thus a class of plants which have been habitually in-and-in breeding for an indefinite period, which must and does produce a weakened constitution, rendering the plants more liable to disease and materially to decrease their fertility, just as the progeny of in-and-in

bred stock would constitutionally suffer by too close inter-breeding.

To originate new and distinct types possessing greater productiveness and vigor than the original varieties, it is absolutely necessary that each parent plant should possess some distinctive and valuable feature peculiar to itself. In one case there may be a variety producing a large grain, but in very limited quantities in another variety. This order of things may be reversed and produce a very large quantity of infinitesimally small grains. Then there may be a further variety possessing both these qualifications and still be unsuitable for cultivation, owing to the straw being weak and unable to carry the ear. To go still further, there may be a variety producing thin skin or husk, and another devoid of skin whatever, one variety ripening early and another late, one withstanding the most severe weather and another susceptible to the least variation. In some instances uncultivated varieties have been met with indigenous and to all appearances utterly worthless, but still possessing to the initiated eye some important and undeveloped features which have eventually played a most important part in the evolution of improved types in these experiments.

More than one popular notion has been exploded by Messrs. Garton. Farmers have been accustomed to complain of high winds and heavy rains at blooming-time as washing off the delicate flowers and preventing the fertilization of the grain. Messrs. Garton say that, immediately the flowers become visible, the critical moment has passed and the work of impregnation, if it be achieved at all, has been accomplished.

Another popular idea, and one of special interest to the miller, which looks like being entirely overturned, is that of the so-called crease-dirt. It is generally supposed to be foreign matter which finds its way to the bottom of the crease during harvesting operations, threshing and subsequent handling of the grain. Messrs. Garton showed us undeniable proof, in a series of highly magnified photographs which they had taken from sections of the wheat-berry, that this is not the case, but that it is a natural production of the interior of the berry beneath the skin at the bottom of the crease. To such high powers have they carried their magnifying processes that they are able to supersede the accepted theories and the text-books. By magnifying a thin slice taken out of a grain of wheat some 400 diameters, it will be seen that there is no connection between the middle of the grain and the outside. Our readers will understand from the accompanying diagrams that the theory is quite new. A is a diagram such as is usually found in text-books. B is drawn from a micro-photograph executed by Messrs. Garton. There is no mistake about the matter, because our experimentalists have magnified the well or duct marked C so that it is shown on paper some five or six inches long, with the natural production distinctly visible in a granular formation at the bottom of the duct. This granular formation is more dense at the end nearest to the germ, and in some varieties of wheats the production is much greater than in others. Therefore, what we desire to explain is that the matter called crease-dirt is not external, but a natural internal production.

THE BLACK WEEVIL.

A LETTER from Jackson Park, Chicago, is published in the Northwestern Miller, stating that a serious grain pest, known as the black weevil, has been found in the cereal exhibits of the agricultural building at the world's fair. It is a native of the West Indies and abounds in tropical climates. The insect is, as yet, comparatively unknown in the northern states, but so alarmed are the exposition authorities over its appearance among their exhibits that all the cereals now on display at Jackson park will probably be burned at the end of the fair. Not only does the invasion of the black weevil into a northern clime affect the farmer, but it also vitally concerns the miller, for cases are on record where human beings have suffered fatally from the use of flour made of wheat badly infested with species very closely allied to the black weevil.

AN IMPORTANT AWARD.

THE accompanying cut is a good illustration of the "Andrews" Lumber Dryer, which was last month awarded the Gold Medal at the World's Columbian Exposition in Chicago.

The gentlemen appointed to investigate the different systems now before the public for the drying of lumber and other wood goods, reported as follows:

"The Andrews Lumber Dryer is adjudged worthy of award for the following points of excellence:

(1) For its fire-proof qualities, the sides being brass, primarily serving as condensing surfaces, and the roof being covered with gravel.

(2) For a progressive system of heating, secured by a graduated arrangement of pipes beneath the lumber.

(3) For even circulation of heat upward through the lumber and downward through the hollow walls, thus coming in contact with the brass exterior covering, acting as condensing sheets, the heat thus being nearly even at the top and bottom of kiln with a positive circulation without the aid of blowers or chimneys.

(4) For controlling the condensation so that the moisture appears on the surface until it is entirely expelled from the lumber, the drying being from centre outward.

(5) Economy of heat by means of using the same air continuously with little loss."

The following gentlemen composed the Departmental Committee on awards:

S. Suwa, Secretary Imperial Japanese Commission

Baron de Marajo, commissioner from Brazil.

G. Neederhien, scientist and commissioner from Argentine Republic.

Dr. E. Hessler, botanist and commissioner from Paraguay.

Prof. A. Runnebaum, University of Eberswale, Germany.

Prof. G. Sellenren, University of Stockholm, Sweden.

Prof. A. Grebnitzky, University of St. Petersburg, Russia.

Robert Hudson, commissioner from New South Wales, Australia.

Hon. B. L. Butcher, West Virginia, U. S.

G. A. Priest, Census Bureau, Washington, D. C.

Hon. R. C. Joiner, Wisconsin.

M. Fenlon, Kansas.

Dr. B. E. Fernow, Chief Forestry Department, Washington.

O. S. Whitmore, Forest Botanist, Chicago.

Phro Suriya, Siam.

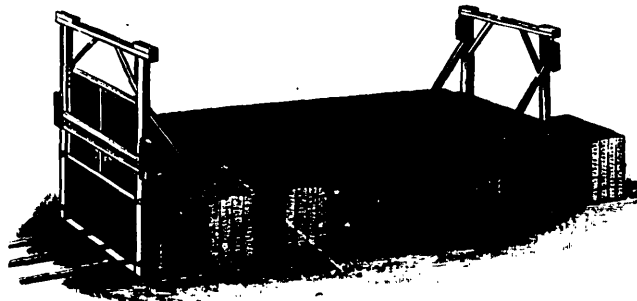
This kiln, of which there are now nearly five hundred in use in the United States and Canada, is controlled in this country by the Dominion Dry Kiln Co., of Toronto, who will cheerfully furnish full particulars as to its workings to anyone making application for same.

A GRAIN OF WHEAT.

A WRITER, signing himself "Jackstick," discusses interestingly in the Miller, of London, Eng., the importance of a grain of wheat. What is a grain of wheat? he asks. And this he answers by saying: The fruit of the wheat plant, the possession of which, in quantity, by any nation, will always, as it has in the past, denote wealth, and a high state of civilization. This fruit is most wonderfully made, and the life it contains is most beautifully protected; its study during development will make it impossible for any miller, with any pretence of watching the laws of nature and reasoning things out in his own mind, to produce flour from it of a bad quality, if the lessons its growth teaches are kept in mind. The grain of wheat is protected by three wrappers or skins of different structural formation, in order to prevent, when the grain is sown in the ground, the inner portion absorbing the moisture in the ground. If it were possible for the moisture to penetrate through the bran of the grain of wheat sown, it would rot in the ground before sufficient heat had been generated in the soil to start the germ into active life. From the nature of the formations of the skins one can at once see, by means of the microscope, that they are constructed to resist the entrance of water, and a very simple experiment will prove to any miller that this conclusion, arrived at by observation, is correct, and that in the process of washing wheat, as carried on now, no water penetrates through the bran, and at a future time, when dealing with wheat washing, we will point out the great advantages to be obtained from this fact.

The experiment that will prove that the water does not penetrate through the bran is accomplished as follows: In a saucer place some water in which has been mixed some dye, such as is used for coloring microscopic objects, and then place in contact with the water a number of berries of wheat, but so tightly arranged, through holes pierced in a sheet of cork, that only different portions of each berry touch the water. By these simple means the wheat berries float on the surface of the dyed liquid, and if the saucer is placed in a fairly warm place, in the course of 48 hours the germ will start into active life and draw the water to it by means of the ducts that nature has provided for it, namely, the beard at the opposite end to the germ and the placenta cord or channel between the beard end and the germ. The dye in the liquid will show the passage taken by the water, and it will be found that it only passes into the berry through the yellow hairs, and not at all through the skin. It will be observed from what is stated above that the temperature has a great influence on the water-absorbing capacity of the wheat berry, and it is a well-known fact that the amount of water absorbed at a given time in the process of wheat-washing is greater at a higher than a lower temperature. The outer skin, by reason of its contact with water, becomes somewhat thicker, but does not allow the water to pass through it.

We must not forget, for instance, the fact that when a grain of wheat starts growing there takes place what



"ANDREWS" LUMBER DRYER.

was discovered by Naegeli when he took 40 grms. of perfectly dry wheat starch and mixed it with an equal quantity of water, that the temperature rose from 22 degs. C to 32.5 degs. C. This fact is a very important one for millers who have met with great difficulties in their improved methods of wheat washing, and this fact can be turned into profitable use by those who follow the further development of the wheat berry. Before leaving the wheat berry to discuss the interior portion of the grain, which is the part that the miller has to reduce to flour, it might be as well to call the attention to the middle, or what has been truly called the compound skin, which under the microscope looks like layers of fishes' scales placed so as to resist to the greatest degree the entrance of water. These scales are so light and friable that it is of the uttermost importance in reducing the grain of wheat to flour to disturb these scales as little as possible, or they will get mixed with the flour, and on account of their nature render it most difficult to remove them, never mind how many times the middlings may be purified. With this fact before us we can very easily understand why it is such a great advantage to make broad bran, and the reason why the flour from a mill that is producing broad bran is, as a rule, so much better than the flour from a mill which has smaller bran. This, no doubt, is the reason why the old-fashioned millstone miller, when visiting another brother miller's mill, always goes to the bran pile before giving his opinion as to how the mill is working. It may be taken, therefore, that broad bran means, whether in millstone or roller milling, a better color flour than what is possible in a mill that is producing a small bran. For several years a considerable amount of time and money has been expended on experiments for arriving at the decortication of the wheat berry, and it has been thought that if the outer skin was removed it was something gained. Moreover, there are men in different parts of

the world to-day who are well acquainted with the different machines in use in roller milling devoting considerable time in order to arrive at this object, who, if they had considered for a moment the nature of the compound skin, would have at once given up the attempt. But they have always thought that the dirt in the crease is not sufficient to discolor the flour to the same extent as the interior of the berry coming in contact with the bran, so it has been their object to remove the outer skin before breaking up the berry. In removing the outer skin there have always been sufficient scales of the compound skin left exposed, even at the edge of the crease, to discolor the flour produced, and this, with the dirt that remains in the placenta cord, discolors the flour to such an extent that the flour produced has always been worse than that produced in the ordinary way.

PURIFYING MIDDINGS.

By R. J. ABERNETHY.

IN the early stage of the purifying age, many and various attempts were made to purify middlings with air alone, and without the assistance of cloth for separating the impurities. All efforts, however, proved abortive when applied to medium and fine stock, and the whole scheme was for many years abandoned by all of the best milling engineers, except so far as it was applied to the coarsest germ stock in gradual reduction milling. For handling that grade of stock aspirators were frequently used. In short, in milling methods, sieve machines only were recommended by those most familiar with actual requirements and best qualified to instruct.

More recently a change came over the scene, the old idea was revived, and the air-current purifying idea becomes a factor once more. It is perhaps true that knowledge and experience have produced rather better machines than those formerly used, but, notwithstanding the living principles that stood in opposition to the success of former air-current purifying machines, stand there still, and while there may be improvement, there can be no absolute success so long as the attempt to violate natural law is continued. There are impurities in middlings, and the specific gravity of these impurities is as great, and, in some instances, greater, perhaps, than the middlings, and therefore cannot be separated from the middlings by air current except at great expense in waste of stock, and even then very imperfectly. The former chief obstacle in the way of purifying fine stock was the waste of flour, which was drawn out and blown into the dust room. Being unable to overcome that obstacle, the matter was virtually abandoned without having to contend with the objection here offered, because the other was the over-awing one. Machines are now constructed so as to save the bulk of the former waste and put it into low grade flour, but the other difficulty now confronts them and becomes the over-awing one. It is one that never has and never will be overcome, because, as stated, in violation of natural law.

It is true that millers are not obliged to use air-current purifiers for all work, because sieve machines are abundant and many of them good, and through this medium fine middlings can be well purified. When more convenient and less expensive to use air machines on coarse stock, it is well to do so, but it is rather foolish to undertake to do all the work with air machines, as it cannot be well done.

FACT.

It is said that "one of the saddest pictures in life is a nigger looking at and 'hankering' after a 20 cent watermelon with only 10 cents in his pocket." But it is not so seriously sad as a miller looking at his competitor's mill running day and night making a barrel of flour out of 4:20, while he requires 4:30 to make an inferior article. One is no more in it than the other.—Ex.

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Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

WHEAT GRADES OF MANITOBA.

SOME dissatisfaction is expressed in Manitoba and the Northwest over the present classification of wheat grades. The official regulations providing for the different grades of wheat classify western wheat as follows: "No. 1 Manitoba hard; No. 2 Manitoba hard; No. 1 Manitoba northern," and so on. A protest comes from the territories that it is unfair to them to classify wheat grown in the territories, under the head of Manitoba wheat. The argument, as expressed by the Commercial, of Winnipeg, is like this: "They the people of the territories claim that it is not fair their wheat should lose its individuality and be classified with the Manitoba product. The quality of the wheat grown in the territories, they say, is just as good as that grown in Manitoba, which in a general sense is quite true, the quality being similar in each case. The objection is based on the idea that Manitoba gets the credit abroad of producing all the wheat grown in western Canada, which is exported under the name Manitoba No. 1 hard, etc., and there is no doubt but that the foreign buyer, who purchases wheat grown in the western territories of Canada, bearing the grade of No. 1 hard, etc., would in his mind associate the province of Manitoba with the production of the wheat. The objection is a sentimental one, but at the same time it is a reasonable one."

The difficulty in producing a remedy for these conditions is to be found in lack of storage capacity in Manitoba. Difficulties now exist through the multiplicity of grades. Our Winnipeg cotemporary explains the matter thus: "Suppose now that the wheat grown in the territories was classified under different grades from Manitoba wheat, the difficulty of storage would be vastly increased at terminal points. When the grain reached a Lake Superior port, for instance, it would have to be kept separate from Manitoba wheat of corresponding quality, thus making twice as many separate bins in the elevators necessary, and entailing no end of extra routine work. There are now sixteen or seventeen different grades of wheat to be kept separate, which is a trying task as it is. If separate classification were given for the territories, the number of grades to keep separate would be doubled." An argument of some force urged against any change is also found in the fact that the grades as now registered are known to buyers, and especially to those abroad. A change of names would make it necessary to re-educate buyers in this respect.

The trouble is one, it seems to us, that only time will right. The wheat-growing interests of the country have progressed rapidly, and, as is the case with a rapidly growing business, there is need for a constant shifting of methods and plans to meet various evolutions and changes. The time will come when a revision of many matters connected with the grain trade of these western provinces will be necessary, but that time, it can hardly be said, has arrived just yet.

GROWING WHEAT.

Will it any longer pay to grow wheat? With prices down to 58 and 60 cents farmers are asking one another this question. Let us see. Man must eat bread, so flour is a necessity and wheat is a primary necessity in the production of flour.

There is a vast difference between the prices obtained for wheat in 1893 and those that ruled twenty and even ten years ago. But the conditions of farming are altered, as well. The labor of working a 200-acre farm is not what it was then. Look at the item of labor. A few men do the work to-day, where, in olden times, it meant to house, feed and pay a large gang of farm hands as each season came around. Farm machinery has, of course, been the important factor in this change.

It is not so near the farmer as he may sometimes think. He has one important advantage over every other branch of trade. Growing wheat cannot possibly go out of fashion. In other trades the scene is constantly shifting, and very radical, decisive, and short are some of the turns.

Wheat can be grown for less to-day than a quarter of a century ago, because our knowledge of improving the soil is so much greater, that we are enabled to get more out of an acre of land in these days. Farming has become a science and something new and pre-eminently useful is being learned of fertilizing methods every year.

He, who does not study these methods will certainly find he is farming without profit; so will one in any branch of trade find he cannot keep up in the procession if he is satisfied to adopt the role of a Rip Van Winkle. Where would our millers be to-day if they continued to be satisfied with the work of the upper and nether millstone, or allowed their mills to be driven by the older methods of power?

A writer in a Chicago journal is authority for the statement that in parts of the west farmers are making money if they receive 45 cents a bushel for their wheat, and they claim it only costs them from 18 to 22 cents a bushel to raise it.

EDITORIAL NOTES.

JOHN BULL is slower to move than some other people. He likes the old ways; he is naturally averse to disturbing present methods of transacting business. Not infrequently this is a source of strength to him, but at other times he is simply placing an unnecessary burden on himself as a result of his conservatism. The English miller has stuck with this characteristic tenacity to the flour sack of 280 pounds. It has been no advantage to him, whilst it has meant that the work of handling every sack of flour became often a grievous burden to the man who had to bear the weight of the load. At last a kick has come, and the London Flour Millers' Association, under pressure of the master bakers, has taken steps to fall into line with the 140-pound sack as the standard.

THE Indiana experiment station has given out the opinion that no variety of wheat is rust proof, both the bearded and smooth kinds being subject to it, and the late wheats are more liable to attack than the early kinds. About eight pecks of seed per acre were found to give the best results, but something depended on the variety and condition of the seed. To avoid rust, not only should uninfected seed be used, but a system of rotation of crops should be practised as a precaution. Seed will not be injured if immersed for 24 hours in a solution of one pound of sulphate of copper in 10 gallons of water, as a safeguard against the pores of smut. Keeping the land clean, and destroying rust or smut on all other crops is important on farms upon which wheat is grown.

THE Department of Trade and Commerce has received a report from Mr. Thos. Connolly, formerly agent for Canada at Dublin, in which he states that the barley crop in Britain will be at least 30 per cent. short this year, and the long drought on the continent will diminish the supply of foreign barley. About 50,000 or 60,000 bushels of Canadian barley were sold on the Dublin market last season. The demand is increasing, especially from the large maltsters, who find it very suitable for the "crystal malt," which they ship in large

quantities to the English brewers, who use it to color English ales and give them a head. Canadian barley is purchased chiefly by the Dublin men through Liverpool houses, and at the date of Mr. Connolly's report (29th August), he learned from a leading broker that a large order for Canadian barley had been received at 11s. 6d. per barrel of 224 lbs.

It is a huge mistake to suppose that business and books do not go well together. The man of business cannot afford to ignore literature—certainly not the literature of his own business. He will be a better all round business man if he takes some enjoyment out of the field of general literature. His mind will be broadened and his vision extended, but in no case, if he hopes to rise beyond the heights of mediocrity, can he give the books and journals bearing on the work of his own trade a disdainful go-by. The Milling World remarks: "Probably one of the most important influences in bringing about the revolution from burrs to rolls was the milling journal. The journals in the field at the beginning of that great change took hold of the movement, showed its importance, instructed the millers while making the change, and aided materially and powerfully in developing roller milling, until to-day the art stands at the highest notch of perfection in commerce." It has been so in any branch of business. It will be so until the end of time. And the wise man will profit by the hint. The fool, it may be expected, will stick to his folly.

A DEAL of good natured fun was poked at Charles Smith, of Campbellford, when at the annual meeting of the Dominion Millers' Association he proposed that the miller should be licensed in order that the chopper and other small fry of the business might be effectually sat upon. Milling, of Chicago, is not sure that friend Smith is as much of a crank as his brethren considered him in introducing such a resolution. Our cotemporary interprets Smith as saying: "I grind chop all the year round for five cents a bag. In summer there's a man who runs a carding machine for me; in winter he grinds chop for five cents a bag. There's a man who cuts wood for me in summer; in winter he grinds chop at five cents a bag. There's a farmer out there who grinds chop for five cents a bag. There's some fellows who run a threshing machine in summer, but in winter they hire an old school house and grind chop for five cents a bag." Smith is right, says Milling, in declaring that such competition is clearly illegitimate. It isn't milling. The legitimate miller must pay heavy taxes. His product is under inspection. His grades are defined by authority, which, if not strictly under parliamentary act, is just as potential. The chop grinder robs him of a legitimate part of his business. "The shoemaker should stick to his last."

WE have millers' conventions and the farming community gather in Farmers' Institutes and lodges of Patrons of Industry and discuss matters pertaining to the welfare of their craft. What is the matter with millers and farmers meeting together occasionally and discussing questions of mutual interest to both? This would have been an impossibility in the distant past, but the old prejudice between these two classes of the community, happily, no longer exists. There is a strong bond of affinity, whether they all realize it, or not, between the man who sows the wheat and he who by a process of mechanical evolution transforms it into flour. "How to increase the quantity and quality of his crops," as a trade cotemporary has said, "is important to the farmer and just as important to the miller, because the increase enhances the value of his mill and his opportunity for making money." The farmers of a given locality will have advanced their own interests according as they have a knowledge of the class of wheat that will be most readily purchased by the millers of that locality. The miller must depend upon the farmer for wheat to grind, and he can only make satisfactory flour by being assured of satisfactory wheat. Nor does an identity of interests end here. A joint meeting on the lines we have suggested would have the effect of bringing to the front these various matters of mutual concern.

DOES WHEAT BECOME STRONGER WITH AGE?

THE effect of age on wheat and flour is a subject that has given rise to much discussion in milling literature at one time and another. Very pronounced views have been held on the question, and opinion is yet divided. From his particular standpoint, perhaps, one of the clearest written articles on the subject has appeared in the *London, Eng., Miller*, from the pen of Mr. W. T. Bates. Asking the straight question, Does wheat become stronger with age? Mr. Bates says: "Were I to put this question individually to each of my readers I have little doubt that the answer would be an unanimous yes. If, however, I asked them to reflect and consider the matter carefully, I believe I should obtain a qualified reply. The first would be spontaneous and representative of deep-rooted conviction, the result, perhaps, of prejudice resting upon a fallacy.

"I have been turning this matter over in my mind for a considerable time, and, as a result, I must say that I have modified my opinion very much, not only upon the improvement of wheat, but also upon flour. The truth is, we have generalised too much, and made a rule, resting upon a basis of truth, too absolute and unconditional. The time is come, I think, when we may venture to controvert, or at least to attempt to disprove, these accepted notions by argument and facts.

"Before coming to any definite conclusions, however, upon the matter, it will be as well to settle and define the meaning of the word 'strength.' The commonly accepted idea of strong wheat is wheat containing a large proportion of gluten, the characteristics of which are the ability to make a strong, tough, tenacious dough, and a good high loaf. Dough which can be stretched to a great length shows tenacity and an undoubtedly large percentage of gluten, and as such, is strong, and if gluten is strength, surely this large quantity should make ideal bread; but, although gluten is the source of strength, in the sense that it retains the fermentative gases in the rising dough, yet to speak of it as strength is to express only half a truth, as in reality it may be a source of weakness under certain conditions. However, it is quite true that without gluten we can have no strength, so therefore gluten must be the basis of all strong wheat.

"Having settled that point we have next to consider how any kind of wheat can become stronger with age. 'As the tree falls so it lies.' When the sickle severs the ear of grain from the root, we may, I think, say that the life of the plant is at an end, and that no further development can take place. There is, undoubtedly, a further hardening and fixing of the various constituents of the berry in some cases, but it is impossible that any new properties can be formed, and yet we all believe that wheat becomes stronger after it is practically dead. There must be something besides gluten to account for the improvement, for gluten does not grow in dead wheat. Yes, there is another property or condition, which is dryness. Without dryness there can be no real strength. Then since dryness and gluten in combination are synonymous with strength, the matter under consideration is brought within very narrow limits, and, apparently, easy solution.

"There are many fallacies hanging about every department of our profession, which once had a basis of truth. The truth upon which this fallacy is founded is English wheat; but what was truth fifty years ago is altogether inapplicable now, owing to changed circumstances. That is, we cannot now generalise as our fathers did, but must judge everything from its proper standpoint. Our fathers said that wheat improved with age because they had only English wheat to judge by; and we know what this means. In damp seasons it is so saturated with moisture that at best it is poor, weak, flabby stuff, although in that state it may possess a large proportion of gluten. The same wheat, however, after a spell of frost or strong drying winds loses its flabbiness and becomes relatively strong. How is this? It cannot be contended that frost or wind has produced more gluten in the wheat; no, those agencies have improved it only by driving out the superabundant moisture. The bulk of grain will be somewhat reduced, it is true, by this drying out process, and the gluten slightly increased relatively, but this will not account for the whole of the improvement. The true explanation, I

think, is that the drying process has hardened the gluten and thus improved the whole mass, or in other words, by the drying out of the moisture the weak soluble gluten has been converted into strong insoluble gluten. This, I contend, is the only change that can take place, and this improvement will not always follow unless the wheat has inherent qualities when harvested. I fear that much of our last season's crop was bad beyond redemption, by frost, wind, or sun.

"Now we have to consider a different set of conditions would not produce a different result that is, whether or not a well-developed, well-hardened, thoroughly dried wheat would be susceptible of any improvement by keeping.

"To answer this, we must fall back upon our experiences, and these satisfy us that in exceptionally dry harvest seasons we can use new wheat with freedom, and find it comparatively strong. This, usually, is the case with early harvests in this country, and early harvests can come only from exceptionally fine weather, indicating good results as above. Late harvests are generally unfavorable, but that of 1890 was an exception on account of the abnormally fine September. All who use English wheat freely will bear me out that the new wheat of that season was strong - exceptionally so; much stronger than the old wheat we are now using. The fact is, the wheat of that season actually deteriorated towards Christmas through the absorption of atmospheric moisture, which is another proof of my contention that dryness is the secret of the improvement, as moisture is of deterioration, although properly harvested wheat quickly recovers its original qualities on the return of dry weather; whereas badly harvested improves only in a small degree. This is how our English wheat acts, but what of that which is harvested under even better conditions and climatic influences?

"I give it as my confirmed opinion that, for the greater part, there is little or no difference in the strength of new or old wheat harvested under a blazing sun. When ripe, under such conditions it is just as fully developed, and all its qualities firmly fixed as they ever can be, for the reason that all the moisture, which alone can do mischief, is dried out of it. A slight toning of the various constituents may take place directly after harvesting through the outer portion being dried more thoroughly than the inner, but no material change or improvement, in my opinion, is possible under such circumstances. But were there any improvement resulting from age, we have only to consider the period of perfection; for we may take it as a fact that wheat is not exactly like wine, improving with added years, although we often hear wheat recommended as being two or three years as if, therefore, it was just so much better. There must be a period of perfection, after which there must be a decline in quality. The fact is, everything depends on the harvest, and wine, even, is no exception to the general rule; for do not connoisseurs tell us that wine of a particular vintage is superb, while that of other seasons is indifferently weak. Some wheats under certain conditions will improve with age; other wheat cannot improve, for the reason that it is perfect.

"Regarding strong glutinous wheats, it is often remarked that the new crop does not work so strong as the old. This has been said of this season's River Plate wheats, and it was also said of the Russian crops of the last year or two, but, like the poor wine, I fear - at least I know in the case of the Russian that there is no improvement with age. Some of the poorness in that case I attribute to effete, worn-out soil, or to the too frequent use of the same seed. At any rate it is an inherent defect which age will intensify rather than relieve. In the case of the Plate wheat, if weaker we can account for it by harvest vicissitudes, the weather at the harvest period being, like our own, somewhat treacherous, as is fully proved by the general presence of sprouted grains. Given a good brilliant harvest in Argentina and the same in Russia with good seed and good land, we may with perfect confidence use the wheat just as freely new as at at any other time. The same remarks apply to American wheat generally. I never remember hearing of new Minneapolis flours being weak, nor of new Duluth wheat being short of

strength, unless, indeed, there was some defect in it. The frosted wheat which comes here under various fancy names is a mixture of strong and weak, good and bad; but if it were kept till doomsday it would not improve one iota. Of course the wheat of the plains of America is affected by harvest weather, like every other. For some climatic reason the crop of 1890 I think it was - was abnormally glutinous and strong. It was not necessary to wait until March to find that out, for it was awkwardly strong and deficient in color, owing to the excessive gluten. I will not say that perfectly developed strong wheat does not undergo some slight change and possible improvement immediately after harvest - a sort of toning and mellowing action, similar to that which takes place when wheat is washed; at first it is wet on the outside and dry within, but after a few hours the outside moisture penetrates and tempers the whole berry, and in that state it is damper, and will mill less freely than when fresh from the washer. In the case of fresh harvested wheat the outside is dry and the inside moist, so that a short period is necessary, as in the case of washed wheat, to temper and harmonize the mass; but in that process it is impossible that any new property can be developed or any improvement take place. That, at least, is my humble opinion. I refer now to well-dried and properly harvested wheat; of course, if the harvest season should be damp, and the wheat garnered in a damp condition, a longer period would be required to bring it to perfection; but in a cold, dry country like America it would be much less that in this country, where the winter generally is damp, and we have to wait for the dry winds of March to do what the early winter does for the American wheat. Some might argue that wheat is like apples, which get mellow by keeping. That might be said of damp wheat, but dry, well-harvested wheat more resembles ripe fruit which needs no keeping; that which needs keeping to ripen is gathered prematurely, otherwise it would come to perfection on the tree, did the season permit.

"Not only do I think that wheat does not improve in many cases by age, but also flour. I can fully understand the reasons for the ancient practice of keeping English wheat flour for improvement, and what I have said about wheat is applicable to flour. In some cases there will be considerable improvement through the drying out process; in others there will be none, and there may be deterioration by absorption when a damp autumn succeeds a dry harvest. In all cases flour is best for a few days' rest after milling to let it thoroughly cool, the same as a loaf of bread improves by being kept till cold, or say 24 hours before being eaten. It is said that bread is not properly cooked until it is cold, but I think we may draw the line of improvement at about 24 hours, after which deterioration certainly commences.

"I know many people make a point of crediting American flour with its superior strength on account of age, and I myself have fallen into the same error; but by the light of greater experience I now recant. I should be inclined to say that an abundant article like flour would rather deteriorate on coming from the dry climate of America to England. If there is anything in this improvement theory, it would apply to wheat in the same degree as flour, so that flour would gain no advantage. No, I think we may give the American wheat credit for being, in most cases, beyond improvement. It is the ripe apple. So also is the American flour. When it leaves the American mill it is about as good as ever it will be, both in strength and color. I know that bakers ask for old flour, and also that many of them keep large stocks in hand to 'get stronger,' and in their case there may be some slight reason for their faith; for if flour is kept in a dry, warm loft, it will become drier, and to that extent will improve, but the improvement will be at the expense of weight; that is, the moisture will be dried out and the flour become lighter, just as the dry American will become heavier by absorption. I think, however, that many bakers are beginning to learn that the quality of the flour depends more upon the wheat from which it is made than the length of time it is kept. Time will never convert poor flour into good flour. We might as soon expect to gather grapes of thorns and figs of thistles."

COOPERAGE D'P'T.

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 resorts 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 close touch with the other and to materially advance the interests of both trades.

TRADE REVIEW.

WE are pleased to say that the depression in the cooperage industry has gradually disappeared and there is every likelihood of a large winter and spring trade.

Nearly all of the Canadian mills are now running at full capacity and barreling the largest part of their output. The new mill of Mr. A. Campbell, Toronto Junction, is now running full and turning out from five to six hundred barrels per day. The mills in Minneapolis, which consume a large part of the product of the stave mills in Ontario, have been barreling their flour in the majority of cases during the past month, the consequence being that very heavy shipments of cooperage stock have been made from Ontario point to Minneapolis; this also supplies to other points in Minnesota, the Dakotas and Wisconsin, more especially West Superior where they are having a very strong run indeed.

Owing to the financial panic in the United States, coopers all over the country allowed their stock to run down, and they are now replenishing these stocks so as to be prepared for their winter run and have dry material on hand and avoid the expense of kiln-drying, the consequence is that manufacturers of cooperage stock all over the country have now experienced a revival in business.

The prices of cooperage stock in Ontario remain about the same as they have been since the first of June and it is not likely that they will advance for the present; it is the contrary in the United States, as prices are bound to advance there, there not being the usual large quantity of staves that there is in this time of the year at the different mills. The mills not being able to get currency to pay their hands were compelled to shut down in July and August, hence there is not the quantity on hand that there usually is at the beginning of October, we expect that cooperage stock will advance considerably in the United States and it may possibly advance in Canada the beginning of 1894. The following are the prices at which stock is being offered at present, delivered in Toronto:

	Per net cwt.
No. 1 30" jointed elm staves	\$5 85
M. K. 30" "	5 50
No. 2 30" "	3 85
" 24" "	4 05
No. 1 5 1/2 ft. patent coiled hoops	6 05
" 6 1/2 ft. "	6 05
No. 1 17 1/2" kiln dried, basswood heading	4 1/2 c.
" 14" "	4 c.

These prices are for carload lots delivered in Toronto, for less than carload lots the price is correspondingly higher according to the local rate of freight.

UNITED STATES MARKETS.

The Chicago market is reported by the Northwestern Lumberman to be slightly improved and the outlook considerably lighter, although there does not show any advance in prices. Oak barrels are in demand at \$2 1/2 to \$5c. The supply of tierce staves is being steadily exhausted and prospects are that prices will be higher in the near future. Recent sales have been made at the top price quoted below. Hoops are also scarce and bring full prices. No. 1 oak tierce hoops sell readily at \$13, while white oak hoops are worth \$9.50. Tierce heading is selling at 14 1/2c., but offerings are so free that unless packers buy tierces in greater quantities than they have been doing, the prices will go lower. Scarcely enough oak staves are arriving to meet the demand and prices are consequently firm. Other stock is nominal. Of the Minneapolis market the same journal says: "The flour mills are running on both full capacity and time, and are barreling most of their products, thus keeping the cooper shops busily engaged with their orders. In fact the rush of business just now is so great as to keep them delivering nights. There is but little change in the stock market. Shipments are freer than they have been for some time, but as they generally apply on former contracts, there is little movement to note. With the present rush of business it is probable that manufacturers will have no difficulty later on in the disposal of their products. There is a plentiful supply of hickory hoops on the market this fall, and stocks at different shops are still very large. It is thought the demand this year at this point will not be more than half what it was last year. Consequently the price is lower by 25c. Within the next few weeks some of the shops will probably look around for their yearly supply of elm hoops."

WIRED HOOPS FOR BARRELS.

WHILE on a recent visit to Chatham, Ont., a MILLER representative, in taking his usual round among the mills was much interested in inspecting the new cooperage in connection with the Kent mills. Both Mr. Stevens and the T. H. Taylor Co. of this town are to flourish barrel which is certainly a great improvement on the package formerly used. The barrels referred to are made from kiln dried stock and hooped with a colored wooden hoops, reinforced by coppered steel wire which surrounds the hoop embedded in a slight groove. The cooperage shop of the Kent mills has turned out these packages for about three months, making from five to six hundred a day. Well seasoned staves are first put through a recently constructed "Andrews" dry kiln properly set up in forms by boys, after which they are windlashed in a steam windlass, and trussed, channeled and crozed also by machinery. Boys nail the hoops on forms, which are so constructed that all hoops are made of exact size, while others put the wire around the hoop and twist it by an ingenious little hand machine. The coopers, receiving the barrels fired, trussed, channeled and crozed, and the hoops ready made are enabled to finish from 100 to 150 barrels per day each. The wire in itself is much stronger than the wooden hoop, which makes the wired hoop especially adapted for kiln dried packages, the same being reputed to give much trouble by bursting ordinary hoops in dour weather.

The Chatham Wired Hoop Co., (limited) owners of the patent for the Dominion, seems desirous of establishing for the cooperage on which their hoops are used the highest possible reputation, as shown from the fact that they offer a considerable discount on royalties to firms using kiln-dried stock. This very commendable policy is calculated to do much towards elevating the standard of cooperage generally. Mr. Stevens, who has sent out about 30,000 of these barrels, shows a justifiable pride in his production, and to say that he is entitled to credit is only doing him justice. Customers and forwarding agents generally have not been slow in expressing their appreciation by letter and personal interviews. The cooper shops supplying the T. H. Taylor Co. have also introduced this style of package, in the manufacture of which they use no machinery.

ELECTRICAL POWER.

IN the present day it is not enough that the proprietor, or his expert in charge of the mechanical operations of mill or factory, should be possessed of an intelligent knowledge only of the uses of steam and its various properties. It is important that he should fully understand these things. But with the developments in electricity and the extent to which this newer power is being applied to manufacturing purposes, it becomes almost as necessary, that the mechanical manager of to day should know as much of the uses of electrical power as of steam power. How to handle the electrical motor; what to do when an awkward balk asserts itself, is a part of his education that he cannot afford to neglect. On this line the matter of reversing a motor is made the subject of intelligent discussion by a writer in the Tradesman. He says "To reverse the direction of any electric motor it is only necessary to change the direction in which current passes through it. But simply taking down the wires and attaching the + wire where the - wire formerly was, will not answer. That will cause the motor to run in the same direction as before. The way to do it is to take down the connections between the brushes and field magnets and change the direction of the current there, through one, either through the armature, or through the field magnet coils. This will change the direction in which the armature will revolve.

"Current always flows from the + or positive line wire into the - or negative one. Here is a handy rule for telling which way the current is passing in any dynamo. First, find the direction in which the lines of force are passing between the field magnets; this can be done with a pocket compass. Hold the instrument over the dynamo, half way between, and six inches above the armature; the compass needle will immediately arrange itself in line with, and pointing directly from one field towards the other. The north end of the compass needle will always point towards the south pole of the motion field magnet, and as the lines of force always travel from the north in the south field of any motor or dynamo, it is known that the lines of force are always passing in the direction pointed out by the north end of the compass needle.

"We can now lay the hand on the dynamo, the thumb pointing in the direction taken by the lines of force. The first finger pointing parallel with the armature winding, while the other fingers are bent slightly, and point around the armature in the direction of its travel. The flow of current in the armature winding will always be in the direction toward which the first or index finger points. Only, bear in mind that the armature coil is always supposed to be between the eye and hand while making the test. Thus, if the dynamo run in a certain direction called "right-handed," the right hand can be used to bring in all the conditions mentioned above. But if the dynamo runs in an opposite direction, the left hand must be used.

"This matter is very useful in determining which way a motor will revolve after it is started up. It is only necessary to find which way the current will pass in the armature, then lay on the hand as before, with index finger pointing in the direction current flows. The thumb points in the direction taken by the lines of force, and the other fingers will, when slightly bent, point in the direction in which the motor armature will revolve. Always bear in mind, that with a dynamo and motor connected in the same circuit, the armatures will revolve in opposite directions."

FIGURING A WAY OUT.

THIS is the somewhat clever way in which a Nebraska writer figures out a profit for the miller. The conditions will vary some in different localities, and the basis of calculation may be altered, in a measure, but the rule, if worth anything at all, ought to apply relatively to most localities. This writer says. A bushel of wheat makes forty pounds of first grade and seven of second grade flour; six of shorts, six of bran, and one pound waste. At present prices forty pounds best flour retails for eighty cents; seven pounds second quality, eleven cents; six pounds bran, four cents; six pounds shorts, six cents, or a total of one dollar and one cent for a bushel of wheat costing fifty cents. It costs forty cents to raise and market the bushel of wheat, and it costs probably five cents to grind it, but say it is ten, and then figure out whether the farmer or the miller will first be able to start a national bank and buy a seat in the senate.

A miller mill with all modern improvements, with capacity of 75 barrels per day, can now be contracted to be built ready to start grinding for \$7,000, but say it costs \$10,000.

Such a mill, located at the central corner of four townships of six miles square each, could be built at a cost of 12 1/2 cents per acre, or \$19.25 per quarter section of the land in the four townships. The cost per quarter would be paid on the saving on a single forty-acre crop of wheat. There is, however, a serious objection to such mills, for they would be socialistic, and possibly even anarchistic, but they would be money-makers for their owners.

ALWAYS A GOOD REASON.

IT is indisputable that the number of boiler explosions in this country is alarmingly great, and it is equally true that a boiler does not explode without there being a very good reason for it a very good reason and a very simple one. There was a time when it was believed by many that there were hidden causes for boiler explosions, and a rather flourishing, if not remunerative, business was done in the theoretical manufacture of some mysterious gas that could never be made to materialize except just at the time when no one had time to detect its presence, and the boiler went to pieces. There are, perhaps, still a few left who believe in the gas theory of boiler explosions, but their number is very small indeed, so small as to make no impression on current opinion. An overwhelming majority of engineers at the present day believe that if the cause of a boiler explosion is looked after in the right way, it will be found without the necessity of making some old gas theory do service, or inventing a new one; without bringing into the argument any unaccountable or unheard of action of the water, or in any way going outside of what plain people can understand.



A CANADIAN miller has been discussing the question of scalpings in the English Miller. He is not overly favorable to fine wire for break scalpings. "Nos. 16 or 18 wire," he says, "are fine enough for a first break scalping, the succeeding ones, of course, being finer. The advantage in using these numbers consists in being able to separate the coarse, germ stock and chips from the break chop, thus preventing it from going through the succeeding reductions on the corrugated break rolls, where a certain amount of it is sure to be finely ground, and reserving it for the gentler action of the smooth sizing roll, where it is flattened out and not reduced to powder, as would be the case were it reduced on the break rolls. Of course, in using fine wire on the scalpings, you may not require to reduce so many middlings on a sizing roll, but the middlings you make will contain more finely-cut bran and germ, which is very hard to separate afterwards, and you will make more break flour of a poorer quality, besides reducing the capacity of the break rolls. In reducing any wheat, especially hard wheats, a certain amount of the bran is broken into small pieces from the very start, which it is much better to separate at once, instead of making it run the gauntlet of the succeeding breaks, a slight pressure afterwards on a smooth roll being sufficient to free middlings that may adhere to it. A light suction on all stock after being scalped, and before further reduction, is advisable, as it removes all fluffy material, light branny flakes, beeswing, etc., which may be sent to bran bin, instead of being further reduced on the break rolls, thereby enhancing the color of the flour."

W. J. Harris, an English agriculturist, who has recently travelled throughout Australia and New Zealand, thinks that there is no country in the world which, from an agricultural view-point, has more to recommend it than New Zealand. Mr. Harris is also eloquent in his praise of the agricultural capabilities of Australia, respecting which he remarked: "That he went there believing that he should find neither soil nor climate suitable for wheat growing on a large scale, but he returned with the conviction that there are at least fifty million acres, thus far untouched by the plough, of as good wheat-growing land as can be found in the world, and that the climate and rainfall over this area are suitable and sufficient."

Prof. Saunders, Director of experimental farms, says of his recent tour of inspection through Manitoba: "In some localities the thresher is turning out as high as 20 to 27 bushels per acre; in others the result is very disappointing, ranging from 4 to 8 bushels, the lower yields covering some of the best districts. On account of the variable character of the crop it is difficult to estimate the average yield over the whole province, but judging from the returns received from different sections, it is not likely to exceed 15 bushels per acre. Most of the wheat, however, is of good quality and will grade high. Barley has also suffered, the grain is light and the yield lessened. The yield of oats is better. Throughout the Northwest Territories the crop will average a higher return, and in some districts the yield is most excellent both in quality and quantity. This is more particularly the case in the Indian Head district, where the Experimental farm is located. North of the railway line crops are very heavy. Threshing was progressing, but only three farmers in that district were far enough advanced to report results. Two of these had 40 bushels and one 32 bushels to the acre. The average yield of wheat for this district will probably be fully 25 bushels, some estimate it as high as 30. The wheat crop in the Territories is good as far as Haldon, but becomes lighter west of this point. It is also good for a considerable distance east of Indian Head, but becomes lighter as it

approaches the Manitoba boundary. In Manitoba the wheat crop in many places looked as heavy as it did in the Territories, but a careful examination of the heads showed that a large proportion were blank at the tip."

"My recent visit to Manitoba," said Secretary C. B. Watts, of the Dominion Millers' Association, "is the seventh I have made to the Prairie Province. I was there when the boom was on, and when it broke. Five years elapsed between my visit of the past month, and the one just previous. Winnipeg is in good shape. From the first time I visited that city I had great confidence in its future, and anything I have seen of it since only goes to confirm that view. My special business to Winnipeg this time was as a member of the western board to select grain standards, having been appointed by the government, as representative of the Dominion Millers' Association." I inquired as to the crop outlook. "Manitoba has a fine crop this year," replied the Millers' secretary, "though the yield varies very widely in different localities. In places where the drouth was most felt figures are given as low as five bushels to the acre, and again in others the yield will run as high as forty bushels, though it must be admitted this last figure is exceptional. The crop has been harvested in splendid shape; threshing is going on and a large amount of careful stacking has been accomplished. We will hear nothing of frosted Manitoba wheat this year, and little of smutty wheat. The weight, however, is below the average. I saw wheat that would not weigh more than 55 pounds. My impression is that the total crop will exceed that of last year, averaging, perhaps, 20 bushels to the acre." What was the result of your work on the board of grain examiners? "Better than at first I thought it would be," replied Mr. Watts. "There was a strong disposition with the farmer-representatives of the board to keep the grades down. They had become imbued with the idea that the lower the grades the more money it would mean to themselves. I must say, however, that after a vigorous discussion the first day in which the contention for higher grades was determinedly fought by Mr. McLaughlin, ex-president of the Miller's Association, and myself, a different view was taken of the matter. The grades are some lower than last year, but not as high, as, I think, the quality of the crop warrants. Why Manitobians, who have any breadth of view worth naming, should want to pursue this depreciatory policy is one of the things it is difficult to understand. The country has everything to gain by holding up a high ideal in the matter of wheat production and especially when the character of its wheat merits this. Last year it was known to everyone that Manitoba No. 2 hard was equal to Duluth No. 1 and was so regarded on the foreign markets. Let Manitoba wheat, as can be done, be placed as the wheat by which other countries shall measure their grain. Instead of talking of Manitoba wheats as being as fine as those of Duluth or Dakota, change the position and make Manitoba the ideal that it is necessary for those places to reach. I have every confidence in Manitoba becoming the great wheat-growing country of North America, and it is unbusiness-like and unpatriotic not to realize this and stand firmly by the high position the country has already attained in this important matter." "It was very gratifying," remarked Mr. Watts, responding to a suggestive comment by the interviewer, "to observe the change of feeling that is rapidly coming over the farmer in his attitude to the miller. The old notion that the miller is the sworn enemy of the farmer exists to a very slight degree anywhere now. In a measure, perhaps, when Mr. McLaughlin and myself took our seats at the western board a few weeks ago, there was an idea in the farmers' minds, that we had come there for the one purpose of carrying out some dark scheme of the miller, that would operate to the serious detriment of the farmer. I bid good-bye to the Manitoba farmers, whom it was my pleasure to meet, convinced that they saw that the interests of the miller and farmer are so closely interwoven that anything that injures the one, must operate in like measure to the injury of the other, and the success of the one is the success of the other. Why, where is the final outlet of our wheat crop? Is it not at the mill, there to be ground into flour?"

DRIVING ROLLS.

ROLLER machines used in flour mills for reducing wheat are best driven with two belts instead of one, as is much in vogue, says the Mechanical News. They should be driven on both sides direct from the main driving shaft without the use of a countershaft. Neither belt should be crossed. Crossing belts is more or less a vicious practice at all times and under all circumstances, and should not, as a rule, be resorted to except under compulsion. However, cross-belts may be tolerated and endured in many places and for many purposes, but driving rolls with cross-belts is not among them. Very many use cross-belts on rolls, as a matter of fact, because they suppose it has to be done, knowing no way in which a cross-belt can be run open without reversing the motion.

It is just like standing an egg on end, simple enough if one knows how. To open a cross-belt on a double stand of rolls requires two carrying pulleys, both of which can be used as tighteners, while doing away with the common tightener used on such mill. In all, five pulleys are used for the open belt against four for the cross-belt. The best arrangement for carrying the extra pulleys is to procure four pieces of timber, say 4x6 when very long, and then 3x8, that will reach from basement floor to ceiling.

These timbers should be placed on end, two of them on each side of the driving shaft far enough away from driving pulley to allow for ample clearance, and securely fastened both at top and bottom. Journal boxes for the carrying pulleys, or rather adjustable tightening frames for supporting and moving the pulleys up and down, should be fastened to the posts near the floor, or at least far enough below the driving pulley belt for clearance at all times. It will, of course, be understood that the four posts will be so arranged as to bring all the pulleys, drivers, machine pulleys and carrying pulleys, in line in the ordinary way.

To get the belt on we start from the floor by passing the belt under one of the carrying pulleys, then up and over the machine pulley on that side; thence down and under the driving pulley and then up over the other machine pulley, thence down again and under the other carrying pulley from the outside, when the two ends of the belt will come together then they can be fastened together, and the job is completed. Care should be taken to run the carrying pulleys up the full height before fastening the belt. Each belt on a roller machine should drive one fast and one slow roll, as in that way the work is more effective, and makes the strain equal on both belts.

TRADE NOTES.

ATTENTION is directed to the advertisement appearing in another page, of the Chatham Wired Hoop Co., (limited.) We are authorized to state that parties who contemplate the introduction of the new coverage will be welcome to inspect the process of manufacture at the Kent mills, Chatham. We understand that royalty charges are very moderate and the outfit required for manufacturing are insignificant in point of cost.

NEWS AND NOTES.

Canada has 600,000 tons more hay for market this season than last.

Efforts are being made to extradite Leon M. Carrier, the Quebec flour ascender. He is in Denver, Col.

The remarkably high grade of the wheat being received in Duluth elevators and flour mills this fall, of the crop of 1893, is astonishing, it is said, all grain men in the Northwest. There is more No. 1 hard wheat than for years, nearly half of all the wheat that comes being of that quality.

Millers, acquaint yourself with all manner of information pertaining to improvement of the wheat products with which you have to do, and after your good mills and good millers are supplied with good wheat—the foundation part of good milling—your road to success will be an easy one to travel.

Says a London, Eng., report: The yield of the wheat crop in New Zealand is estimated at 8,397,600 bushels, or 1,380,000 bushels under last year's return of 10,257,600 bushels. In 1891 the out-turn was 5,723,200 bushels. The area sown was 1,297,447 acres, or about 51,444 acres less than in the previous season. Taking the food and seed requirements of the colony at 4,349,600 bushels, there would remain apart from stock of old crop about 4,028,000 bushels for export.



The particular purpose of this department is to create an increased market for Canadian mill products—flour, oatmeal, cornmeal, rolled oats, pot barley, horse 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 MILLER 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 industries. We invite correspondence from millers, shippers and buyers on any matter touching these important questions.

GROWTH OF FLOUR-MILLING.

THERE is good reason to expect, that there will be a considerable development in milling operations in Russia during some of the years yet in the future. The people of that country have already got moving on that line and they seem to be sufficiently satisfied with the effort to believe that there is an encouraging milling future before them. Some are sanguine enough to think that the time is not far away when the quantity of wheat consumed in milling in Russia will preclude the necessity of shipments of wheat to the western markets of Europe. This is a question, however, that can no more than be guessed at for the present.

The fact that flour milling is to any reasonable degree being carried on in Russia is suggestive of the general growth of milling operations in various European countries. We noted last month the inception of steam roller flour milling in Japan. No one dreams, perhaps, of competition in flour production from the land of the Rising Sun, but the world does move in this age, and would appear to move very quickly, too. Flour-milling is undoubtedly making marked progress in Great Britain, its mills are multiplying, and the adoption of modern methods there is now about as universal as on this side of the water. Meanwhile the increase of milling capacity goes on both in Canada and the United States, so that wherever we turn, whether at home or abroad, competition among the mills becomes keener. At home there are more mills than before to supply the demand. The field for export is narrowed to the extent that the flour producer in export fields has acquired the ability to supply the local demand. It is to be granted that with the natural growth of population there will be an added demand for flour and bread the world over. Which is just now getting ahead in the race, the flour-producer or population, is a matter that will have its influence, under all these conditions, on the markets of the present and in part of the future.

COMFORT FOR BRITISH MILLERS.

According to recent estimates of the Washington Agricultural Bureau, if that very variable and dubious authority can be relied upon, United States wheat crops this year are not likely to exceed in any large measure the requirements of home consumption. The Millers' Gazette, of London, Eng., finds in this possibility a grain of comfort for the British miller. American millers will not be in a position to flood the British markets with their flour, thinks our cotemporary, for the simple reason that the wheat will not be forthcoming. The argument it follows up in this manner: "True it is that there are large stocks of old wheat on hand, probably 75 million bushels; but that is a very moderate total compared with the actual exports of the past two seasons, viz., 192 million bushels in the past season, and 225 million bushels in 1891-92. During the past season ended June 30, no less than 14,620,000 barrels of flour, representing nearly 75 million bushels of wheat were exported, of which 10,361,860 barrels came from the United Kingdom, and 1,549,000 barrels to other European countries. To keep up this rate, nearly every bushel of wheat available for export to Europe in the present season of 1893-94 will have to be sent in the

shape of flour, a thing manifestly impossible. The British miller may, therefore, pluck up courage—if he has ever lost it—for it is as certain as such matters can be, that the competition of American flour will be less than in either of the two previous ones. At present, it is true, there are no signs of any falling off, for since August 1, no less than 200,000 sacks per week have been sent to Europe. A somewhat pertinent comment upon the past year's export business of some American millers, is to be found in the fact that the £10 shares of a well-known large American joint stock mill are to-day not worth more than £2 to £3."

THE PRESERVATION OF FLOUR.

Mr. Ludvig Fromm, of Karlsruhebroda, Germany, has obtained a patent for a new method of preserving farinaceous products. In his specification he says: "This invention relates to a method of preserving flour and farinaceous products, and consists in the admixture to the substance to be preserved of a powder or 'flour' of hazel nut. In preparing the hazel nut flour, the kernels are first removed from the shell, and then (preferably after being roasted) are ground or reduced to powder; only the white substance of the kernel, however, is ground. This powder or flour is added to the goods to be preserved—cereals, pulse, or the like—in a proportion varying from 5 to 25 per cent., care being taken that the mixture is as thorough as possible, as it is important that the fatty element of the powdered hazel nuts shall pervade or permeate the whole of the substance. This fat does not become rancid, and at the same time acts as a deterrent against insects and caterpillars. The flour so mixed acquires, moreover, a property which enables the bread or other goods made of it to keep much longer than similar goods made of ordinary flour, the fatty or oily element preventing the absorption of moisture to a great extent, and consequently the formation of mould, mildew, or similar growths. Besides, the great quantities of albumen and fat contained in the hazel nut pulp enhance the value of flour or other product as such; as nutritious substances, however good in themselves, will only fully be taken advantage of by constitution of the body if the albumen and fat they contain are in the normal proportion to the hydrates of carbon."

CURRENT THOUGHT.

"DESPITE the commands of experience and the warnings of friends and the milling press," says the American Miller, "some millers persist in consigning flour whenever they run out of orders. They are not far-sighted enough to see that dealers who can get a miller's flour at their own price in a central market, will not pay the manufacturer's price at point of production. Many we regret to say, are such chronic consignors that they cannot refrain from consigning to markets already depressed with large stocks. They do not refrain from swearing about the returns, although they have themselves to blame for the unprofitable business. The dealer and the sheriff are the only ones to profit by a miller's persistent consigning."

THE Commercial, of Winnipeg, Man., thinks that Manitoba wheat should be in demand this year for mixing eastern and other soft wheats. "The quality of the crop this year," it says, "is just what is required for mixed purposes. It is bright and flinty and should produce an extra strong flour, thereby making it just the thing required for imparting strength to the soft wheat flours, by judicious admixture. About the only domestic demand for Manitoba wheat outside of our local mills, comes from Ontario millers, and in some years this demand is quite an important item. With the poor crop of spring wheat in the sister province, the millers of Ontario should require a considerable quantity of hard Manitoba to grade up their flour. The quality of the Manitoba wheat is such that it should be sold this year at a sharp premium over the soft wheats. It is simply a superb wheat for mixing; and flour from the ordinary eastern wheats will be vastly improved by a liberal admixture of Manitoba."

BRITISH millers and bakers continue to discuss the pros and cons of foreign flours as compared with the home article. Is the strong preference that exists

in some quarters for the imported flour based on a genuine difference in quality? This is what these people are busily asking one another. Do we get as big a yield from the foreign as we imagine? Is the way a writer in the British Baker puts the question. At what sacrifice to the quality of our bread do we force in as much water as it will hold? "Careful consideration of the subject," says the British Baker, "will show we do not get that extra water-absorbing capacity for nothing. Some of our trade do not sufficiently realize that if we want to sell a large quantity of bread the less water we sell in it the better, unless we counteract the depreciating influence of the water by using a higher grade of flour. Let us take an extreme case. A sack of American first baker's will at the present time be about 25 per sack less price than country roller whites, and, for the moment, we will say the American will make five quarters more bread than the country, equaling a further 2s., that is, a total of 2s. per sack, or one halfpenny per quarter. But the first baker's grade and the country separately turned into bread would be more than a great contrast. The first baker's would barely be saleable for a family trade, but might fetch fourpence per quarter, whereas the country would more easily sell at fivepence, and would very closely compete with a well-known bread which I recently purchased at fivepence halfpenny. One halfpenny saved, one penny lost. If with an ordinary family trade a man wants extra strength or yield, he must either buy a higher-class bag or increase the quality of the remainder of his mixture. If he does this, wherein is his saving?"

THE FLOUR MARKET.

In so far as prices remain steady, the flour market is in a fairly healthy condition. Though the tone is encouraging, sales are light. For the present local trade in city and country would appear to be pretty well supplied. Export trade is slow. There has been considerable enquiry from abroad, but prices offered are too low to give any incentive to large trade. The decline in wheat markets has also had its influence in exciting caution on the part of buyers. The Northwestern Miller says: "All the millers report that sales are light and greatly under the output. One or two firms report having a liberal supply of orders on hand, and are glad of the opportunity to catch up. Others are simply meeting business as it comes to them. There is a decided disposition to sell only for prompt shipment. Foreign business is still very meagre, the continent at present taking practically nothing. Both patent and bakers' are bid for, but usually the bids are not within the reach of millers by 6d. to 1s. On what few sales are effected, very close figures have to be made. Patent and bakers' are quoted a shade lower than they were a week ago, but millers are reluctant to give concessions, except as the lower cost of wheat permits."

PRICES OF FLOUR AND MEALS.

Toronto: Car prices are: Flour (Toronto freights) — Manitoba patents, \$3.80 to \$3.90; Manitoba strong bakers', \$3.60 to \$3.70; Ontario patents, \$3.25 to \$3.40; straight roller, \$2.90 to \$2.95; extra, \$2.50 to \$2.75; low grades, per bag, 90c. to \$1.10. Bran—\$11. Shorts \$13.50.

Montreal: Flour—Winter wheat, \$3.90 to \$4.10; Manitoba patents, best brands, \$3.85 to \$3.90; straight rollers, \$3.10 to \$3.15; extra, \$2.90 to \$3.05; superfine, \$2.60 to \$2.90; Manitoba strong bakers', \$3.70; Manitoba strong bakers' best brand, \$3.70. The demand for oatmeal is fairly good and prices hold steady. Standard bags, \$2 to \$2.05; standard, bls., \$4.20; granulated, bls., \$2.25; do., bags, \$2.05; rolled oats, bags, \$2.10; rolled oats, bls., \$4.30 to \$4.40. Feeding stuffs are offered more freely and the general tone of the market is easier. Bran, \$14.50 to \$15.50; shorts, \$16 to \$17; moullie, \$22.

Winnipeg, Man.: Flour—Prices in small lots to the local trade are quoted: Patents, \$1.50; strong bakers', \$1.60; XXXX, 70 to 95c.; superfine, 75 to 90c. Oatmeal is unchanged. Rolled oats quoted at \$2 to \$2.50 per sack. Granulated, \$2 to \$2.20; standard, \$1.75 to \$2; cornmeal, \$1.60 to \$1.65; beans, \$1.50 to \$1.90 per bushel; split peas, \$2.40 to \$2.50; pot barley, \$2.40 to \$2.50; pearl barley \$4 per sack.



Office of the CANADIAN MILLER,
(October 14, 1893.)

THE GENERAL SURVEY.

CROP estimates are coming in fast and thick from many different authorities. We have had the annual report of the Hungarian Minister of Agriculture, which has provoked some lively criticism. His estimate of the world's production of wheat this year is 2,279,000,000 bushels as against the official average of 2,280,000,000 annually for the last ten years. The deficit to be filled by importing countries is given at 379,000,000 bushels. The surplus available in exporting countries to satisfy this demand is 378,664,000 bushels. The Secretary of the Liverpool "Corn Trade News" pronounces the Hungarian estimates "not only worthless but mischievous."

The New York Sun has made an elaborate, and, what is considered by not a few to be, a careful estimate of the world's wheat product. The Hungarian Minister is here, also, brought to book. He is charged with taking "no account whatever of the needs of the people inhabiting the islands of the sea, and the tropical lands, which grow no wheat and yet consume from 35,000,000 to 40,000,000 bushels annually. Neither has he taken cognizance of any importing country outside of Europe, although the exports of the United States to such countries has averaged 23,454,000 bushels per annum during the last five fiscal years." The Minister's figures dealing with the United Kingdom, Germany, the Netherlands and Switzerland are all challenged, as being widely astray, by this same critic. The Sun places the United States harvest below home needs, while the world's product in 1893 is thought to be below the world's requirements by some 196,000,000 bushels. This is said to be partially offset by an extraordinary reserve of something near 100,000,000 bushels in the United States.

Mr. Robert H. Lawder, of Toronto, who has for years been a close student of crop conditions, has a lengthy letter in the Shipping and Commercial List, of New York, in which he deals with the estimates of the Hungarian Minister and other estimates. Mr. Lawder considers the statistical condition to be unpromising. He says: "If the world's wheat crop in 1892 was sufficient to meet all requirements during 1892-93, and leave very large reserves to be carried over into 1893-94; and if the world's wheat crop of 1893 shall prove to be as large as that of 1892, as appears to be the case, the deduction must be, that the reserves at end of the present crop year will have undergone another increase equal to that which has taken place in 1892-93. On the other hand, prices are unprecedentedly low, and it may be assumed that the consumption for human food will be increased, that a larger quantity of wheat will be fed to cattle, and that a considerable quantity of wheat will be withheld from market. This last result appears to have already happened in British India, where, with a wheat crop in 1893 about 60,000,000 bushels larger than 1892, the exports since April 1 have only been about one-half of those in the same time in 1892." As to the future of prices the Toronto expert contends that the supply is too abundant to justify any expectation of permanent improvement.

The variety of opinion on the crop situation gives grounds for the conclusion reached in "The Market Situation," of Milling, that "The wheat situation this year is very complicated and the best judges see nothing ahead, or immediately ahead, which promises better times."

New wheat is coming in slowly. The prices do not tempt farmers, and one hears considerable in confirmation of Mr. Lawder's statement that it is being largely fed to cattle.

More and more the future of the wheat markets becomes a question of speculation. This uncertainty is the unfavorable element of the situation. We make calculations at the commencement of a crop year based

on certain supposed reserves; but with the notions that prevail among the farming community these times it is almost impossible to ascertain nearly correctly the real reserves that are in farmers' hands. We ensure the wheat speculator for the tyrannizing part he oftentimes plays in disturbing the markets, that he may carry his own ends. But the farmer himself is becoming just as prominent as a bull or bear, according as he thinks his interests can be best served. It is this hiding the facts, a suppression of the true story, that is playing hob with markets everywhere. For this very reason the situation may not be as gloomy as seems to be the case. There may be something more than sentiment in taking a hopeful view of the future.

CURRENT PRICES OF BREADSTUFFS.

WHEAT: Toronto: White, 57c.; spring, 56c.; red winter, 56c.; spring, Midland, 59c.; No. 2 hard, 72c.; No. 3 hard, 67c. The Grain Trade Bulletin, of the Central Wheat Buyers' office, reports: Toronto. "Car wheat worth 60c. to 61c. on track, Toronto, for fall wheat. Street prices: Fall, 62c.; red, 61c.; goose, 59c.; spring, 61c. Ontario wheat, car lots: Ontario fall wheat offering freely at 58c., both red and white, and some red and mixed at 57c. straight. Hardly any demand, exporters offering 56c." Chicago: Wheat market quiet with only a moderate business. At the opening May commanded a premium of 7 1/2c. over December, but at the close was bringing about 7 1/2c. over December. Duluth: No. 1 hard, 62 1/2c. for October; No. 1 Northern, 61 1/2c. for October; No. 1 hard, 64 1/2c. for December; No. 1 hard, 71 1/2c. for May; No. 1 Northern, 70 1/2c. bid for May; to arrive, 61 1/2c. St. Louis: 61 1/2c. for cash; 61 1/2c. for October; 62 1/2c. for November; 64 1/2c. asked for December, 71 1/2c. bid May.

BARLEY: Toronto: Feed is held outside at 38c. and is quoted at 36 to 37c. Sales of No. 1 Canada in Buffalo made 77 to 78c., high-class brewers being the purchasers. Buffalo: No. 2 Western 61 to 62c.; state, 68 to 70c.

OATS: Toronto: Quiet and fairly steady. No. 2 white, 35c.; No. 3 white, 34 1/2c.; No. 2 mixed, 32 1/2c. Chicago: October, 27 1/2c.; December, 28 1/2c.; May, 31 1/2c.

PEAS: Toronto: Dull; 52 to 53c.

RYE: Toronto: No. 2 quoted at 54c. At Toledo No. 2 sold at 48c.

A NEW WHEAT COMPETITOR.

THE Argentine Republic is stepping to the front as a competitor in wheat, whose growing strength cannot be disdainfully cast aside. In a recent English consular report, Mr. W. H. Gastrell refers to the rapid development of Argentina from an almost purely pastoral to a cereal producing country, pointing out that, while in 1880 the Republic imported 177,000 tons of wheat, it has this year a surplus available for export of 1,000,000 tons. He remarks further that, geographically considered, the country is remarkably well adapted for the cultivation of cereals. Its vast cultivable areas and the extensive facilities for transport provided by its railway system, render its potentialities as one of the sources of the food supply of Europe a subject of considerable interest. For the present year the total area under cultivation is estimated at 12,500,000 acres, and the possibilities of extension may be judged from the statement that the area said to be suited to cultivation in the whole country is about 240,000,000 acres. As the distance to ports of shipment from the tracks at present under wheat crops is usually short, it can be produced and shipped at an exceptionally low cost, this depending very much, Mr. Gastrell says, upon whether the colonist and his family perform the work themselves or have to pay for hired labor. A calculation is made, based upon the average yield of one ton from two and one-half acres, that, allowing for all expenses of transport, etc., the wheat, if sold in Europe at about 22s. per quarter, would return a net profit of about 4s. 6d. per quarter. The United States Miller points out "that the price mentioned is considerably below the lowest yet reached in England, and as the quantity available for export is already sufficient to make it an appreciable factor in calculating the total food supply, the progress of this comparatively new competitor in the world's markets will be watched with increasing attention."

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BY THE WAY.

THE future of wheat production in Great Britain is proving a matter of serious concern to millers and agriculturists in the United Kingdom. A report of the English Board of Agriculture conveys the intelligence that the area sown to wheat in Great Britain has sunk from over 4,000,000 acres in 1863 to 1,897,488 acres in 1893. This decline has not come at a jump, but has been a matter of growth during these thirty years. From more than 4,000,000 in 1863 it had declined to 3,500,000 in 1873. Two years later, in 1875, the figures changed to 3,300,000. This year the decrease is 322,250 as compared with last year.

* * * * *

These conditions are accentuated by the terribly low average of prices that have prevailed in Great Britain for some time. Low prices have ruled the world over. The cost of wheat production, however, is not the same in all parts of the world. And it is here that the British farmer, with his high-priced lands, is feeling the effects of competition with the farmers of the newer world, where land is comparatively cheap. Must wheat production then be given up in the United Kingdom? This is the question, to quote from a letter to the CANADIAN MILLER, from Mr. W. R. Mallett, a large miller, of Exeter, Eng., and a name familiar in milling literature, that "is widely and seriously occupying men's minds in Great Britain." As a means, perhaps, of shedding some light on the question, Mr. Mallett writes: "I am anxious to get some reliable information at first hand from parties in the various grain producing countries as to the first cost of growing wheat under differing climates, soils, and conditions of labor and taxation, which will be condensed into a paper, I have consented to read this autumn before the leading agricultural associations of the west of England."

* * * * *

The means adopted to secure this information is the issue of a circular containing a number of leading questions touching the matter under consideration. The circular is headed: "Wheat Lands Under Cultivation," and the questions propounded are as follows. 1. Is the land usually owned by the occupiers or rented? 2. If owned, what is about present selling value per English Statute acre or an equivalent, taking land of a quality fairly representative of your district, county, or government? 3. On what terms are real estate loans obtainable? 4. If the land is rented, or hired. What is usual or fair average rental, also taking fair representative quality, per English acre or an equivalent? 5. What wage is usually paid for farm labour, and hours of work? 6. I shall value any information you would give as to: a. Cost of manure, if used; b. Cost of working and preparing the land; c. Cost of seeding; d. Cost of harvesting and threshing. 7. What is fair average crop? 8. Can any other crop be raised in the same year? Of what value would such crop be? 9. Of what value is the straw? 10. What is total cost of transport, road, rail, or water, from the farm to nearest ocean-shipping port? 11. At present level of wheat values, say 30s. per English quarter of 49 lbs., for good wheat delivered in London, does wheat-growing pay, and is its production increasing or decreasing with you? 12. At this level of price what is the net return to your grower? The MILLER cheerfully publishes these questions and will be glad to learn that this act will have had the effect of furnishing Mr. Mallett with information from Canada that will be helpful to him in the preparation of his forthcoming paper.

* * * * *

The MILLER has, at various times, referred to the work of the Millers' Trading Bureau of the United States, and the success that has attended the efforts of those who have been handling the business. We learn that this work has proved so valuable to exporters, that the rail-carriers have detailed men to send out notices every day of the flour loaded into vessels for export. Before, exporters were notified of day of sailing and name of vessel taking flour whenever a clerk happened to have time to attend to it. The bureau has undoubtedly done good work, the one matter of regret, as the American

Miller says, is that petty jealousy and strife have prevented a large number of flour exporters from making use of the bureau. United States millers would appear to be constantly at war with each other, and, ever and anon, their associations are rent assunder by the Kilkenny cat methods that are employed to keep the concern, going. The contrast in this respect with the Dominion Millers' Association is very marked.

* * * * *

The members of the several boards, that fix the grain standards for the year, have had a busy month. In our Scribe page is published an interview with Mr. C. B. Watts, who returned a fortnight ago from Manitoba, where he had been serving as a member of the western board. Many interesting and suggestive facts are given by him in connection with wheat production in the Northwest. The disposition seems to have been general, both in Ontario and Manitoba, to lower the standards of wheat and other grains. In our own province, from all accounts, the effort has been more successful than in Manitoba. Wheat, it is said by some, will grade about the same as last year, but from information that comes to the MILLER we are inclined to the opinion that the standard will in point of fact be lower. We hear of a tendency to give confusion to some grades by so mixing the grain that it will be difficult to tell just what is the real quality of that which is offered. A like difficulty, it is said, exists with oats, where black and white, have so become part of the same grade, that it will not be an easy matter to properly locate the place of some. With grades of grain, as with the speech a man will use, the more clear-cut and distinct it is, the less trouble there is to understand exactly what is meant, and much confusion is saved afterwards. One cannot pretend to compare intelligibly Canadian red wheat with the red wheat of Toledo, or some other market, if the red wheat of our own country is so indistinctly graded that it may mean red, or something else. In Ontario, in mummy and black-eye peas two new grades have been decided upon. The standard of barley will run lighter.

A FORGOTTEN CRAFT.

THE work of the millwright, as we knew it in our youthful days, is, in many places in England, at least, quite unknown. The old-fashioned millwright was usually a man of sterling worth, well educated in all the details of his trade, and capable of managing intelligently any kind of work that he was called upon to face in a mill, a man of quick resource, and a thorough workman in wood and iron. When his services were required either for alterations or repairs, he approached the job with a thorough knowledge of its details, and after examination was usually ready with a careful and accurate plan of what was required to be done, and a straightforward idea of setting about doing it. His workmen were very much after the type of the master, mostly younger and with less experience, but with the same "laneliness" and readiness of resource, and, under the direct personal supervision of their employer, were daily learning the necessity and value of accuracy in the details of their daily work.

Mills built by such men were the pride of the owner and the delight of the operative. These were the days prior to the keen-cutting competition for contracts, and before the time of the "jerry-building" which occasionally finds its way into mills.

The plan and arrangement of the machinery was the joint idea of the millwright and the miller, and every drive and every machine was carefully arranged and accurately erected. Some of the mills built on these lines were fine specimens of millwrights' work: the bright, true running shafting, noiseless gears, and the woodwork, with the strength and solidity of high-class work, all tended to make the aggregate results satisfactory and pleasing in every way.

With the advent of roller-milling much of the excellent work disappeared. Keen competition for orders, want of care in measuring up the mill, and, in some cases, absolute ignorance in the drawing-office of the details of flour-mill machinery, led to many arrangements that were bad alike in principle and practice. Then the attempt of the foreman erector, with his army of mill joiners to put right the work of the draughtsman, led to much work that was unique and grotesque; and in addition to this the great misfortune was that the miller for whom the work was being done did not himself understand it, nor the best methods of doing it. Consequently many of the earlier roller mills were very unsatisfactory, and gave a world of trouble to their owners. Shafting and pulleys

out of line and proportion, drives ill-conceived and badly carried out, elevators that would not carry or deliver, spouts that would not run, were some of the causes that rendered the life of the miller not a happy one.

During the last ten years, however, there has been considerable improvement, and as the millwright seems likely to again take his legitimate place, we may hope to see a return to the excellent standard of work that prevailed in the mills of our fathers.

After all, the general plan, the arrangement and erection of a mill have a great deal to do with the profit made by it, often much more than the owner thinks or will allow himself to think. We have been in mills within a few years, where the absence of the millwright and the presence of the drawing office assistant and the mill joiner was broadly written on every floor. Badly hung shafting, hot bearings, belts tight as fiddle-strings and running against guides, with liberal use of resin or left paste, do not tend to excelsity or economy in working.

The milling engineers are now much more approximating to the millwright than ever before. Some who have taken a high place as builders of modern mills have been millwrights and sons and grandsons of millwrights; have always been famous for the excellence of their work, and have more than upheld their name and reputation in the later field of roller-mill erection. A miller of large experience recently said to us, when speaking on this subject, "Give me good machines and a well-planned and erected mill, and if the diagram is not quite right it can be easily altered; but unskillful planning and workmanship in erection are always present and always making themselves felt."

This is quite true, and the short life of some mills and the necessity for remodeling so soon after starting, was no doubt due to the courses we have set forth. However, we are apparently on the eve of better times, when the miller will be his own expert and the millwright be responsible for the machinery only. -Milling, Liverpool.

\$1,000 CASH BUYS IT.

THIS piece of sarcasm is to be credited to Mill and Power:

Substantial building 40 x 50, 1½ stories high, basswood frame, selected elm siding and good oak-slab roof, three run of five-foot Blue Lacking stones, flutter-wheel to each run, under-shot wheel drives machinery, consisting of one rolling screen, one Grimes' smutter, and bolting equipment equal to any, viz.: two 42-inch reels 20 feet long clothed with 10 ft. No. 8, 5 ft. No. 9 and 5 ft. No. 10, imported silk, placed in knock-down chests where the flour can be mixed to suit each customer, also all tools and implements used in the mill. Block and tackle for taking up the stones, facing hammer for dressing them, and one set of balance scales with 56-pound iron weight, etc.

The dam is three feet six inches high, measuring from a boulder or nigger-head marked "D" lying in the outlet of water from the mill. The dam can be raised three inches higher by grinding free all wheat and feed grists for two farmers, Stickute and Stullhorn, living one on either side of the creek above the pond.

The mill is built at one side and partly on the dam which is made of gravel and brush—inehaustible materials, always at hand, so the miller can make necessary repairs while the mill runs, no outside help required. Four acres of land (which spread out level will make ten) goes with the mill, including a good big dwelling 10 x 40 feet, four pig pens made from hard water elm, an excavation in the bluff for chickens, and other improvements.

I cannot supply the demand for the mill's product. It is a splendid opening for a man of generous impulses and unlimited capital in a community where creditors are never dunned for settlement.

The people are unanimously in favor of a "miller's trust." Some until after harvest, others to the end of time. Book accounts to the amount of \$1,235.50 go with the mill. My price is the book accounts. Terms, \$1,000 cash, balance when collected. Good sucker fishing in the spring, at which time I always salt down a year's supply, but as I am getting too old to wade, and suffer heavy penalties in rheumatism, therefore I am obliged, after running it thirty years, to sacrifice this valuable mill, horse, society and brain diet, for the paltry sum named. Address,

WORN OUT MILLER,
Sucker Creek, Doctor's Utopia.

DONT.

ONE of the most common, and at the same time greatest abuses of the boiler, is the reckless practice of blowing out the boiler as soon as the fires are hauled, and the boiler still hot. Under such circumstances the contraction of the fire-sheet, tube-sheet and tubes is so unequal and rapid that in the end it results in the ruin of the boiler.

THE NEWS.

CANADA.

-Winnipeg, Man., is adding \$1,884,000 worth of building to the city this year.

-The new mill of the Peterborough Milling Company is about ready for operation.

-The Brandon (Man.) Farmers' Elevator, Mining and Trading Co., Limited, has been incorporated.

-Dow & Curry's new oatmeal mill, at Pilot Mound, Man., is expected to be ready for operation this month.

-W. H. Whinster, of Strathclair, Man., is another loser from fire, his grist mill being consumed three weeks ago.

-Patrons of Industry in Manitoba purpose to handle grain for their members, and have opened an office in Winnipeg.

-Henry Oliver, an oiler at the Columbia Flouring mill, Enderby, B.C., lost his life by being accidentally drawn into the machinery.

-The council of Hanania, Man., has offered Mr. Walker, of Niagara, Ont., a bonus of \$5,000, if he will erect a flour mill in that town.

-Govenlock's elevator and engine house at Griswold, Man., have been destroyed by fire. The elevator contained 25,000 bushels of new wheat.

-M. Creighton's roller mill, at Comber, Ont., was reduced to ashes a fortnight ago. Cause of fire unknown. Loss, \$12,000; insurance, \$6,000.

-Baxter's large grain warehouse at Burlington, Ont., was destroyed by fire in September, together with 15,000 bushels of grain. Loss, \$25,000; partly insured.

-Chas. Braithwaite, Grand President of the Patrons of Industry, has taken office in the Grain Exchange building, Winnipeg, Man., and will handle grain this season for the members of this order.

-The McKay Milling Company's grist mill at the Chaudiere, which had been closed down for repairs is again running, and night and day hands will be run until sufficient stock is laid up.

-Stephen Nairn, the well-known oatmeal miller, of Winnipeg, Man., says the best oats grown this season were to be found in the Red River Valley. Mr. Nairn has received at his mill about 10,000 bushels.

-The Bank of Montreal has issued a writ against the estate of the late F. W. Gibbs, of New York, for \$18,322.10 on a promissory note. Mr. Gibbs, it will be remembered, died about a month ago. He formerly resided in Toronto.

-W. F. Stewart has purchased the National Roller Mill, in Brussels, Ont., and has set to work to make necessary improvements about it and the dam. It is said that Mr. R. Graham is associated with him in the enterprise.

Some years ago, Menno Shantz, miller, at Berlin, Ont., failed and went out of business without settling with his creditors. In March last he purchased a men's furnishing stock in the name of his wife, Lydia. He has now assigned.

-The Great Western Mill, owned by Thos. McDonald, Woodstock, Ont., and which was destroyed by fire in August last has been rebuilt. The machinery is of the most modern type and the capacity 300 barrels of oatmeal and split peas per day.

-The Montreal Transportation Company is building a large barge at Kingston, Ont., with a capacity of 55,000 bushels of grain. The company will give employment to two hundred workmen during the winter. The barges have been so busy this season that repairs have been out of the question, and these will be prosecuted in the winter.

-Archibald Campbell, M.P., West Toronto Junction, Ont., has notified the Mayor that the agreement entered into last November with the town for the erection of a flour mill, elevator, and cooper shop has been fulfilled, and everything is in first class running order. The mill turns out over 300 barrels daily.

-A Montreal dispatch says: It is understood that a new grain elevator company is in process of formation here and that the scheme has the promised support of several of the steamship companies, the Canadian Pacific and the Grand Trunk railways. The capital of the new company will be \$100,000, and it is expected to start operations next spring.

-The roller grist mill, owned by J. W. Cochrane, Crystal City, Man., has been sold to Hon. Thos. Greenway, who has rented it to Graves, Campbell & Co. Mr. Cochrane is building a mill at Glenboro. Graves, Campbell & Co. have also taken possession of the elevator formerly owned by the Farmers' League, and have commenced buying grain.

-Head & Bossoms, elevator builders, of Portage la Prairie, Man., have ten elevators contracted for this season; six are completed. They are at Kenney, 40,000 bushels capacity; Carmuff, 30,000; Bagot, 20,000; Baldur, 30,000; Cypress River, 30,000; and Indian Head, 30,000. The uncompleted ones are at Sintilata, 30,000; Lumsden, 20,000; Oakville, 20,000; and Belmont, 30,000; and these will be completed almost right away.

-A Winnipeg dispatch says: The shipment of new wheat received so far by the Canadian Pacific Railway is the largest in the history of the company at this season of the year. These receipts represent principally deliveries from farmers, the wheat in store at Fort William up to the 23rd September amounting to 472,700 bushels; receipts, 178,589 bushels; ship ments, 356,702 bushels. The receipts at the Canadian Pacific Railway elevators from now on will equal the shipments.

-The annual meeting of the Lake of the Woods Milling Company, limited, was held at the office of the company in the Board of Trade building, Montreal, on the 4th inst. The report for the year ending August 31st, which was submitted to the shareholders, was considered satisfactory, and a dividend of 6 per cent on the capital stock of the company was declared payable on the 1st of November. The following directors were elected: Robert Meighen, John Mather, R. B. Angus, John Turnbull and W. A. Hastings. At a subsequent meeting of the directors, Robert Meighen was elected president and managing director; John Mather, vice-president; W. A. Hastings, general manager; G. V. Hastings, general superintendent, and S. A. Metax, manager at Winnipeg.

-The erection of the proposed C.P.R. elevator, which was to have been built at Winnipeg, Man., this fall, has been postponed until next year. This action was decided on after it became apparent that the elevator would not be needed to assist in handling this year's crop. It is estimated that fully 85 per cent. of the crop will grade No. 1 and 2, and the balance Nos. 3 and 4, there being practically none of the poorer grades, consequently there will be no need of a cleaning and sorting elevator for which the one to have been built was intended. Again, it is confidently expected that a goodly proportion of the crop can be shipped out before navigation closes and the storage facilities at Fort William will be ample to accommodate the remainder quite easily, and the Winnipeg elevator would not be required for storing purposes.

GENERAL.

-Ten carloads of human bones were recently shipped from Mexico to the United States. They are to be used for fertilizing and sugar-refining purposes.

Russia has millions of fertile acres that have not been touched by the plow; improved agricultural methods and machinery are being introduced; the grain trade is being placed on a business basis; flour mills of large capacity and modern type are being erected. Lastly, it is said, a change is to be made by the Czar in the land system, which will substitute individual effort for the primitive communal system. Clearly, Russia is to be our rival.

According to the Austro-Hungarian Consul at Milan, Italy has more flour mills than can find work; many mills, it is stated, are shut down. Although the high duty on foreign flour (amounting in all to 13 9/16 lire, or about 11s.) prevents anything like free importations, a certain amount of foreign flour finds its way into the peninsula. The imports in 1891 amounted to 38,910 quintals (the quintal is 220.46 lbs.), against 41,312 quintals in 1890, the respective shares of Austro-Hungary amounting to 18,734 quintals in the latter, and to 18,886 quintals in the former year. The same report adds that of foreign flours Russian and Hungarian divide the honors in the north of Italy, while Russian flour shares the ground with the native product in the south.

PERSONAL.

Mr. J. C. Wilson, of the Glenora Mills, Pictou, Ont., has been confined to his home through illness.

Mr. Harry J. Stevens, manager of the Aylmer (Ont.) roller mills, was married on September 27th, at the Church of Christ, Dorchester, to Miss Ethel Stripp, of Kingsmill. The ceremony was performed by Rev. T. B. Knowles, of St. Thomas, assisted by Rev. F. R. Black. The happy man of this happy occasion is a son of Mr. N. H. Stevens, the big miller of Chatham, and one of her most esteemed citizens.

TERRESTRIAL GRAVITY.

THE mean density of the earth has been studied by a French physicist, M. Berget, by means of a new instrument? the gravimeter of M. Mascart. This apparatus consists of a U-shaped glass tube, containing a column of mercury balanced against a small quantity of hydrogen gas in such a way that slightly varying effects of gravitation will cause the mercury to move in the tube, as in the thermometer or barometer. By this delicate device M. Mascart believes he has obtained some evidence of a variation in the gravity of the earth. M. Berget made his computations of the mean

density from the difference in effect upon the apparatus of the earth's attraction with the attraction of a lake and when the lake had been emptied of its 320,000 tons of water. A number of trials have led the experimenter to place the mean density of the earth at 5.4, the estimate of M. Cornu, by the method of Cavendish, being 5.5.

MILLERS' & MANUFACTURERS' INS. CO.

ESTABLISHED - 1885

32 Church Street, Toronto

The President, James Goldie, Esq., in moving the adoption of the report on the business of 1892, said: I have much pleasure in drawing your attention to the fact that this company has verified, in a marked degree, every expectation set forth in the original prospectus when organized in 1885.

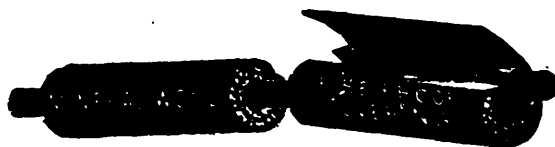
Up to the present time the insurers with this company have made a saving, when compared with the current exacted rates, of \$91,000.00. And in addition thereto bonus dividends have been declared to continuing members amounting to \$21,521.71.

Besides achieving such result, we now also have, over all liabilities including a re-insurance reserved (based on the Government standard of 50 per cent (\$50)), a cash surplus of 1.33 per cent. to the amount of risk in force.

Such results emphasize more strongly than any words I could add the very gratifying position this company has attained. I therefore, with this concise statement of facts, have much pleasure in moving the adoption of the report.

The report was adopted, and the retiring Directors unanimously re-elected. The Board of Directors is now constituted as follows: James Goldie, Guelph, president; W. H. Howland, Toronto, vice-president; H. N. Baird, Toronto; Wm. Bell, Guelph; Hugh McCulloch, Galt; S. Neelson, St. Catharines; George Pattinson, Preston; W. H. Story, Acton; J. L. Spink, Toronto; A. Watts, Brantford; W. Wilson, Toronto.

HUGH SCOTT, THOS. WALMSLEY, Mgr and Secy Treasurer



Mineral Wool Pipe and Boiler Covering

if you want to save fuel
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 " " " to prevent condensation
 " " " cold water pipes from dripping
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CANADIAN MINERAL WOOL CO. LTD., 126 BAY ST., TORONTO

COOPERAGE STOCK STAVES, HOOPS, HEADING OR LINERS

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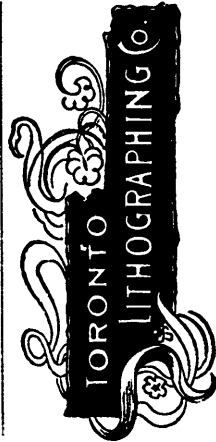
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... THEY MAKE THE BEST STOCK... **CHATHAM, ONT.**

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line of Steamships across Lake Michigan.
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to **ST. PAUL, DULUTH** and Pacific Coast points.
Write either of the undersigned for Folders, which
contain Maps, Train Schedules and much information
of value to those contemplating a trip to any of the
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Toronto, Ont.

USE MYERS' ROYAL CATTLE SPICE

TESTIMONIAL.
DEPARTMENT OF AGRICULTURE,
ONTARIO,
Toronto, March 17th, 1893.
Gentlemen, We have used Myers' Royal Cattle Spice
during the present winter with both cattle and sheep.
It seems to be equally valuable for both. I noticed
especially the benefit on a lot of yearling rams. The
change in their appetite and appearance was easily
perceived after the first week or ten days' feeding, and
they have steadily and rapidly gained since.— Yours
very truly,
(Signed) JOHN DAVIES,
Messrs. Myers & Co., Toronto.

JAMES DICKSON

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ASSIGNEE
COLLECTING ATTORNEY
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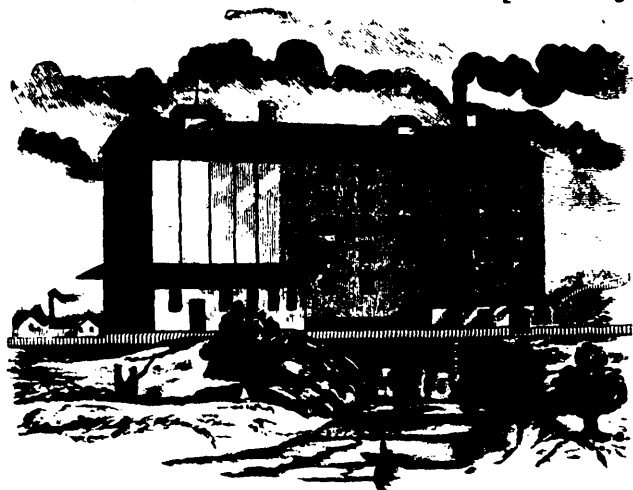
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Daily Capacity 500 Barrels



3½ Cents a day—

That isn't much money, is it?

About twenty-five cents a week or so.

And a man must be pretty hard up if he hasn't that much to spend every week.

Times are hard, they say; but if they are hard now to your family and yourself, what will they be to your family without you?

That's worth thinking about.

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Write to us and we will give you all particulars.



Send for sample of our new SAWMILL BELT



- Royal Mills, capacity 1,000 bbls
- City Mills, 1,100 bbls
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GENTLEMEN,

We have thoroughly tested the "Andrews Lumber Dry Kiln furnished by you and must say that it more than surpasses our expectations. We put green spruce lumber in from the saw dripping with water and in 18 hours it was drier than lumber that had been stuck up in the yard all summer, and in four days it was as dry as a bone, and without nearly as many checks or warps as the same grade air dried.

A very important feature of the "Andrews' Kiln is that it saves so much steam over that of any other system.

You may refer any one you like to us, or send them down to inspect, and we can satisfy them that your kiln cannot be beat.

Yours truly,

EASTMAN LUMBER CO.

WHAT?

WHY

CHATHAM, ONT.,
August 24th, 1893.

A. G. MORTIMER, Esq.,
Manager Dominion Dry Kiln Co.,
Toronto, Ont.

DEAR SIR,

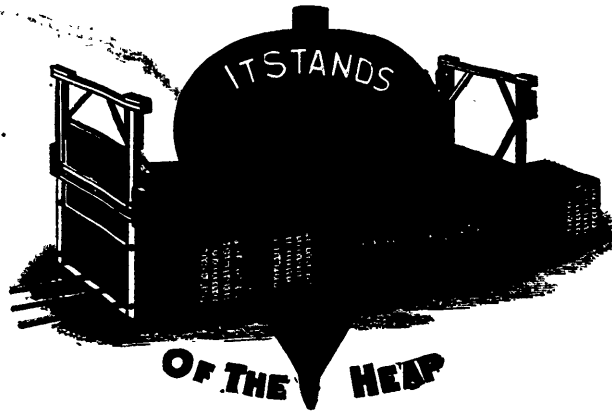
The "Andrews" dry kiln, which I purchased from you has now been in operation over a month, and it so perfectly satisfactory that I cannot say enough in its favor.

I use very little steam and my staves come out as dry as a bone, and are not in any way injured by warping or discoloration.

Yours truly,

(Signed) N. H. STEVENS

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FAIR
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Are always in better working condition
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Mill don't have to shut down for repairs
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GREEY ROLLS

ARE SO HARD AND TOUGH

LAST TWICE AS LONG AS OTHERS

..... Guaranteed to be absolutely free from any flaw

GREEY ROLLS ARE THE BEST

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..... Warranted perfectly true, and returned promptly

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1874	27.57	1874	13.54
1875	28.71	1875	15.35
1876	29.74	1876	17.15
1877	30.75	1877	18.74
1878	31.75	1878	20.26
1879	32.74	1879	21.41
1880	33.74	1880	22.51
1881	34.73	1881	23.58

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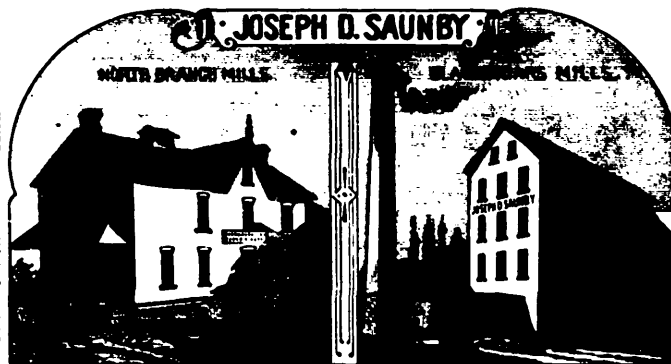
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