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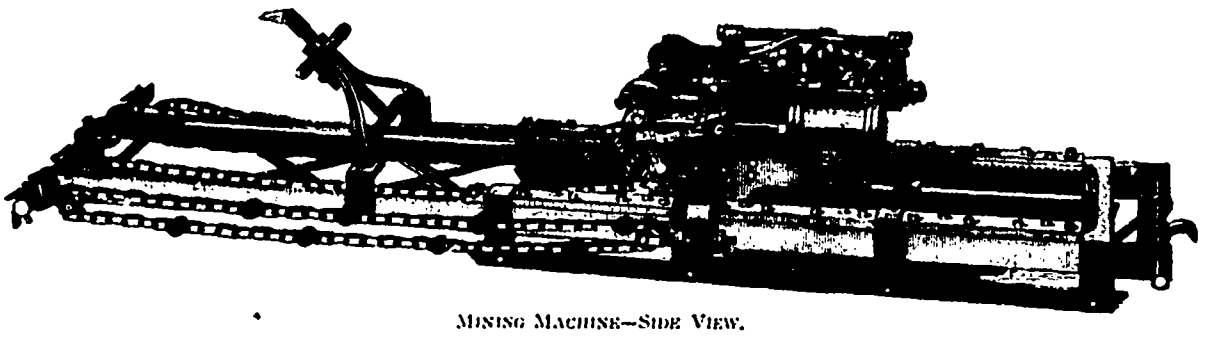
DOMINION MECHANICAL & MILLING NEWS

VOL. VIII.—NO. VI. TORONTO, ONTARIO, OCTOBER, 1887. { Price, 10 Cents $1.00 PER YEAR.

COAL MINING IN THE CANADIAN NORTH-WEST.

IN the summer of 1881, Sir A. T. Galt, Mr. Lethbridge, of London, England, and several other gentlemen applied to the Dominion Government for the lease of five coal mining locations in various parts of Alberta, on the Bow and Belly rivers, with a view to test the quality of coal prior to the opening up of the Northwest Territories by the construction of the Canadian Pacific Railway. Having obtained three leases, a party of mining experts were sent in the spring of 1882 to examine these, and by the end of the same year an exhaustive report on each location was received, which showed that the coal on the Bow Rivers, although more favorably located for shipment to market than the Galt mine coal, was much inferior in quality and in consequence would not warrant the expenditure of a large sum of money in development, it being apparent that sooner or later the Lethbridge coal would become accessible to market, and, owing to its superior steam-producing qualities, the Bow River location would ultimately become of small value.



MINING MACHINE—SIDE VIEW.

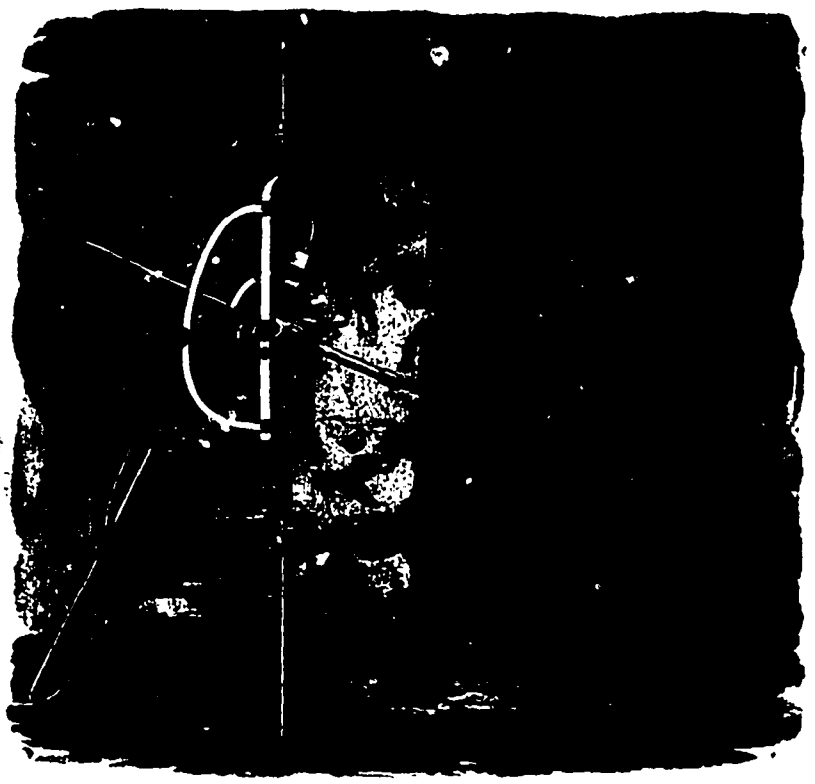
It was therefore decided to open the Galt mines at Lethbridge, and transport the coal in barges down the Belly River to Medicine Hat, the point at which the C. P. R. crosses the South Saskatchewan River, and for this purpose a company was formed in the spring of 1883 with a capital of £50,000 sterling, and preparations were made to build the steamer and a fleet of barges to convey 3,000 tons of coal from the mines to Medicine Hat, which the C. P. R. had agreed to take from the company at a good price in order to encourage the enterprise and ensure cheap fuel for the prairie country which their railway would open up for settlement.

The difficulties to be overcome in the building of these boats were immense, as the material, excepting the lumber for the hulls, had to be freighted in bull wagons from Swift Current (at that time the terminus of the C. P. R.) to Lethbridge, a distance of 250 miles, and the lumber had to be brought from the company's saw mill in the Porcupine Hills, a distance of 60 miles, to the shipyard at Lethbridge.

Skilled ship-builders were brought from Yankton and Pittsburgh via the Missouri River and Benton, and on the 1st of June, 1883, the steamer "Baroness" was launched and floated down the river to Medicine Hat to receive her machinery, but owing to various disappointments and delays some 200 tons of coal only were brought down the river that season (1883).

Finding that the season of navigation on the Belly River for the transportation of coal was going to prove very short, the company determined to increase its floating tonnage by building two new steamers and sixteen new barges, which was done during the fall and winter of 1883-4, and on the opening of navigation in the spring of 1884, the company had three steamers and twenty-five barges employed in carrying coal to Medicine Hat.

The navigation of the river however proved very difficult, and the duration of its season extended over a a period of seven weeks only, thereby demonstrating that some other means of transport would require to be employed if it was expected to bring the coal into general use in Manitoba and the Northwest Territories.



DRILL AT WORK.

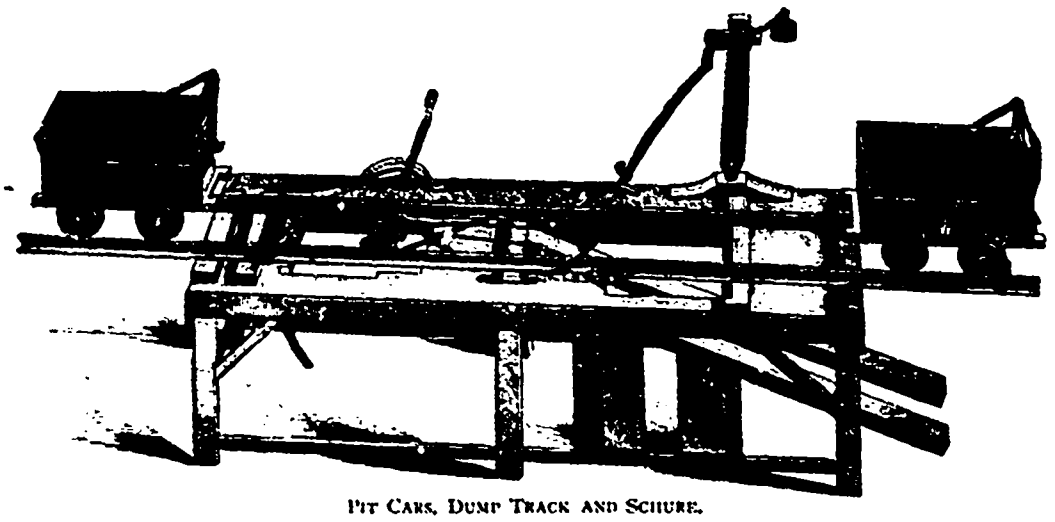
Short as the season was, the company succeeded, however, in delivering to the C. P. R., 3,000 tons of coal before the fleet had to be laid up, owing to low water in the river and this coal on being thoroughly tested in the locomotives of the C. P. R., proved to be of great value for steam purposes, so much that the C. P. R. company offered to give the coal company a contract for a large quantity of coal for a term of years, if they would build a railway to connect the mines with the C. P. R. Having obtained this contract they applied to the Dominion Government for a charter to build a narrow guage line of railway, which was granted, and with it a railway land grant of 3,840 acres per mile, to be paid for at the rate of ten cents per acre.

The company now increased its capital to £150,000 sterling and issued bonds to £160,000 sterling, to build the railway, and the contracts were let to commence work in April, 1885, on the railway construction, but owing to the rebellion breaking out about that time, it was impossible to get the contractors to begin work before the end of May, and until the railway was completed the various work parties had to be afforded military protection. Fortunately, however, owing to the judicious action of the Government, the Indians in Alberta were kept quiet and the railway was finished on the 28th day of August, 1885, and on the following day coal was delivered on the C. P. R. at Dunmore, being the point of junction with that railway. The railway connects at Dunmore with the Canadian Pacific main line 650 miles west of Winnipeg. The line was finished Aug. 28th, 1885, and the first train of coal hauled over it the next day being delivered to the C. P. R. on August 31st. There are now four or five trains daily, each of about 16 cars of coal and the passenger cars. The water is hard upon the boilers, except at Lethbridge, where good water is had, but boring will be done this year along the line for artesian well supply.

The total cash receipts for the first month's working were $8,721, while those for November, 1886, were nearly double, or $15,079; one week in that month showing the business to have been 8,862 tons of coal, 54 tons of company's freight and 70 passengers carried. All the locomotive and other repairing is done at the machine shops. The water supply for the railway, the collier and the town is drawn from the Belly River by a force pump in the valley and driven up a steep bank of 300 feet.

The machine shop contains one six-foot planer, one large lathe for car wheel work, one general purpose lathe, one drill two-inch capacity, one nut and bolt machine, one wheel press and one 24-inch fan for blacksmith's use, all run by a 26-horse-power engine, and all from Bertram & Sons, Dundas, Ont.

The most extensive coal deposits are on the Bow and Belly rivers, which form the South Saskatchewan, and it is on the Belly the Galt mines are situated. The seam can be seen for several miles on both banks at different heights, the outcrop being known to extend from St. Mary River for 70 miles. The supply is exhaustless and is estimated by Professor George M Dawson at five to nine million tons under each square mile, showing from 40 to 56 per cent. (and more) of fixed carbon. The seam of coal is five feet two inches thick, is almost flat and very regular. There are three double "entries" to the mine running into the bank from the lever of the rivers, each "entry" being now in a distance of about 1,200 feet and a working chamber 21 feet wide is opened out every 24 feet in these "entries."



PIT CARS, DUMP TRACK AND SCHURE.

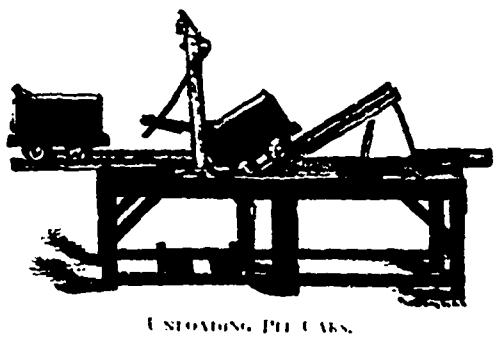
The quality of the coal and character of the goaf is

steadily improving as the workings get further in under the "bench" land. The covering of the coal at present is about 150 feet, but in a few months, when the entries are advanced 1000 feet further, the covering will be 350 feet, when a still better quality of coal may be looked for.

To facilitate mining the coal and to render unnecessary the employment of a large body of skilled miners, who have to be brought from the Eastern Provinces at great expense, the company have introduced an American mining machine, which undercuts the coal and thus does the work which heretofore has required the employment of skilled labor. Two men run each machine, and after the cut has been made ordinary labor can shoot the coal down with powder and load it into the pit cars. The machines, which have proved very successful, are run by compressed air, which is conveyed in wrought-iron pipes to the various workings in the colliery, a distance of upwards of 3,000 feet from the compressor.

Besides the machines, an air-drill has also been introduced to bore holes for the slots The compressed air is also conveyed in pipes to the blacksmith's shops for the forge for driving the emery wheel, which is used for sharpening tools, etc., and this year the company propose to use the same power to drive the machinery in the railway repair shop and hoisting engine. In compressing, the air becomes heated up to 350 degrees and is cooled by passing over tubes of cold water. The coal after being brought out of the mine is hauled up an inclined plane, 2,100 feet long, to the bank head, whence it is discharged into chutes leading into the company's railway cars. There are screen bars in these chutes as well as in those at Dunmore in order to insure the coal being sent to market in good condition. The company have now in their employ about 350 men, of whom 50 men have their families resident in Lethbridge.

The mining staff consists of one superintendent, three engineers, two firemen, four bankmen, three screeners, one weigher, five general laborers, two carpenters, two bottomers, two blacksmiths with two helpers, one emery wheel grinder, seven teamsters, four timberers, four general purpose men in mine, eight mining machine tenders, and 80 miners blasting and filling, there being in 1886, 125 men on the colliery pay roll. The daily output per man is about five tons in a working "shift" of nine hours, from 7 until 17 o'clock, with an hour for dinner, the largest daily output reaching 300 tons. The cutting machines or "iron-men" are very compact, powerful, and rapid-acting, working on the floor level and biting into the coal a strip three feet wide at the rate of a foot deep per minute. The pit cars hold one ton each and are hauled to the pit mouth, two or more at a time by mules, where horses replace the mules and draw five cars to foot of inclined plane. As the five full cars are raised to the schutes, five empties return on the opposite track, both being worked by a wire cable from a drum above It only occupies five minutes to raise, dump, screen, weigh and tally (record) five tons of coal. The coal is screened into three classes, the finest and next being used for ballasting the railway, and the clean lumps only going to market. The cars are emptied, two at a time, the tipper by a dial indicating to the weigher below the number of the miner who filled it, and the weigher crediting each with his work. As the cars are filled trains are made up and despatched.

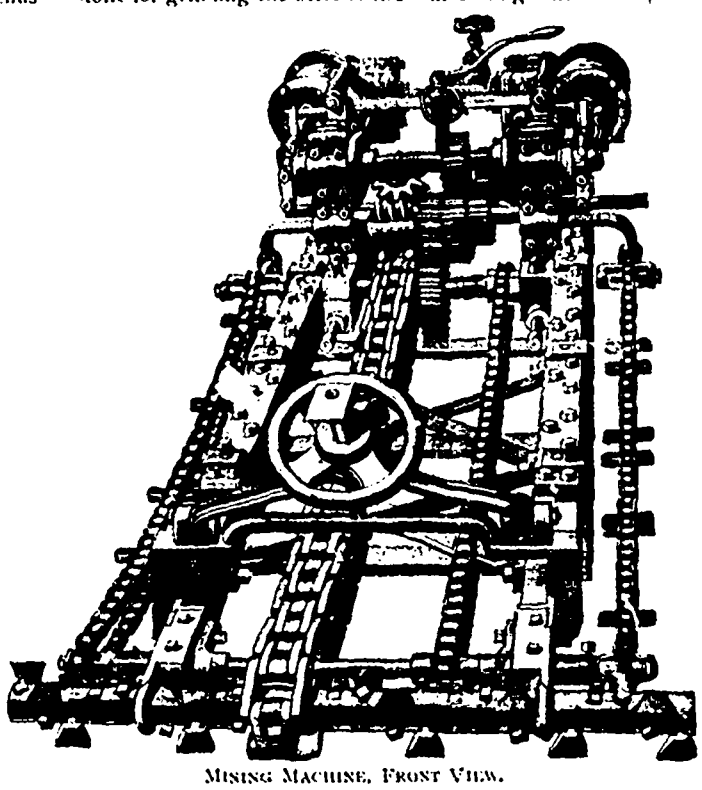


Stoating Pit Cars.

About ten per cent. of the coal is lost in screening, as the fine will not repay carriage.

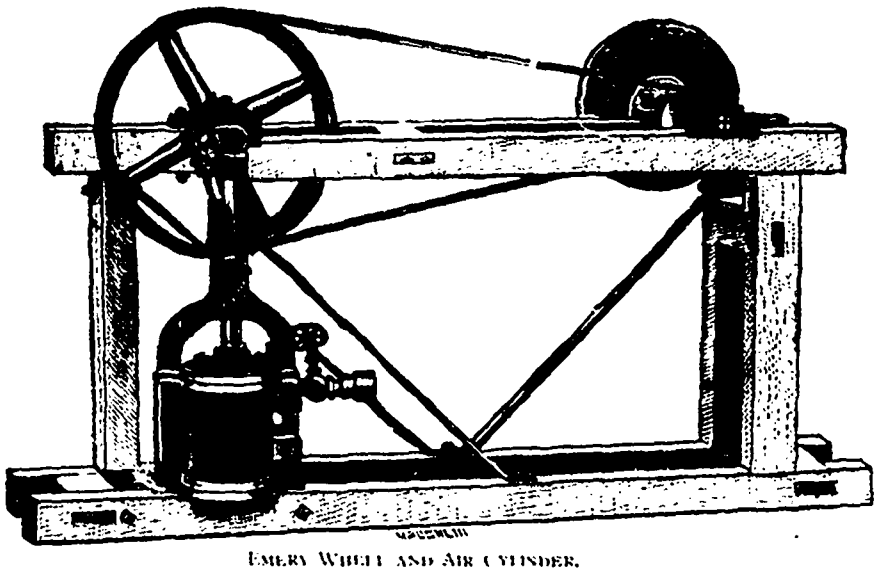
The colliery buildings are one engine-house 26x36 feet, 1 storehouse 16x42, 1 blacksmith shop 15x20, stables for 15 horses and corrals. The inclined plane is double track, 2,300 feet long, at an angle of 8 degrees or nearly 300 feet vertical, the elevated trestle at its upper end being 22 feet high, 26 feet wide and 200 feet long, and at each end is an electric alarm to warn the engineer when to hoist or lower. The machinery consists of three 60 horse power boilers, with room for two more of 200 horse-power each, which are to be put in this year, three air compressing engines 20x24, 1 Inverwood engine, 60 horse-power, for hoisting the coal, one pumping engine 10 horse power for supplying the boilers, for which is used the river water direct, and that which is condensed from the air compressors.

The blacksmith's shops have three forges and an emery stone for grinding the bitts of the coal-cutting machines.



Mining Machine. Front View.

The four Legg coal mining machines have a capacity of fifty tons each daily, one machine and two men being equal to twelve men with picks, and the two rotary power drills are each equal to twelve men boring by hand, one of these drills boring a hole five feet deep in five minutes. In the mine is an automatic air pump with a capacity of 120 gallons per minute, but it is not so far required, as the workings are very free of water;



Emery Wheel and Air Cylinder.

also 5,000 feet of five-inch air line pipe, 5,000 feet of 1½ inch branch pipe, of which 8,000 feet are in use, 50 feet 1½ inch rubber tubing for supplying the cutting machines. There are 100 mining cars holding one ton each, and running upon two miles of rail track, employing altogether fourteen mules and horses. As the coal is removed the roof has to be supported by timbers, and every day this requires sixty stout logs five feet long, thirty ties for track rails, thirty overhead beams, 3x6, 4x6 and 8x8, in ten feet lengths, and sixty post caps of 3x4 plank, 1½ feet long. The main entries are five feet wide, 6½ feet high, 15 feet apart and 200 feet between each pair. The details of the works are many and minute and very interesting, and even a novice can see that the superintendent, Mr. Stafford, is quite at home, having all the practical as well as the general principles at command, using them in the interests of master and man. He has had long mining experience, being 11 years in the noted Westville, Nova Scotia mines, and is quite familiar with most of the coal exposures of the west, having explored there from 1882 and tested several veins in the interests of the present company.

When the coal is mined from the "chambers," the coal pillars are taken out, the pipes, rails, etc., removed, and the roof allowed to fall in, and so on each in turn.

In filling the pit cars, any stony or refuse matter that may be found is thrown aside, and should any escape it is picked out at the bank head and checked against the miner, who is fined therefor, as he is paid by weight and the stone is much heavier than coal.

The coal has high steam properties, and the C. P. R., which was contracted for 100 tons daily, finds that locomotives consume about one ton of it for each 50 miles haulage loaded. The City Council of Winnipeg also had it tested for heating properties during the winter of 1886-7, and it satisfied their engineer. It finds a market in all the towns of Manitoba and the Territories, retailing in Winnipeg at $7.25 a ton, is clear, bright, free from clinker, yields great heat, a cheerful fire, and lasts well.

The company owns 10,000 acres of coal lands and will bore with diamond drill this year to test the eastern extent of the measures at present unknown.

Mr. Elliott T. Galt is general manager of the whole company and attends closely in person to its affairs. He has had the wisdom to select as aids efficient heads of departments, and through all a high standard of duty is apparent and acted up to. The company has spent upwards of $1,500,000 in development, and has a very important part in saving our national wealth in that way and also by displacing imports, and it is pleasant to know that the success met with has encouraged the promoters to more extensive work when conditions allow.—*The Emigrant.*

MR. WIMAN PROVES TOO MUCH AND FRIGHTENS THE YANKEES.

Ordinarily high latitude, short summers, long winters and frost and cold are supposed to be somewhat unfavorable to the successful culture of wheat. This belief, according to the latest returns, must go to the limbo of exploded beliefs, and all these supposed disadvantages must be transferred to the other side. Mr. Erastus Wiman, the wide-awake, progressive Star-Spangled-Canuck-Yankee, who has moved over from Canada and joined the large army of Yankee millionaires, in his recent speech in Buffalo advocating "commercial union," in reference to the immense resources of Canada, stated that northwestern Canada possesses 466,900 square miles of wheat-bearing land, and that the wheat area of the Dominion exceeds that of the United States. He also made the following statement: "Owing to the nearness of this wheat-bearing area to the North Pole, the sun during the summer months affords two hours longer of forcing power than elsewhere on the continent where wheat can be grown. Two hours a day of additional sunlight during a wheat-growing season is of enormous importance and gives to these regions an advantage which the frost and cold of the balance of the year in no way lessen. But even the frost and cold, strange to say, afford an advantage in the production of the delicate wheat plant. This advantage is found in the fact that owing to the depth in the ground which the frost penetrates, the earth is never entirely free from its influence, and deep down in the rich alluvial soil there remains a well spring of moisture which under the long and strong sun's rays constantly exudes and keeps moist the tender roots of the plant. Hence droughts and absence of rain have no terror to the wheat producer of the great Northwest." Of course, as Mr. Wiman has large tracts of iron land in Canada, which he would like to have developed by American assistance, he is to be pardoned for his

Mining Machine at Work.

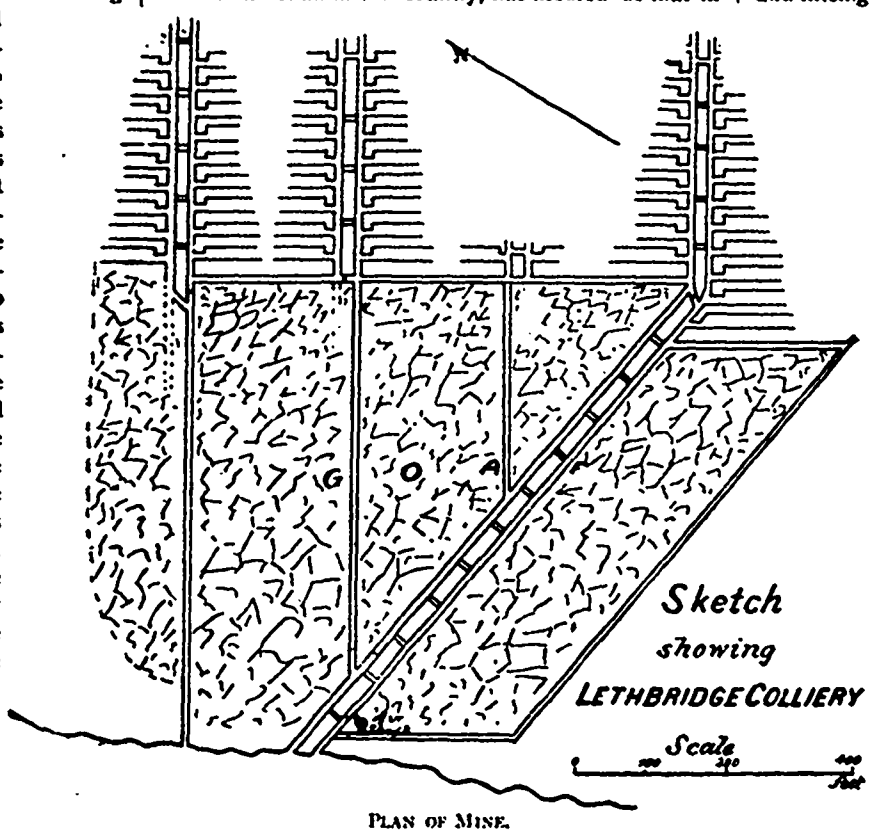
warmth of advocacy of the claims of Canada, and as he has not made an exhaustive study of mathematical geography, he is not to be judged too harshly for his utterances on wheat culture as affected by latitude and its concomitants. But he proves too much. If Canada possesses so much wheat land, the Yankees will not desire "commercial union," which would imply competition with all this Canadian potentiality. And if, "strange to say," Manitoba's extreme frost and cold re-

move all fear of drought because of an extra two hours of sunlight a day, then Mr. Wiman has only to extend Canada's wheat fields to the North Pole, where, carrying out his idea, a day six months long will insure a crop of wheat not to be equalled anywhere else on earth—unless it be at the South Pole. Over-enthusiastic advocacy oftentimes leads to singular extremes, a fact which so level-headed a man as Mr. Wiman should not forget.—*Milling World.*

BRITISH MILLERS AND MANITOBA WHEAT.

As a means of placing British millers on an equal footing with those of America, the London *Miller* advocates the formation of a syndicate to purchase the superior hard wheat of the Canadian Northwest. Anent this subject our contemporary says: It is useless to think of engaging in any kind of manufacturing business unless the possibility exists of procuring the best raw material, and flour milling is certainly no exception to this rule. The mills of Minneapolis have proved exceedingly formidable competitors to the British milling trade, simply because those who worked them have been able to obtain almost unlimited supplies of a hard strong wheat eminently suitable for treatment by the modern system of milling. There really is no reason why these great merchant mills should have a monopoly of this excellent raw material. Great Britain is not destitute of capital, and hitherto her sons have lacked neither the heart to form great enterprises nor the brains to carry them out. No doubt the formation of such a syndicate as we have advocated would be a great undertaking, but then it is precisely the people whose fibre shrinks from any danger and exertion who get elbowed out of their share of the good things of this world. We are loth to believe that our millers, with all the capital that has been accumulated in years gone by, when foreign competition had not yet been called into being, and with all the experience that has been gathered during these late bustling times, are unequal to the task of competing with the millers of the new world in the purchase of raw material. After all, the one thing needed is proper organization; in other words, the exercise of the ordinary business qualities with which the modern Briton is supposed to be fairly endowed. We have repeatedly called attention to the magnificent possibilities that seem to lie in Manitoba, one of the western provinces of our own Dominion of Canada. There is raised a wheat of exceptional quality, of which experts speak with one breath of praise. It is true that in the past year or so the promise of the Manitoba crops has been cut short by early frosts. But that after all, is fortunately a calamity of exceptional occurrence, and constitutes no argument against the scheme in view. This year, it is stated, the crop of Manitoba will not fall short of 11,000,000 bushels. There should therefore be a fair margin for export, and if a British syndicate only existed, negotiations would now be in progress for the acquisition of the cream of this crop. With such raw material in hand, our millers could look forward to a winter campaign with their American competitors without the least trepidation. We are not aware that anything has been done here towards effecting a consummation so devoutly to be desired, but we are informed on excellent authority that a firm of great merchant millers in Canada, who are ordering their means of production on the Minneapolis model, now own about forty elevators in Manitoba. Like wise men, they are determined to garner the best of the crop, and doubtless excellent material will not leave their hands in any other shape than flour. It is not difficult to understand why those on the spot should be at such pains to secure and keep the wheat of Manitoba when we look at the samples which have made their way across the Atlantic. A practical Canadian miller who is also thoroughly conversant with the conditions that obtain in this country, has assured us that in his opinion the British miller who should temper his mixture with hard Fyfe wheat to the extent of only 25 per cent. would raise the value of his flour by fully one shilling the sack. The millers of Great Britain may make up their minds to this—if they are disposed to let slip this opportunity of utilising the magnificent wheat of the western states of Canada, there are others who are by no means so remiss.

ENTRANCE GALT COAL MINE, LETHBRIDGE.



PLAN OF MINE.

Shelton's foundry and machine shops at Tilsonburg were burned on Sunday, Sept. 11th. Loss, $2,000; no insurance.

COMPRESSION OF STEAM.

Steam, as compared with water, occupies 1728 times as much space. A cubic inch of water will make 1728 cubic inches of steam at atmospheric pressure. Now, if this steam is compressed into half the space it occupies at atmospheric pressure, it will double that pressure, or, fifteen pounds above the atmosphere; it will then occupy only 864 cubic inches. If reduced again to half its volume, it will occupy 332 cubic inches and will have 30 pounds pressure. Reduced again to half the volume, the steam will occupy 216 cubic inches, and will have sixty pounds pressure to the square inch. We can go on reducing in this way until we find that a cubic inch of water turned into steam and compressed into a space of three cubic inches will have the enormous pressure of 3840 pounds to the square inch.—Boston *Journal of Commerce.*

A SKIN-FLINT EMPLOYER.

Nothing is so discouraging and chafing to an ambitious and intelligent miller as to be engaged to an employer, who, for want of judgment, will not make such repairs and improvements as by the miller are seen to be imperatively necessary. There is that kind of economy that is detrimental to the prosperity of a business, and many a faithful expert miller is chafed to exasperation under its mangement. A spout is needed to convey stock, in accordance with some desired change. No carpenter to be had, no material with which the miller can make it himself. A few feet added to the height of the smoke stack might increase the draft, save fuel, and make happy a hard worked, perspiring fireman. A new elevator or conveyor to handle grain would save much work. A toe pin gets loose in a spindle, which should be fixed. The proprietor lets it wabble. Many little things are seen which the miller with a real interest in his business would make right, one by one, and constantly increase the efficiency of the mill; but the proprietor fails to see their importance and is never ready to provide the means for the remedy. Such proprietors are usually of slow pay, and do not conduct a very prosperous business, and most likely they never will. There are many young millers of good metal stuck on to such employers, and anxiously watching a better chance. Our advice would be, don't stay by such a man any longer than you are compelled to stay. The employer who has judgment enough to make a success of his business, will see these things, and either give you proper authority or provide the remedies. There is only one thing equal to an employe that takes no interest in his work, except to draw his pay, and that is an employer who takes no interest in his business, and places no confidence in the judgment of his employes, and this employer practices false economy.—*Millers' Review.*

The crops in Nova Scotia have not been satisfactory.

DOMINION MECHANICAL & MILLING NEWS

PUBLISHED MONTHLY,

BY

CHAS. H. MORTIMER,

Office, 31 King Street West,

TORONTO, - - ONTARIO.

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Advertising rates sent promptly upon application. Orders for advertising should reach this office not later than the 25th day of the month immediately preceding our date of issue.

Changes in advertisements will be made whenever desired, without cost to the advertiser, but to insure proper compliance with the instructions of the advertiser, requests for change should reach this office as early as the 22nd day of the month.

Special advertisements under the headings "For Sale," "For Rent," &c., if not exceeding five lines, 50 cents for one insertion, or 75 cents for two insertions. If over five lines, 10 cents per line extra. Cash must accompany all orders for advertisements of this class.

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The DOMINION MECHANICAL AND MILLING NEWS will be mailed to subscribers in the Dominion, or in the United States, post free, for $1.00 per annum, 50 cents for six months. *Subscriptions must be paid strictly in advance.*

The price of subscription may be remitted by currency, in registered letter, or by postal order payable to C. H. Mortimer. Money sent in unregistered letters must be at senders' risk. The sending of the paper may be considered as evidence that we received the money.

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EDITOR'S ANNOUNCEMENTS.

Correspondence is invited upon all topics pertinent to the mechanical and milling industries.

This paper is in no manner identified with, or controlled by, any manufacturing or mill-furnishing business, nor will a bestowal or refusal of patronage influence its course in any degree. It seeks recognition and support from all who are interested in the material advancement of the Dominion as a manufacturing country, and will aim to faithfully record this advancement month by month.

Readers of the "MECHANICAL AND MILLING NEWS" will confer a favor upon the publisher and derive material benefit themselves by mentioning this paper when opening correspondence with advertisers. Drop us a postal card when you have written to an advertiser, give us his name, and then we will put you in the way of getting the benefit. Don't forget this.

IT seems rather strange that none of the "hapless and hopeless" Canadian farmers of whom our Commercial Union friends have been talking, were to be seen among the thousands of well-clothed, contented-looking agriculturists who thronged the Exhibition grounds in this city last month.

FIRE has destroyed about a million and a half dollars worth of property in Montreal during the last two months, and rates of insurance have gone up ten per cent. there in consequence. The city authorities are blamed for neglecting to provide adequate fire protection, for lack of which the citizens will now be called upon to pay extra insurance to the extent of nearly half a million dollars a year.

THE news that the electric light has been adopted by the Canada Atlantic Railway Company for lighting its cars, will be thankfully received by the travelling community. Poorly lighted railway coaches have hitherto been one of the most serious sources of discomfort to night travellers. Now that the electric light has been introduced by one Canadian railway, the others will no doubt be compelled to follow suit.

IN renewing for the fourth year his advertising contract with the MECHANICAL AND MILLING NEWS, Mr. James Jones, of Thorold, states that since the appearance of the advertisement in our Jubilee and Exhibition number, calling the attention of millers to his short system mills, he has received numerous enquiries relating to the same. Mr. Jones is not the only one who has proved the value of this journal as an advertising medium for manufacturers.

THE Commercial Union agitators are confining their efforts almost entirely to Canada. Seeing that Messrs. Butterworth and Wiman are the only persons of note on the other side to speak favorably of the movement, isn't there a field over there for a little missionary work, also? But, perhaps our Commercial Union friends are trusting that the Americans will not long remain blind to the many and important advantages which the carrying into effect of Commercial Union would bestow upon them. In the case of Canada the advantages do not appear to be so obvious, hence more argument is necessary to make converts.

IT is pretty certain that scores of mill and factory owners throughout the country who have hung hand grenades on their walls as a protection against fire, are trusting to a broken reed. How many have given these grenades a thorough testing before purchasing them? At a test made at Cornwall recently, the grenades proved utterly worthless. This is a matter of great importance to owners of mills and factories, and they should lose no time in investigating it.

WE are pleased to observe a growing disposition on the part of millers and others to use our correspondents' columns for the purpose of asking questions and discussing matters relating to the business in which they are engaged. This is the way to give and obtain information, and our readers are invited to make free use of our columns for that purpose. If you, reader, see something that calls for improvement, tell the public about it, and in return you will learn the opinions of other people. This is a world of give and take, but a great many people are forever taking without ever giving. If you have been pursuing that policy, consider it a mean one, and abandon it. The readers of the MECHANICAL AND MILLING NEWS are waiting to hear from you.

WHATEVER may be said concerning the right of the Manitobans to build a railroad to connect with American lines at the United States boundary, the millers of Ontario and Quebec will watch the carrying out of the undertaking with anything but satisfaction, seeing that it will be the means of diverting the much-coveted No. 1 hard wheat of the Northwest from Canadian to United States mills. Ever since the present agitation for the building of the railroad began, Mr. Pillsbury and other large millers at Minneapolis have been anxiously watching the struggle and encouraging the Manitobans in their purpose, knowing full well that when the road is built their proximity to the immense wheat fields of the Canadian Northwest will make them masters of the situation.

IN a reply to a letter addressed by the editor of this journal to the Secretary of the Millers' Association of Huron, Perth, Grey, Bruce and North Wellington, inviting him or some member of the Association to show how Commercial Union would benefit Canadian millers, we have received the following reply:

WINGHAM MILLS, 22nd Sept., 1887.

DEAR SIR: I sent your letter to the mover of the motion on Commercial Union, and now have his reply. He promises to attend to it, but says he will be unable to do so this month. Mr. Hay, of Listowel, is the party. My own time is largely taken up. I am not accustomed to writing articles, but at a later stage I may be able to advance a trifle upon the question.

Yours truly,

W. B. HUTTON.

We regret that the gentlemen who favor Commercial Union are not in a position at present to give a reason for the faith that is in them. Our readers will expect to hear from them, however, in our next issue.

THE *Roller Mill*, of Buffalo, N. Y., prints a paragraph from this journal on the Commercial Union question, and comments thereon as follows:

"We cannot enumerate in this space the many advantages that would flow from commercial union, but if our contemporary is not too prejudiced to read carefully what is being said at the union meetings on its own side of the border, it may come to take a different view of the matter. It is not to be expected that we of this country favor commercial union out of a purely philanthropic spirit, nor is it at all evident that we do so from pure selfishness, but it can easily be shown that a union if feasible, would be of vast benefit both to Canada and the States."

We beg to assure our contemporary that we *have* "read carefully" what has been said at the commercial union meetings, but so far without being convinced that the union if carried out on the basis proposed would be for the benefit of Canada. The benefit to the Americans of getting free access to our forests, our northwest wheat fields, our valuable fisheries, and of making this a slaughter market for their surplus manufactures, is clearly apparent. If our contemporary, throwing aside bald assertion which is entirely valueless, would condescend to enter into particulars regarding the benefits to Canada of such a union, we might, indeed, be led to "take a different view of the matter." If union is likely to redound so greatly to the advantage of *both* countries, the *Roller Mill* should not think its space too valuable to devote to solid arguments calculated to help on a consummation "so devoutly to be wished".

BRITISH millers have been at their wits' end for some time past to know how to keep their heads above water in the face of the keen competition of American mills. The complaint is not that flour cannot be made as cheaply in British mills as in American mills. The disadvantage experienced by the British miller lies in the fact that he can't get hold of wheat equal in quality to that from which American flour is made. In an article in another part of this paper reproduced from the London *Miller*, our English contemporary, as the best means of relief to British millers, advocates the formation of a syndicate to purchase and supply British mills with Manitoba No. 1 hard wheat. In such a move, our contemporary sees not only means of placing the British miller on an equal footing with his American competitor, but also of guarding him from further competition of Canadian mills located in the heart of the wheat growing districts of the Northwest. There seems to be no doubt that the proposal is the best that can be made, and yet it is not likely to afford the British miller more than temporary relief. The Canadian Northwest is bound to be the scene of extensive milling operations, and in course of time the bulk of the wheat grown there will be ground on the spot and exported in the shape of flour to Europe.

NOW and again we hear of manufacturing firms guaranteeing to give employment to a certain number of hands in consideration of the municipality granting them a bonus of so many thousand dollars. A case of this kind is now up for consideration in the town of Whitby, where a company has been given a bonus of $5,000 and a loan of $10,000, on guaranteeing to give permanent employment to forty hands. The company are now making a second proposition to the town, namely, that if the $10,000 loan be made a gift they will establish another line of manufacturing and guarantee to employ permanently eighty hands. Now the question arises, of what earthly use is such a guarantee to the town which accepts it in return for liberal grants of hard cash? Is there any means whereby any company can be compelled to employ more hands than it can find work for? Suppose the company referred to finds that it cannot command sufficient business to profitably employ eighty hands, what then? Why it must either reduce the number of its workmen to correspond with the extent of its business, or run at a loss and go into bankruptcy. In either case its guarantee is broken, and the town loses its money. Considering the circumstances, who will say that it does not deserve to lose?

FOR the information of the western Ontario millers who recently subscribed allegiance to the Commercial Union idea, on the ground that perfect free trade with the United States would give them "an enlarged market for their product," we reproduce the following extract from the *Milling World*, of Buffalo, which may fairly be credited with knowing something about the American flour market. Our Buffalo contemporary says: "Commercial Union with Canada" is a lengthy phrase that may be boiled down to the much shorter and much more accurate phrase, "Free Trade." All the benefit is to be on the Canadian side of the bargain, as the candid Canadians themselves openly confess in their agitation of the subject. For instance, the Millers' Association of Huron, Perth, Grey, Bruce and North Wellington, a gathering representative of the Dominion milling interests, at their recent meeting passed the following resolution: That we, as an association, would approve of a Commercial Union between Canada and the United States on a fair basis, believing it would be in the interests of the community as a whole and especially would it aid and assist the milling business of the country by giving us an enlarged market for our product. In view of the fact that the grain-growers and flour-makers of the United States last year not only supplied the Yankee consumers with all they could eat of the best and cheapest flour in the world, but at the same time managed to send abroad something like 157,000,000 bushels of high-class wheat in the shape of grain and flour, it is a question how, or where, or when, or by what means the Canadians could hope for an "enlarged market" for the products of their milling business in the United States. The association passing that remarkable resolution has evidently not read the wheat and flour statistics in these galorious United States, and is, quite as evidently, sublimely and quintessentially ignorant of the market conditions and requirements of the blarsted Yankees."

MR. A. AUSTIN, of Listowel, in a letter published in the correspondence department of this paper, wants us to give our opinion of "the sugar ring, and cotton ring, and other rings" that, as he alleges, "flourish under the model government that you worship." For the information of our correspondent and our readers in general, we have no objection to state our position. This journal is no friend to monopolistic rings of any kind, the object of

whose existence is to reap an undue profit at the expense of the consuming public. No attempt has ever been made in these columns to justify or excuse combinations formed for such a purpose. On the contrary they have on more than one occasion been severely denounced. There are times when, under the pressure of competition, prices are so reduced that the manufacturer gets little or no return for the large amount of labor and capital which he has invested in his business. Under such circumstances manufacturers have the right to effect an understanding among themselves by which prices may be kept at a fair standard. No man or set of men should be expected to work for nothing. On the other hand, if it is shown that manufacturers in a certain line take advantage of the protection afforded them by government to extort more than a fair profit from the public, they should be given to understand that such conduct will be punished by a removal of the protection which they enjoy. It is a noteworthy fact that combinations formed for purposes of extortion, usually meet the fate of the California wheat ring, the collapse of which was referred to last month. In conclusion, we desire to point out two mistakes into which Mr. Austin has fallen. One is in thinking that the MECHANICAL AND MILLING NEWS regards as a "model government" or "worships" at the shrine of Sir John Macdonald's administration. There are few, if any, model governments in this country or any other. With the efforts of the present government to foster and develop Canadian industry and resources, we have been and are in full sympathy. Apart from that we are forced to dissent from many acts of their administration. The other mistake is in blaming the government for the formation of "rings." Such "rings" are formed in every country, but as we have said, they are usually short-lived. In the United States they exist under the Cleveland administration, which is generally conceded to be as free as most governments from political corruption. If the tariff is to blame for them, then the fault rests with the Canadian people who signified their approval of it after an experience of seven years by returning its founders and administrators to power so recently.

THE DOMINION AND INDUSTRIAL EXHIBITION.

THE month just closed was a busy one for the city of Toronto. The Dominion and Industrial Exhibition which opened on Sept. 5th and closed on Sept. 17th, attracted immense crowds of visitors from all parts of Canada and not a few from the United States. The Exhibition itself, the number of persons who attended it, and the amount of money paid in to the Exhibition Association, was far in advance of any previous year. The excess of receipts this year above those of last year, amounting to nearly $12,000, will go far towards paying for the additional buildings put up on the grounds, the cost of which is estimated at about $25,000. The exhibits in every line were of a high order, and included many firms and localities not represented here before. Most of the exhibitors of former years were on hand this year, but the places of some were filled by newcomers, while the spaces allotted to exhibitors were so changed about as to do away with the sameness of appearance of which visitors are apt to complain.

Machinery Hall, to which a considerable addition was made, is still altogether too small to accommodate manufacturers' exhibits. Several exhibitors in this line were obliged to show their goods in temporary coverings outside the Hall. If Machinery Hall were enlarged to double its present size there is little doubt it would be filled. If this enlargement cannot be made, the management should consider the question of reducing the space allowed to individual firms, such, for instance, as the exhibitors of wood-working machinery, a couple of whom have for several years occupied about one-third of the entire building, to the exclusion of other lines of machinery in which the public is quite as much interested. In iron-working machinery Messrs. Bertram & Sons, of Dundas, and the London Machine Tool Co., represented by Mr. L. A. Morrison, made exceedingly fine displays. Both firms are understood to have sold the greater part of their machines on the spot. In flour milling machinery the display was much smaller than in former years. The Geo. T. Smith Co., of Stratford, who have for several years had a large exhibit of this class of machinery, were not present this year. Messrs. Inglis & Hunter showed a roll frame, Mr. Alex. Laidlaw, of Parkdale, a barley cleaner, Mr. Cowan, of Parkdale, a patent conveyor, and Mr. Livergood, of Brantford, a grain cleaner and separator.

Among the most important of the new features this year was the large exhibit of grain, roots, and other productions of the Canadian Northwest and British Columbia. The exhibit was a most attractive and interesting one, and calculated to give the beholder a decidedly favorable opinion of the present status and future prospects of that great country. The magnificent samples of wheat were the subject of admiration from Ontario farmers and millers.

The Exhibition as a whole was, as already stated, a very great improvement on its predecessors, and visitors could not but be impressed with the fact that Canada is a great country, the development of which is going on rapidly, and which only needs the united and well-directed efforts of all her sons to make a great and prosperous nation.

NOTES.

In Machinery Hall Messrs. F. E. Dixon & Co., of this city, showed a fine lot of leather belting, consisting of 24 inch and 36 inch belts, 100 feet long, manufactured for the Toronto Electric Light Co., a 16 inch belt 70 feet long for the same company, and several smaller belts.

In the Main Building Annex, Messrs. Robin & Sadler, of Montreal, the well-known manufacturers of leather belting, had an exhibit of their goods. The most prominent features of the exhibit were a 22 inch driving belt, 58 feet long manufactured for the Globe Woolen Mills at Montreal, two 16 inch light and heavy double belts, and a large number of single belts, besides specimens of rawhide and lace leather. The workmanship on all the belts shown was first-class.

The display of pianos made by the Herr Piano Company, of 47 Queen Street East, Toronto, was a centre of great attraction to music loving visitors throughout the whole period of the Exhibition. A singing quality of tone and equality of power throughout all the registers pre-eminently distinguish these instruments, which are moreover all fitted with the finest American actions from New York. The Company showed the smallest upright piano made in Canada, having the full compass of notes, namely, 7⅓ octaves. The scale employed was invented by Mr. Herr himself, and gives a powerful and clear treble, quite uncommon in instruments of this type. In fact it was this piano which first established the reputation of the firm for piano-building. Of the large uprights, one having a most handsome mahogany veneer case, was admirng by everyone who saw it. The Company's uniformed band of 26 pieces played on the grounds several days.

For several years past Exhibition visitors with an eye for the ornamental and useful have found much to interest them in the displays of artistic office, church and school furniture made by W. Stahlschmidt & Co., of Preston, Ont. This year was no exception, the Company's large and handsome exhibit facing the entrance to the Main Building Annex being continually surrounded by admiring spectators. The exhibit showed all the Company's standard goods which received such honor in this country and Europe, and in addition many new styles. Among the latter are three specimens of a library escritoire. One of these has the desk in the centre, a bookcase with glass doors being on either side, another having bookcase on but one side. A new style is a ladies' desk, a very prettily-arranged piece of furniture, and will undoubtedly meet with a large sale. Among their standard specimens is the Office King, which we have more than once described. It is a *fac simile* of the one sold last year to Her Majesty the Queen, and is unquestionably the most elegant and convenient piece of office furniture ever designed. The firm are now engaged constructing library furniture for his Holiness the Pope, which they will shortly ship to Rome. The exhibit, taken as a whole, was the best display of office, school, lodge, church and library furniture we have ever seen.

ELECTRICAL SPARKS.

The Canada Atlantic Railway Company has adopted the incandescent system of electric lighting. The first train lighted by electricity in Canada will be run between Ottawa and Montreal,

Electric motors for running mills are not only within the range of possibility, but is a practical fact. Contracts have recently been made for furnishing motors and all machinery for operating mills in this country. This, however, is not a new thing. There is in Hungary a large woolen mill, among other establishments, the power for which is transmitted by copper wire some forty-five miles from the source of power to the machinery to be operated. The power is turbine water wheels, forty-five miles up a valley, and the woolen mill is located on a railroad where the goods may be marketed cheaply. In more than one Swiss village where watches and other small machinery are manufactured in the houses of the inhabitants, power is transmitted from house to house in this way.—*The Millstone.*

ADVERTISING A NECESSITY.

Shall a man advertise, or shall he make the best of machines and leave the world to find out the fact for itself? Strict integrity and close attention to one's business are always necessary to any success, no matter how moderate. But no great business can be gained or kept except by some methods of advertising. Every city has many instances of men who tried to do business on their unheralded merits, and failed. Getting a bargain is the second law of nature, male and female. The manufacturer who persistently and continually proclaims to the people that he has the bargains will draw the trade. And in the hurrying, busy, eager life of today, it is the constant advertiser who attracts attention to the public. He who waits for the people to discover, unaided by advertising, the merits of his products will only wait to see his business dwindle away to nothing. Advertising is to business what vigorous health is to the body—one can drag along an existence without it; but existence is not life any more than the simple fact of having something to sell is business.—*The Woodworker.*

The Inspectors under the Ontario Factories Act are going their rounds.

Whitby has granted over $30,000 in the way of bonuses to manufactories.

Porters' extensive tanning, boot and leather belting factory at Montreal was badly damaged by fire last month.

The Bristol Iron Company, composed chiefly of Ottawa capitalists, with a capital of $200,000, is applying for incorporation.

The town of Ingersoll has granted a bonus of $4,000 to Mr. John McKellar, formerly of the Gurney Works, Dundas, to enable him to buy and run the Russell foundry there.

Whitelaw's foundry at Woodstock, Ont., had a narrow escape from being destroyed by fire a few days ago. Sparks set fire to the roof of the moulding shop, and burned a large hole.

An order-in-council has been passed authorizing the admission into Canada, duty free, of the marine engines manufactured in England for the new steam boiler, twin to the "Chicora," now being built at Deseronto for the Niagara Navigation Company, as they cannot be manufactured in Canada.

Sylvester Bros., of Lindsay, propose to erect a two-storey brick building near their factory, to be used as offices and library and reading rooms for employees. The firm are deserving of praise for the interest thus manifested in the welfare of their employees, and it would be well if many others would follow their commendable example.

A heavy steel casting has just been completed in Sheffield, says the *American Machinist*, which, it is said, is probably the heaviest ever made in England. The diameter of this casting is 62 inches, and its weight 70 tons. The heating operation lasted over sixty hours, and when the glowing mass glided out of the furnace the ingot with porter-bar and balance-weight made a total weight carried by the crane of at least 120 tons. This ingot was pressed into shape in a 3,000-ton forging press.

The tidal water-wheel that runs the works of the Sagadahoc Fertilizer Company, at Bowdoinham, Me., is probably the only one of its kind in existence. It is twenty-seven feet in diameter, with a foot of its rim out of water at high tide. The spokes are wide and set diagonally, like the vanes of a windmill. It turns eighteen hours of the day by tide power, running one way with the flow, the other with the ebb. With one footfall of the tide this wheel gives about fifty-horse power. It has been in use since 1861.

An experiment is now being made at the Fullerton Avenue Pumping Works, Chicago, says the *American Engineer*, with crude petroleum for firing the boilers. The test is not yet complete, but a great saving is thereby expected. Some years ago a similar experiment was carried out at the West Side Pumping Works, and great results were attained, but, comment is unnecessary, the oil went up in price so outrageously that the city abandoned oil as a fuel and went back to coal. This time the authorities are more wary and are arranging the boilers in such a way that coal fuel can be resumed almost without letting steam down.

The Prussian Government, in response to a petition forwarded by the Association of German Millers so far back as 1883, undertook to institute a special enquiry into the value of the lubricants commonly used in mills and factories. Some preliminary tests made with this view at the expetimental labratory of Charlottenburg showed the need of more exact testing instruments, and as these have been supplied by the Government the labratory is about, it is announced, to undertake a series of full and searching tests. The results of the work done in the labratory will be made public in due course.

Statistics complied in Berlin give the aggregate horse power of all the steam engines in use as 46,000,000. Each steam power is equivalent to three times an actual horse power, and a living horse is equal to seven men; so that the world's engines represent approximately the work of 1,000,000,000 men, or more than the double working population of the earth, whose total number of inhabitants is 1,455,923,000. Of the total steam force, not including locomotives, the United States has 7,500,000 horse power; England 7,000,000; Germany, 4,500,000; France 3,000,000; and Austria 1,500,000. The locomotives of the world number 105,000, and represent 3,000,000 horse power.

Northwest Letter.

HARVEST operations did not progress as rapidly as indicated at the time of writing my last letter, owing to heavy rains which have occurred the first of every week for the past four weeks. In sections where the crops were earlier the bulk of the grain was in stack before the rains commenced, but in later sections the grain was caught in shock. The result is that at the time of writing this letter, there is still a good deal of wheat in stock in those later sections. This week we have escaped the usual Sunday and Monday's rain, and a very few more days will see all the wheat in stack even in the latest districts. The color of the grain caught in the rains will not be as bright as that secured earlier, but it will not be damaged otherwise. Cool winds and cloudy weather followed on each occasion after the rains, which would dry the sheaves quickly and without injury from bleaching. It is thought that in some instances damage may result from careless stacking, or from stacking before the grain was thoroughly dried out, but if such should turn out to be the case, it will be solely the result of carelessness. A few loads of damp wheat have already been marketed at some points, but this has been in instances where the grain was threshed from the stook. The harvest this year has been a very slow one, and it is well that it was so, for if the grain had come on as rapidly as it did last year, there would have been great loss from shelling. The crops were so heavy that it was impossible to make rapid progress in harvesting. The weather, however, was very cool during harvest, and the grain ripened slowly, thereby enabling farmers to keep up. At the same time the cool weather was most favorable to the production of a very fine sample, the berry filling out to perfection. There have been a few light frosts, but up to the time of writing there has been nothing severe enough to greatly injure vegetation. In the vicinity of the city tender garden stuff is still growing, though in places the leaves give indications of a slight nipping. Grain has escaped uninjured.

In my last letter I summed up the probable wheat surplus of the Northwest. I am now fully convinced that the showing then made is if anything under the mark. I then placed the probable average yield of wheat for Manitoba at 20 bushels per acre, age ist 26 bushels estimated by the Agricultural Department, and 28 bushels as the average yield shown by returns from all parts of the country by the C. P. R. Co., individual estimates of some well-informed men even going as high as 35 bushels to the acre. Since writing my last letter a good deal of threshing has been done at points all over the country, and the yield is turning out magnificently. From the threshing already done scarcely anything under 35 bushels per acre as the average yield of districts is heard of, whilst some individual yields vouched for are simply astonishing. Your correspondent is almost afraid to repeat them, they seem so incredulous. Many fields of wheat averaging 40 bushels to the acre are reported on reliable authority, and some going away above this are vouched for. The reeve of a municipality declares that one of his fields averaged 57 bushels to the acre, and a clergyman risks his reputation on the statement that another field has gone one better. These reports are not few and far between, but are coming in daily from all parts of the country. Some of these have even gone up into the sixties. The same marvelous stories come of oats and other crops. Fields of oats averaging up to 110 bushels to the acre have been reported. No doubt some of these statements have been exaggerated, but where there are so many of them it is fair to believe that at least a few are not wide of the mark. Judging from the results of the threshing, I am therefore inclined to believe that my former estimate may be safely increased by from three to five bushels per acre, and still a conservative view will be maintained. Increasing the average yield by three bushels per acre, on the basis of our former estimate, Manitoba would have about 7,500,000 bushels of wheat for export this season, over requirements for home consumption. This estimate is arrived at by deducting ten per cent. from the wheat acreage of the province as reported by the Agricultural Department, and allowing 23 bushels per acre for the balance, altogether with requirements for home consumption as follows: Reported acreage sown to wheat for the present season, 432,134 acres, less ten per cent. = 388,921 acres, at 23 bushels to the acre, = 8,945,183 bushels, less 500,000 bushels required for home consumption (five bushels per capita of the 100,000 population of the province) = 8,445,183 bushels, less 920,000 bushels required for seed next year (allowing for an increase of about 30,000 acres) and we have 7,525,183 bushels as the export surplus of Manitoba for the present crop year. To this may be added 1,000,000 bushels (a low estimate) as the surplus of the Territories.

I have had a chat with a number of the Ontario farmers who recently visited the province, and they express themselves as astonished at what they have seen. They were unable to find words which would indicate their surprise. One gentleman related with wonder the fact that he had witnessed in one field four horses attached to one binder, and then only about half a swath could be cut at a time. A comparison of the present crop with that of last year may be elucidated from the amount of binding twine required. Last year from 2½ to 3 pounds per acre was the maximum average quantity used. This year from 4 to 5 pounds of twine per acre has been required.

The grain movement is about three weeks later than last year. In September last year there was a heavy movement of wheat, whilst this year up to the present time there are only a few loads coming in at provincial grain markets, with the exception of one or two markets in southern Manitoba where the movement has reached from 3,000 to 5,000 bushels per day. A few cars are moving through to Lake Superior ports almost daily, and millers are commencing to grind on new wheat. A few cars of new flour have also gone eastward. Prices paid farmers for wheat are of course low in the present state of outside markets. Prices to farmers for No. 1 hard range from 53 to 58 cents, with No. 2 hard and No. 1 northern quoted three cents lower. The recent reduction in C. P. R. freight rates on wheat eastward have advanced prices in the same proportion as the decrease in the freights, namely 2½ to 3 cents per bushel, the reduction being 4 to 5 cents per 100 pounds, and applies to flour, oatmeal and millstuffs. The wheat rate from Winnipeg to Lake Superior now is 24 cents, or all rail from Winnipeg to Montreal, 46 cents per 100 pounds. The C. P. R. rate from Manitoba points to Lake Superior is still considerably higher than the rates from Minnesota and Dakota points to Duluth, the St. Paul, Minneapolis and Manitoba road giving a 20 cent rate from Dakota to Duluth. The C. P. R. rates this year are about the same as the Dakota rates were last year, the Dakota roads having reduced their rates this year.

With the general interest which has been taken in harvest, I have somewhat neglected the lumbering industry. It is well known that Rat Portage, in your own territory of Ontario, and which at one time was supposed to be under the wing of Manitoba, is the great source of lumber supply for Manitoba and the eastern portion of the territories, the western portions of the territories drawing their lumber from the mountains and British Columbia. Of course there are other sources of lumber supply than Rat Portage, but the lumber manufactured on Lake Winnipeg and other parts of Manitoba is mostly rough stuff, principally spruce. The pine supply comes from the Lake of the Woods district, and a large portion of the logs sawn at Rat Portage (including Keewatin and Norman) are drawn from the State of Minnesota. I lately had an interview with the Lake of the Woods lumbermen, who have agencies and branch establishments in Winnipeg, and they all report business better this season than it has been since the days of the boom, consequent upon the fine harvest just gathered. Lumber is now being distributed to country points freely, which indicates that farmers are going in for building improvements. There are six mills at Rat Portage and suburbs, but only five of these have been in operation this season, the other, known as Rulmer's mill, having been idle for two years. The mills in operation are the Keewatin Lumber Company and Dick and Banning's, at Keewatin; the Rainy Lake Lumber Company's mill at Rat Portage; and the Minnesota and Ontario Company and Cameron and Kennedy's mills at Norman. The Keewatin Company will cut about 8,000,000 feet of lumber this season, and they have 4,000,000 feet of logs hung up in Minnesota. They have about the same quantity of lumber on hand. Dick & Ranning will cut about 7,000,000 feet. Cameron & Kennedy will cut about 6,000,000 feet in addition to about 3,000,000 feet of lumber now on hand. The Minnesota and Ontario Company have just closed down after cutting 5,000,000 feet. This Company owns extensive timber limits in Minnesota, and has about 10,000,000 feet of logs cut, a small portion of which are hung up. The Company has about 13,000,000 feet of lumber now on hand, and it was thought that this quantity would be sufficient for the present season. By closing down now a supply of logs will be on hand to commence cutting early in the spring. The Rainy Lake mill is now closed down, but was in operation a short time this season. This estate it is well known has been in liquidation for some years, and the mill has been idle, but it was started up this season to cut the logs on hand. The logs, which have been in the water three years, were scattered about the lake, and a good deal of trouble was experienced in picking them up. The liquidators will get out a log crop this winter and run the mill next season. The mill is one of the best on the lake.

Jas. Shepherd & Sons' saw mill at Sorel, Que., was burned last month.

The Norman mills at Rat Portage, have lately been shut down for want of logs.

The Abyssinia took 50,000 feet of lumber to Japan, on her last trip from Vancouver.

Estey's saw mill at Fredericton, N. B., is running night and day, employing 50 hands.

Owners of limits in the Ottawa district report a scarcity of men for the coming winter's work.

Mr. John A. Christie has sold out his lumber business at Brandon, Man., to Durham & Mann.

Mr. George Edwards is putting up a saw mill in connection with his planing mill at Fordwich, Ont.

It is said the Chaudiere mills will soon be forced to close down, the water being lower than for fifty years past.

Mr. Adam Hess, of Listowel, has purchased a couple of saw mills in Muskoka, and is removing to that district.

Sackville, N. B., lumber shippers are experiencing difficulty in obtaining vessels to transport their cargoes to Great Britain.

Agents of leading lumber firms have visited Ottawa during the past month and engaged men to do the coming season's work.

The planing mill at Stouffville, Ont., owned by George Bros., was burned Sept. 15th. The fire originated in the engine room.

The saw mill, lumber and logs belonging to Mr. D. Cameron, at Moosomin, N.W.T., have been purchased by J. D. Gillies, M. P.P.

Messrs. Leamy & Kyle, proprietors of the Commercial Mills at Victoria, B. C., lately shipped twelve car-loads of lumber to Winnipeg.

Messrs. R. & G. Strickland, of Lakefield, Ont., have purchased all the timber limits in Burleigh and Anstruther townships belonging to Mr. Ullyott.

T. L. Fox has purchased from the government the sole right to cut the timber on the town-site at Illecillewaet, B. C., and has a gang of men employed clearing it off.

The tariff of tolls on logs and cordwood passing through the Bobcaygeon, Peterboro' and Hastings locks on the Trent Valley canal has been amended by order in council.

Bush fires destroyed Parry & Mills' saw mills and smelting works at Furniss Falls, Ont., besides a large quantity of lumber and shingles belonging to other parties. Loss, about $63,000.

The *Canadian Trade Review* of Montreal argues, and very correctly, that if the Government exact higher ground rents from the lumbermen, increased protection should be given them from the ravages of fire.

Thompson, McArthur & Co., Fenelon Falls, have purchased Mr. J. E. Gould's new steamboat and intend building another, both of which they intend putting on the water north of Minden this fall. The company will be in a position to buy all the ties, telegraph poles, saw logs, etc., that can be delivered on Gull river water.

The Ottawa *Free Press* says: The excessive drought of the past season has greatly affected the mill owners who have frequently had great trouble owing to the lowness of the water. The statements made are that where the mills are running fully the water above the dam sinks at least a couple of feet, and that with shallow water the drought from the falls is so great as to bring down the bark and other floating matter, so as to form a blockage at the screens. In order to remedy that it is now proposed to increase the head of water above the dam by putting in a new dam from O'Connor Island, towards the Eddy dam, and so prevent a large amount of the present waste power which flows over the falls. The amount which it is estimated the new works will cost is about $5,000, and the mill owners suggest that the city should bear an equal portion of the expense with each of the mill owners. The city draws power for the pump house, but as it draws from a place where the water is much deeper, it never really suffers from the lowness in summer, but always has plenty. It is not proposed to commence any operation this winter, and indeed the whole matter may be said to be in embyro at present.

[For the Mechanical and Milling News.]

THE BOYS IN WHITE.

What tollers can with ours compare,
Thro' this wide, wid'ning world?
For young and old wear powdered hair,
And, if they like it, curled.

The boys in white, the boys in white!
The millers' boys, oh! fair are they!
Without a speck, without a spot,
Within, without, at work or play!

How fine they look when, work being done,
They mingle with the crowd
Which makes its admiration known
In blessings deep and loud!

The boys in white, the boys in white!
The millers' boys, oh! fair are they!
Without a speck, without a spot,
Within, without, at work or play!

At meetings when the boys attend,
In flour from boots to brow,
They're never crushed by foe or friend,
Or drawn into a row!

The boys in white, the boys in white!
The millers' boys, oh! fair are they!
Without a speck, without a spot,
Within, without, at work or play!

The flouries are beloved by all—
Respected are and feared:
In throngest street and fullest hall,
A way for them is cleared!

The boys in white, the boys in white!
The millers' boys, oh! fair are they!
Without a speck, without a spot,
Within, without, at work or play!

WHANG.

Maryborough, Ireland, 1887.

Flesherton is to have a new roller mill in operation shortly.

T. & W. Boldue, millers, Valleyfield, Que., have dissolved.

The new elevator at Oakwood, Ont., is nearing completion.

Mr. Geo. Fensom is building a new roller mill at Elmwood, Ont.

A couple of new grain warehouses will be built at Rapid City, Man.

Nairn's oatmeal mills at Winnipeg have commenced work on new oats.

Goodfellow & Hanson, millers, Wroxeter, Ont., are giving up business.

Mr. Alex. McLeod has purchased the Thompson Mills at St. Stephen, N. B.

Machinery is going forward from Winnipeg for the new roller mill at Balmoral.

The farmers' elevator at Portage la Prairie, Man., is about ready for the machinery.

Messrs. Lipsey & Stickney have succeeded Messrs. Hortop & Argo, in the Elora Mill.

A new grain elevator is being built by Mr. A. P. Campbell at McDonald Station, Man.

The Ogilvies will enlarge and put new machinery into their elevator at Oak Lake, Man.

William Henderson, miller, Mount Forest, Ont., is reported to have made an assignment.

Meldrum, Davidson & Co., of Peterborough, have completed a new 60,000 bushel elevator.

The Bell Mill at Ingersoll was damaged recently by the chimney falling upon it during a storm.

Business on the Welland Canal is reported to be dull owing to the competition of the C. P. R.

The St. Jacobs, Ont., flouring mills were shut down a week last month, while undergoing repairs.

The streets of Mount Forest are lighted by electricity with power supplied from Cringle's flour mill.

A grain market will be opened this season at Binscarth, Man., on the Northwestern railway extension.

Would it be fair to call a manufactory of elevator buckets a "bucket shop." If so, Hamilton owns one.

1,629,848 bushels of grain have been received at Owen Sound from Chicago since the opening of navigation.

It is reported that the Keewatin Milling Co, intend to build an elevator at Dominion City, in the Northwest.

Mr. John Marshall, an experienced miller, has lately opened the Farmers' Custom Mill lately in St. Catharines.

Valens & Robson's mill at Valens, Ont., has commenced operations again, after being inoperative for some time.

The people of Prince Albert, Saskatchewan territory, talk of forming a joint stock company to erect a flour mill.

Mr. James Wilson of Calendar, has begun the erection of a new frame mill to be supplied with roller process machinery.

Mr. Joseph Cawthrop, miller, of Thamesford, Ont., is said to be shipping $12,000 worth of flour yearly to the lower provinces.

Northern Dakota No. 1 hard wheat is reported to be selling at 51 cents, while the best Manitoba grain is bringing 57½ cents.

The people of Gladstone, in the Northwest, are agitating the question of providing more storage room at the station for grain.

Roller process machinery is being put into the new mill at Moosomin, N. W. T., by Edward P. Allis & Co., of Milwaukee.

The milling property destroyed by fire in the United States and Canada during the month of August last, aggregated over $800,000.

The fall wheat crop in Ontario has averaged only sixteen bushels to the acre this year as against twenty-one bushels for the years 1882-6.

Mr. W. Stamforth, of Arundel, Ont, has sold his mills to the Messrs. Priest, of Wentworth, who took possession on the 1st September.

Geo. McCulloch, of the Plum Creek and Rapid City, Man., mills, has returned to the Northwest from an extended visit to Ontario.

James Reid, of Quesnelle, British Columbia, is erecting a grist mill, to which will be attached a saw mill. The mills will be run by steam.

Some statistical genius has figured out that it will require three trains per day for 194 days to move the Manitoba wheat for export alone this season.

Mr. Henry, of Scarboro', Ont., has purchased the interest of Mr. Chas. Hay, ex-M.P.P., in the Portage la Prairie, Man., Milling Company.

The reduction in grain rates by the C. P. R. from Northwest points to Port Arthur means $300,000 more in the pockets of Northwest farmers

Minnedosa, Man., reports state that the repairs to the grist mill are being rapidly prosecuted and all the new machinery will be in place in time for the current year's crop.

The *Millers' Gazette*, of London, predicts, as a result of the failure of the wheat rings and the consequent low price of American wheat, better times for British millers.

Mr. H. N. Schmidt, formerly of Gad's Hill, has entered into partnership in the milling business with Mr. J. L. Eidt, at Mildmay, Ont. The firm name is Eidt & Schmidt.

The C. P. R. rates on the carriage of grain between points in the Northwest and Port Arthur show a reduction of from four to five cents per 100 lbs. as compared with last year.

Messrs. Elliott & Co., Baird & Co., and Metcalf Bros. of Almonte, Ont., have jointly built a new dam above the falls near their mills, which will materially improve their water-power.

Mr. J. T Barker has retired from the St. Thomas Milling Company and intends coming to Toronto to live. In connection with other business, he will continue to represent the Company in this city.

In view of the large amount of grain for export from the Northwest this season, the Canadian Pacific Railway Company has removed 2,500 cars from the Montreal division to the Port Arthur division.

A big milling project is talked of at Calgary in the Northwest, and inducements will be offered by the people of that town to eastern millers to erect a large mill there. Next spring will probably see something done.

The London *Economist* estimates the consumption of wheat for the United Kingdom for the coming cereal year at 216,000,000 bushels, and that it will be necessary to import in wheat and flour 152,000,000 bushels.

The experimental farm authorities continue to receive encouraging letters from Manitoba, touching the success of the Russian wheat there. All point to the fact that it ripens several weeks earlier than the Red Fyfe.

Progress in the erection of the large flour mill at Keewatin has been retarded by the want of sufficient workmen, but this drawback will be remedied. The arches have been placed over the lower windows of the structure.

The surrounding country falls far short in supplying the demands of the Peterboro' millers. One Saturday recently, the *Review* says, six thousand bushels were imported to town over the Canadian Pacific Railway.

The Tara *Leader* says an individual named Robertson, hailing from Dunnville, who visited Tara a week or so ago with a view to starting a roller mill, left without settling his board and livery bill, and warns the public to look out for him.

Mr. McGaw, buyer for the Ogilvies, estimates that there will be 7,000,000 bushels of Northwest wheat for export, 1,000,000 will be ground by local mills, and 650,000 bushels will be necessary for seed next year—making the total output for the year 8,650,000 bushels.

Mr Jas. Jermyn's new mill at Minnedosa, Man., will contain 5 sets of Allis rolls, 4 Smith purifiers with Cyclone dust collectors, 4 long reels, 4 scalpers and a smutter. Five breaks on wheat will be made. Work on the job will be commenced in about a month.

The Winnipeg *Free Press* says it knows of a gentleman in that city who has received enquiries from a large brewing firm in England as to the probabilities of obtaining from 500,000 to a million bushels of barley in the Northwest. He thinks that he could safely guarantee fifty cents a bushel there if the barley was forthcoming.

According to an estimate prepared by the Hungarian Ministry of Commerce, the import wheat requirements of consuming countries the current year will be 305,716,600 bushels, and the exporting capacity of shipping countries only 287,583,300, leaving a deficit of 18,133,300 bushels. If this estimate is anywhere near the mark, an advance in prices is pretty sure to come a little later on.

A correspondent writes to the Moosomin, N. W. T., *Courier*, from Millwood, forty miles distant, as follows: Messrs. Mitchell & Bucknell have a fine saw mill here, which has just been closed down for the season, after making a most successful cut of over 1,000,000 feet. The same gentlemen have a fine roller mill in course of erection, which will be running in October, and afford a fine market for the splendid crop of wheat grown this year in the locality.

The well-known milling firm of Howland, Jones & Co., at Thorold, Ont., has been dissolved. Mr. Jones has retired and intends to devote his attention to mill machinery and the fitting up of mills on the short system. Mr. Howland will continue the milling business at Thorold.

A copy of the *Citizen*, published at Jackson, Mich., has reached us, and contains a full page advertisement of the "Cyclone Dust Collector," of which 2,500 are said to be in use in United States mills. This invention has lately been introduced to millers in Canada by Messrs. Inglis & Hunter, of this city, who have obtained the right to manufacture them for the Dominion.

The *Northwestern Miller* says: Jas. Pye returned Friday from a ten days' trip to Manitoba. While away he took the contract to reconstruct the 75 barrel mill of Jas. Jermyn at Minnedosa, Man. To all intents and purposes, the mill will be made new, and the machinery furnished by Mr. Pye will include 5 double sets of Allis rolls, 4 Smith purifiers with Cyclone dust collectors, 4 long reels 4 scalpers and a smutter. Five breaks on wheat will be made. Work on the job will be commenced in about a month.

The delegates appointed by the Board of Examiners in various parts of the Dominion met in the Toronto Board of Trade rooms on September 15th, and fixed the grain standards for the coming year. The standard agreed upon varies but slightly from that of last year. The names of the delegates are: Quebec, F. Kirouac, W. Carrier; Montreal, A. J. McBean, S. St. Onge; Hamilton, R. Evans, R. R. Morgan, C. R. Smith, Port Arthur, F. E. Gibbs, W. J. Bawlf, W. C. Dobie; Fort William and Port Arthur District, J. Harris, and G. A. Chapman; Toronto, H. N. Baird, W. Taylor, Thos. Flynn; Winnipeg, G. J. Maulson, D. H. McMillan and W. A. Hastings; London, J. D. Saunby and Jas. Slater.

Mr. J. W. Ford, miller, of Markdale, Ont., has made an assignment. The village paper, the *Standard*, says of him: Mr. Ford has been in the milling business some 16 years in this place, and a more enterprising, industrious and honorable business man could not be found; yet, owing in the first place to a want of sufficient capital during the recent years when it became necessary to make large expenditures in changing to the roller system in order to keep apace with the age; and then following this three years o low price in wheat, which is a vital point in milling; those together with several severe losses has caused the present difficulty. We trust, however, that he will be able to make such arrangements as will enable him to resume operations.

The following table is interesting as showing, in bushels, the wheat crop, of the world for 1885-6 in comparison with that of 1887:

	European countries.	Other countries.	Total production.
1887, est.....	1,180,000,000	810,000,000	1,990,000,000
1886, crop.....	1,176,000,000	853,000,000	2,029,000,000
1885, crop.....	1,214,000,000	796,000,000	2,010,000,000
Average crop.....	1,191,000,000	844,000,000	2,035,000,000

It will thus be seen the production in Europe is a trifle below the average, while in other countries, including United States and Canada, India and Australasia, the aggregate promises to be about 4 per cent. below an average production.

The Orillia *Packet* says: We learn from the Thornbury *News* that the millers of Grey and adjoining counties endorse commercial union Most likely. Some two years ago the *Packet* was informed by a miller, formerly resident here, that the National Policy hampered his business. If the duty were taken off, he admitted, he would import cheap Western States wheat, grind it, and export it to Britain or the Maritime Provinces, with the Ontario brand. When asked how that would affect the Canadian farmer, he said Ontario wheat could be exported unground. Asked how long the Canadian brand would retain its present high standard under such a policy, the miller responded by a laugh. But the *Packet* believes the millers would find a "boom" secured by that means, ultimately as ruinous as "killing the goose which laid the golden eggs."

A correspondent writes the Mechanical and Milling News as follows: The grist mill of R. A. Shepherd, at Abingdon, which has just been remodeled into the short system roller process by Mr. James Jones, of Thorold, Ont., was successfully started on August 24th in the presence of a number of mill men, who pronounced it most complete, simple, and easy to adjust. Mr. Jones only uses in all five machines—first and second break, (which are single rolls and work on a concave,) one stone roll; corrugated and smooth roller. The wheat is cleaned by the celebrated Greey smut and brush machines. The bolting is short and simple which makes it much more convenient for the miller. The flour has been thoroughly tested by bakers, who say it surpasses anything they have yet seen. I am now convinced that the old process or long system has had its day, along with the centrifugal, and will ere long be replaced with the short system and a stone roll.

The Portland *Oregonian* of Aug. 6 says: Now that there is a prospect of wheat having a price some time in the near future, and, more's the pity, a low price at that, the manufacturers of flour are beginning to figure on the Chinese trade again. Two officials of the Canadian Pacific have been in the city for several days looking up the prospects for flour freights. They will send the Sardonyx here if enough flour can be had to justify, and the new steamer building at San Francisco will also come here if the flour trade starts up. The Chinese merchant who shipped a cargo of flour from this port last fall, is here again looking for another cargo. Of course, no flour made from the high-priced wheat of the past few months can be shipped, but as soon as wheat begins to come in at the present prices, flour will be cheaper, and then Portland millers will ship to China. The best price which could be got here now is about $1.10 for Valley and $1 for Walla Walla wheat, and farmers are very slow to sell at these prices. Portland could furnish considerable flour for shipment, as the mills controlled by the Portland Flouring Mills Co. alone can turn out 2,500 bbls. per day.

Michigan millers have recently addressed a circular to the farmers with whom they do business, and as the adoption of such a system as therein proposed would be likely to result to the mutual advantage of millers and farmers in Canada, the epistle is here

reproduced: "We, the undersigned, desire to make a change in the present system of gristing or exchanging wheat for flour. The present system has so many faults and objections that it is high time to remove it and adopt a better one. It is as old as our great-great-grandfathers, and it has outlived its usefulness. Under it the miller has acquired a world-wide reputation for dishonesty among the farmers, and the farmer is looked upon by millers as a chronic grumbler and fault-finder. This is all wrong and should not be so. We ask the farmer to adopt the modern plan now generally coming into use in the East, viz., Sell your wheat at going cash price, and buy your flour at wholesale prices. You are then in the same position as the dealer, and the miller is doing merchant milling. He is not robbing the poor farmer by stealing his grist and giving him the toll. The farmer takes any grade of flour he desires, and it will do away with this imaginary stealing. It will make the farmer and the miller better friends. The farmer can devote more of his time to his crops and family instead of cursing the miller and last, but not least, there will be some hopes of a miller entering the Golden Gates with our good farmer friends. Now we ask all farmers to join us in giving this new system of gristing a trial, let us see if we cannot remove the objections now existing."

A new roller mill project is on foot at Millbrook, Ont.

The Neepawa, N. W. T., flour mill began operations last week.

The Cadmus, Ont., mill is not working to its full capacity, owing to low water.

Messrs. Harrison & Dunlop, millers, of Thorndale, Ont., have lately sold out.

An elevator will be erected at once, in connection with the new mill at Rapid City, Man.

Mr. Herriott miller, of Plum Creek, has taken charge of the new roller mill at Rapid City, Man.

The Regina Milling Co., and Leitch Bros., of Oak Lake, Man., have orders from Montreal for flour.

The Crystal City, Man., flour mill, owned by Thos. Greenway M. P. P., is undergoing improvement.

T. Fletcher will erect a grain and flour warehouse in connection with his new mill at Moosomin, N. W. T.

Fire destroyed Little's grain elevator at Cypress River, Man., last month. Loss $4,000; insurance, $1,000.

Messrs. Geo. Needler & Sons' new roller process mill at Millbrook went into operation a couple of weeks ago.

Mr. Hogg, late of the Dunedin Mills, has purchased a fine mill at Silver Creek, a few miles west of Collingwood.

Mr. Milton Teskey, of Appleton, is putting up a new roller mill at Carleton Place, the capacity of which will be 50 to 60 barrels.

English millers are at present enjoying a little "boom" as the result of the low prices of wheat caused by the collapse of the California wheat ring.

Mr. Adams, miller, formerly a resident of Carluke, Ont., latterly a resident of California, met his death very suddenly lately through being kicked by a horse.

Leitch Brothers, millers, of Oak Lake, Man., have shipped to Montreal four carloads of new flour. Their mill is running at its full capacity night and day.

The municipality of Turtle Mountain, in the Northwest, has passed a by-law granting bonuses to aid the construction of flour mills at Boissevain and Killarney.

The firm of Pennee & Peer, millers and flour dealers, Quebec, has admitted as a partner Mr. D. Plewes. The firm name has been changed to Pennee, Peer & Plewes.

During the month of August, Messrs. Campbell, Stevens & Co., of the Kent Mills, Chatham, Ont., shipped twenty-six car loads of bran, flour and feed to the Eastern Provinces.

During the first eight months of the present year Canada exported to Great Britain 438,316 cwt. of flour, compared with 323,697 in 1886. The U. S. heads the list of export countries with 978,998.

Hayne's flouring mill at Brigden, Ont., is reported to be running night and day, notwithstanding which the proprietor is at present behind 2,000 barrels with his contracts. This is an enviable record.

Mr. Conrad Olesen, the clever draughtsman of the Geo. T. Smith Purifier Co., has lately returned from a trip through Norway, Denmark and Great Britain. He looks much improved in health.

Mr. Hamilton, proprietor of the Neepawa, N. W. T., flour mill, which went into operation last month, has given the farmers of his locality notice that none but well-cleaned wheat will be received at the mill.

Experiments in the way of manufacturing a cheap and reliable article in the shape of paper barrels have been going on for some time in the United States, and a satisfactory result is said to have been reached.

British Columbia has hitherto been supplied with oatmeal from Montreal and the United States, but Mr. Johnston, proprietor of the Portage la Prairie, Man., mills, has been out there and expresses confidence in his ability to capture at least part of the trade.

The following milling and grain dealers, according to the Winnipeg *Free Press*, will likely have buyers at Portage la Prairie this season: Assiniboine Milling Co., of Portage, and the Ogilvie Co., Hudson's Bay Company, and Messrs. Bawlf, Mitchell, McMillen, and Spink, of Winnipeg.

The following, from a letter written by a Canadian now residing in Michigan, to the Seaforth *Expositor*, tells its own tale: You talk about an unlimited market in the United States, but you forget the unlimited supply. Compare the wheat market here and in Seaforth: seventy cents is the highest here; you quote eighty-two. Farmers here get lower prices for everything. Just think of it, prime dairy butter eight cents a pound for the last four years. Commercial Union and annexation are both political bubbles. Are there no patriots in Canada patriotic enough to throw politics to the wind and stand up for their country's true welfare?

Complaints are heard that a great deal of wheat brought to market in Manitoba this year is very dirty. The loss through lack of proper cleaning is placed at ten to fourteen pounds to the bushel. This shows a slovenliness and carelessness on the part of the Northwest farmer that will injure no one so much as himself.

Winnipeg *Free Press*: Mr. J. D. Sheehan, inspector for the Millers and Manufacturers' Mutual Insurance Co., of Minneapolis, is expected up this way shortly. Mr. Sheehan is a Torontonian, and is widely known and respected. While here he will visit the Ogilvie and other mills, and will also look over the mill now in course of erection at Keewatin.

The Cochrane Manufacturing Co., of Dundas, owners of the right to manufacture the Cochrane patent roller mill described in these columns last month, have called for tenders for large additions to their foundry, and the Messrs. Bertram & Sons are turning out a large order for machines with which to equip the works. When everything is ready the Company will go extensively into the mill-furnishing business.

According to a recent decision of the United States treasury department, domestic produce can not be forwarded by a Canadian vessel and by land routes through Canada, from one port of the United States to another, without becoming liable to the payment of duty. Merchandise arriving at a domestic port after passage through Canada will, however, be admitted duty free, upon the production of proof that it was originally shipped from a domestic port.

We frequently have occasion to say, remarks the *Millstone*, that prejudice is stronger than reason. The reason why sacks should be used instead of flour barrels is not so strong as the prejudice in favor of the latter. Sacks are cheaper than barrels. Probably fifteen or twenty cents a barrel might be saved by buying flour in sacks rather than in barrels. In Great Britain, as we all know, sacks are used almost exclusively. Sometime this will be true of America.

As matters stand at present, Ontario millers are working almost for nothing, and the flour dealers are reaping the profits. The MECHANICAL AND MILLING NEWS has heard of millers operating plants for several months of the present year on a profit of less than four cents a barrel, while the flour dealer has been making a profit of 25 cents a barrel. This would seem to be one of the occasions when a "combine" on the part of the manufacturers would be justifiable.

The demand for oatmeal is not sufficient to keep the mills in Canada running more than about half the time. The MECHANICAL AND MILLING NEWS would suggest to some of the oatmeal millers that they might increase the demand and also their profits very materially by improving the quality of their product. The quantity of hulls scattered promiscuously through much of the oatmeal sold in this city, effectually destroys the pleasure one would otherwise find in eating it.

A wrong idea held by many "cub" millers is, says the *Modern Miller*, that in order to become proficient in their trade, they must needs seek situations in big mills. Now we wish to say to them that our personal observation has convinced us that about the only thing an apprentice in a large mill learns thoroughly is how to sweep a floor, and we advise them to stay where they are, if in well conducted small mills, for there they will have far greater opportunities for improvement under the immediate supervision of the head millers. The master of a small mill has a direct interest in instructing his apprentice, for the more skillful he becomes the greater value he is to him, and in a short time he becomes capable of taking entire charge.

Steam Department.

THE BOILER ROOM.

By GEO. C. ROSS.

A recent article in the MECHANICAL AND MILLING NEWS gave some useful hints and valuable information on the subject of "Steam Boiler Setting." There is one feature of the subject not touched upon in that article which is well worth a little consideration, and might be discussed under the heading "The Boiler Room, or where shall the Boiler be Set?"

A well known writer on the steam engine begins a chapter on boilers thus: "A disquisition on the subject of boilers naturally begins with the subject of furnaces, for although furnaces may exist without a boiler, a boiler will be of little utility without a furnace."

With as much truth it might be said that the subject should begin with the boiler room, for although a boiler may exist without a room, yet it will be of very little utility unless there be some place to put it. The boiler room has not, as a matter of fact, received from the users of steam the thought and consideration which it deserves. It is very often any place about the works which cannot well be used for any other purpose.

In cities, where ground is valuable and buildings cost so much that every part must be made to earn its rent, boilers are very often placed in some dark part of the cellar. No matter how dark the place may be, nor how low in the ceiling, if only the boiler maker can manage to set the boiler in, the place is good enough and is in fact just *the* place for it. The question as to how the boiler is to be got out again is seldom considered, and as little attention is paid to the thought as to what the result would be should the boiler, impelled by its own internal powers, start up in search of the daylight.

The health, convenience and comfort of those whose business it is to fire and keep the boilers in order, are merely matters of secondary importance, to be attended to after the boilers are started to work. Men are plentiful, and in the keenness of competition, are found willing to work under almost any conditions, and therefore such details as their health and convenience need not be considered as of much importance.

In country districts where land is not so expensive and plenty of ground room can be had, it is quite common to find the boiler turned out of the house altogether and a mere shed put around it, which is neither water tight nor frost proof. The expectation seems to be that if a boiler is tight enough and strong enough to keep the water in, it should be equally good for keeping water out, and therefore does not need much of a roof over it.

Inside the boiler room the space in front of the boiler is usually just enough for a man to get the coal or wood into the furnace without his clothes actually taking fire during the operation. When tubes are to be cleaned, a door or window can be opened to give a little more room and light, and in the winter time let the frosty air have full play on the ends of the tubes. At the back end the brick setting of the boiler usually forms the end of the boiler room. This plan admits of the rapid cooling of the brickwork and of the boiler end, if there is any advantage in that. As for head room over the boiler, it is seldom that there is more than will enable a man with a tight squeeze to get around the dome or out and in of the man-hole.

Such is briefly a description of the average boiler room as it exists in this Canada of ours. It is true there are exceptions, for some boiler owners make the boiler room of such dimensions that the boiler can be properly attended to.

A boiler room should be of such length that while there is a space in front of the boilers at least equal to the length of the tubes, there is also room at the back end for a man to get freely around it, and that blow-off pipes or any other connections may be within the house and be protected from the frost. The width should be enough to leave a passage at one side at least wide enough for a wheel-barrow, so that in cleaning out the soot or dust from behind and underneath the boiler, there is room to work. This space is not wasted while the boiler is in regular work, as there should always be some room to keep a little dry fuel ready for any emergency.

The roof should be perfectly water tight, and should be high enough to enable a man to walk freely over the boiler with air and light. This space should not be used either as the sweating room of a Turkish bath, nor yet for drying yarn or lumber. Serious trouble is often caused by leakage from the roof, causing water to drop on the boiler plates. The amount may be very little and be quickly dried when the rain is over, yet in the course of time the corrosion will render the boiler unsafe.

The boiler room should be well lighted—especially should the steam guage and the water guages be always distinctly visible, so that there may be no guessing as to what the pressure is or where the water is.

A boiler should never be put into a place without considering how it is to be got out again. In some cases this has been overlooked, and boilers had to be cut to pieces to get them out. In a certain handsome stone boiler house with heavy walls, the boilers are five feet in diameter, and the door into the house is four and a half feet wide. These boilers were built inside the house, and when the time comes for their removal either the boilers or the walls will have to give way.

Another point that should never be overlooked is that there should be free admission of air to the boiler room. If this is not attended to the furnace will not work properly, as there will be but little draught.

In choosing the place to "set" the boiler, make it large enough, have plenty of air and light, have it well drained, and have all pipes and boiler connections protected from frost, and the place will deserve the name of a Boiler Room.

Steam can be carried three hundred feet with little by carefully felting and boxing the pipes.

The society of Stationary Engineers of Toronto is now in affiliation with a similar society in Montreal.

The DOMINION MECHANICAL AND MILLING NEWS for August is issued as a combined "Jubilee and Exhibition number." It has thirty-four pages, enclosed in a chaste and elegant cover illustrating the different trades and industries. In point of literary excellence and superior mechanical execution this issue of the MILLING NEWS has never been equalled, and scarcely approached by any publication in the Dominion.—*Truth*.

CAUSES OF LACK OF UNIFORMITY IN FLOUR.

NO miller can keep his flour uniform, if the products in the mill are continually changing. Even if the same grade of wheat is constantly used, the flour will go up and down in grade as the mill varies in the different classes of stock. Considerable time is necessary until the flour will show that the products are irregular and below the standard. The purified middlings will first give evidence of decline in quantity and quality, if the breaks become deranged. As a rule, as soon as the quantity of middlings is lessened, the quality deteriorates also, both in making and in handling them. The patent flour is affected next, and then the baker's flour. To lower the quality of the middlings, means to lower the grade of every flour the mill makes. This is evident from the fact, that the residue of the patent product will contain much more of impure material, so that until this stock is finished quite a difference will be noticeable. Thus a slight variation in the purified middlings will show quite a difference at the end of the mill, and the flour taken from all the intermediate operation must also be governed by the condition of the purified middlings. The miller can, of course, offset some irregularities in regard to the middlings by closely watching his bolting reels, and cutting off freely; but even if this is possible and understood, there is more in permitting the middlings to "run down," than most millers will admit, and to this negligence may be attributed the complaints often heard about the flour being "off," etc. If, in the operation of the mill, the variations in the quality of the different flours could be indicated on a card, as it is possible to make a record of the variations of steam, water, or any kind of pressure, some millers would be surprised at their work, and many a miller and millowner would be able to ascertain why their flour meets with such meagre success.—Harry S. Klingler in *Milling Engineer.*

SHAFT SPEED REQUIRED.

If you require to know how fast a shafts need to turn to carry a given horse power, within good working limits, you may, with safety use the following rule:

Multiply the desired horse-power by 285 for cast iron, by 190 for wrought iron, or by 92 for steel, and divide the product by the cube of the diameter in inches. This quotient will be the minimum rs speed in turns per minute.

This rule is good only for shafts which are not subject to bending or to sudden changes of load or speed; where these come in you will require higher speed so as to put less twist upon the shaft.

But, for ordinary condition, the rule is all right as it is. Thus, if you thought of carrying 100 horse-power with a 3-inch turned wrought iron shaft, you will need actual diameter (100 × 190 ÷ 3 × 3 × 3) = 19,000 ÷ 27 = practically 704, a speed which you would not like to put. If then you made up your mind to have a 4-inch shaft, you would find that it would take a speed of 19,000 ÷ 64 = practically 300 turns per minute.

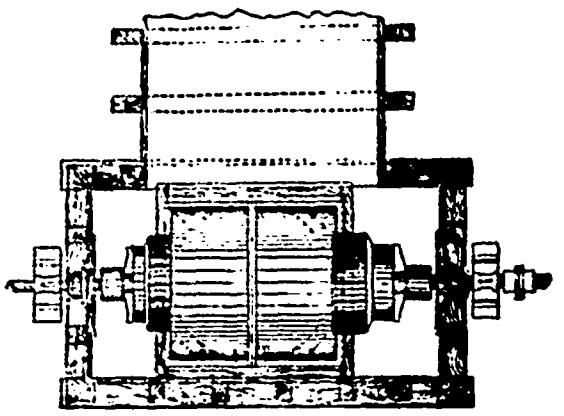
If the 3-inch shaft was of steel it would require to be run at but (100 × 92) ÷ 29 9,200 ÷ 27 = practically only 341 turns, while with a 4-inch steel shaft you would require ouly 9,200 ÷ 64 = practically 144 turns per minute.

PURIFICATION.

An exchange says that the employment of but one purifier in small stone mills is often the cause of much dissatisfaction. If the milling is high enough to produce considerable good middlings, the feedstuffs are not purified; or if the feedstuffs are cleaned the middlings must be neglected. As a rule these mills have one, or at the most two purifiers, and it is an impossibility to produce desirable results with this number of machines, however small the mill may be. It must be especially remembered that it is quite a secondary matter how much material is to be handled; for the fundamental fact remains that it must pass very often through the sieves, in small as well as in large mills. The small miller is forced to dress all the middlings he produces as rapidly as possible and to prevent, as much as he can, the production of tailings. Many millers will say that these views are expressed solely in the millfurnisher's interest and that their financial condition allows them no choice in the matter. But we insist that, however small the mill, it must have a complete outfit to give good satisfaction. In an establishment having all needful machinery, much tailings of excellent quality will be made and these require repeated gradings. It is sufficient evidence of poor quality in middlings when the tailings do not prove abundant.

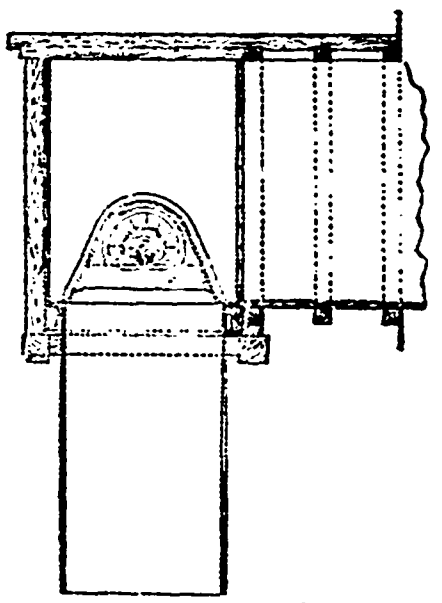
SETTING WATER WHEELS NEAR THE SURFACE OF HEAD WATER.

It is almost invariably found convenient to locate water wheels on horizontal shafts as near the surface of head water as possible. The pulleys which drive the mill must be as far above back water and be kept as dry as possible. In erecting new mills, if the wheels are



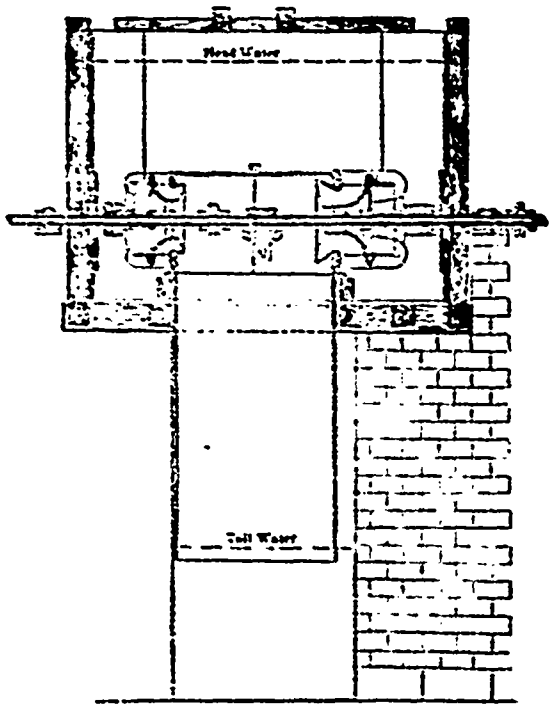
SECTION ON CENTER OF SHAFT.

set high, the excavation of a large, deep pulley pit may be avoided frequently. The cost of flumes may be reduced and wood or masonry may be used instead of iron, because the flume will be shallow and only have to resist a light pressure of less than ten feet fall, where an iron flume would be required if the water wheels were located at the bottom of the fall.



SECTION ON CENTER OF FEEDER.

The accompanying plates, showing two thirty-six inch Risdon water wheels of the Ripka Mill, are given as an illustration of this. They displaced a water wheel on a vertical shaft and are placed on the same line as the old jack shaft; hence none of the advantages of the old arrangement are lost, although gears and steps are



PLAN.

avoided, and this arrangement has a great advantage at the part gate in economy of water, for there are two wheels, one of which has twice the power of the other, and either one or the other can be used. They are accessible to clean. There is at no point a pressure exceeding nine feet head on the wooden flume. All the rest of the fall is utilized by an iron draft tube.

Our experience, gained from a large number of cases, has persuaded us that water wheels may be located at almost any convenient point below head water. We have placed the center of the shaft twenty-five feet above tail water and had satisfactory success. We have placed the top of the chutes within a foot of the surface of head water, and after we had placed an air tight bonnet over the chutes and about two feet above them, with the edges of the bonnet running down into the water, so that no air could reach the wheel, we had no trouble from the high location. We prophesy that within a few years water wheels will be located above head water at the top of siphons, to which this water will be raised on the principle of the siphon.

One of the best methods of construction under circumstances such as are here described, is with the masonry flume. The pressure of the water will be so small that only a thin wall will be required to resist it. The permanency of the masonry flume can be obtained by no other method of construction or materials. Stone work does not settle and throw shafts out of line. We have erected many wheels of the character shown in this sketch on masonry flumes, and they have universally given great satisfaction to the owners.—"W. W. T." in *Milling Engineer.*

HOW TO KEEP CATALOGUES.

Every manufacturer and user of machinery, says *Wood and Iron*, makes a continual use of catalogues for reference. They are his constant companions, and hardly a day passes that he does not refer to them a dozen or more times. They are usually kept in drawers, or piled up on the desk, and when one is wanted the whole pile has to be pulled over. This continued handling causes them to get worn, dusty, and dirty, or some one borrows one and forgets to return it, and when wanted it cannot be found. Another source of trouble consists in the almost infinite variety of sizes and styles in which they are published. To obviate these difficulties and always have his catalogues for reference in the most convenient form, a mechanical engineer of this city conceived the idea that if he could get a large enough list he could assort them into sizes and classes and have a number of those of the same class into one book, thus avoiding all danger of loss or destruction, and still have them condensed and handy. This he accomplished in such a manner as to have about fifty different catalogues bound into four volumes, and although he has a large assortment of other catalogues unbound, he never refers to them unless it is impossible to find what he wants within the four bound volumes on his desk. Not only is this arrangement of catalogues of considerable value as a reference for manufacturers, but engineers, machinists, wood workers, and tradesmen in general, who desire to make themselves familiar with different constructions and the makers' opinions, can gain much valuable information from them.

PERSONAL.

Items of personal intelligence from or concerning persons engaged in the various branches of mechanical industry represented in Canada will always be welcome to this column, with the stipulation that the name of the sender be given, not for publication, but as a guarantee of good faith.

Louis French, jr., had an arm taken off in a Holcaygeon saw mill recently.

Mr. Hutchison, of the Big Mill, Goderich, has lately returned home from a holiday trip.

A Mr. McFarlane had a finger squeezed off by the air pump in Deane's flour mill at Newmarket, lately.

Mr. W. Bedford Dixon, manager of the Colonial foundry at Sackville, N. B., has just recovered from a long illness.

Mr. Chas. Rather, the well-known water wheel manufacturer, of Montford, Ont., was called home from the Exhibition by a telegram announcing the death of his father-in-law.

Mr. James Higginson, late of the Dundas Drop Forging Co., has moved to Parkdale and will accept a situation at the Bolt Works at the Humber as assistant superintendent.

A little son of Mr. John Row, grain dealer, of Exeter, Ont., while playing around the storehouse, was caught in the shafting, had his clothes torn from his body, and was rescued just in time to save his life.

Mr. Thos. Gain, of Hamilton, representing the Lincoln Paper Mills, gave the MECHANICAL AND MILLING NEWS a call early in September. He was *en route* to the Northwest on business for his company.

Mr. James Stark, of Paisley, dropped in on the M. & M. News at fair time. He say's there's no money in the milling business, and yet the fact fails to knock the good nature out of him, as it appears to have done in the case of some others.

Stratford *Herald:* Mr. Martin Heppler, an employ of the Smith Pavilion Works, died of consumption yesterday at his residence, Galt street, after an extended illness, aged 33. The deceased was a married man and leaves a wife and one child to mourn his departure. He came here three years ago from Listowel, where his parents live. He was much respected by his fellow-employees and others.

The MECHANICAL AND MILLING NEWS invites the opinions of millers on what is known as the "short system" of milling. Very little appears to be definitely known of that system, and an expression of opinion on the subject would prove beneficial to all concerned. A couple of letters have lately appeared in our correspondence columns on the subject. Who will lend a hand and keep the ball rolling? If the short system has any advantages over the long system it is to the interest of the millers to find it out.

PAGE

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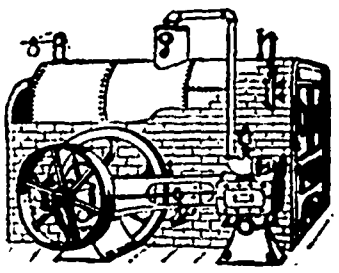

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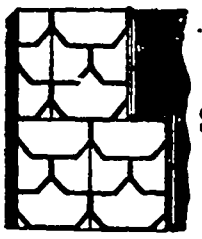

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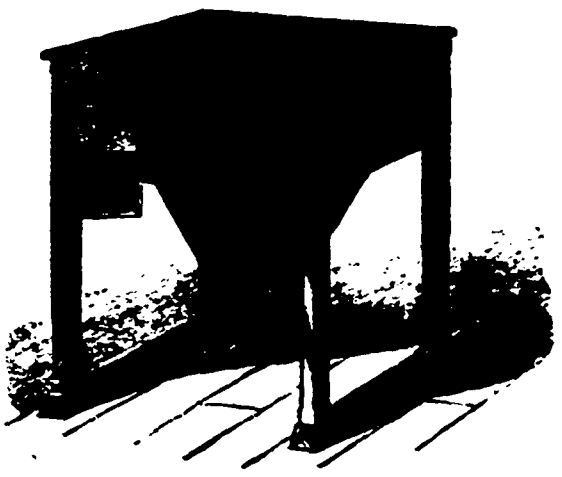

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INDUSTRIAL PARLIAMENTS.

We are indebted to Mr. O. A. Howland, of Toronto, for a copy of a book entitled "The Irish Problem as viewed by a Citizen of the Empire," which has recently been published by an English publishing house, and of which he is the author. One of the means suggested by Mr. Howland for settling many of the difficulties which afflict Ireland in common with Canada and other nations, is the formation of Industrial Parliaments. The following extract from his work will serve to illustrate his idea of the constituents which should enter into such assemblies:

"Thus the elements of what I would entitle an Industrial Parliament are already in existence. The various trades and professional assemblies form natural constituencies, from which, by a voluntary system of representation, might arise a new national deliberative assembly in each of the English speaking nations. Silently, without the assistance of a statesman or the guidance of a scholar, those materials have been making ready. They have appeared. A stone has been cut out without hands. Commencing with the labor organizations to which may be given the credit of setting the example—there is scarcely in at least the United States and Canada, an industrial pursuit whether manufacturing financial, agricultural or commercial, that has not developed within itself an organization for the discussion and cultivation of its particular interests. For these various bodies to agree to send their representatives to form a joint assembly would seem to be a step of self-evident feasibility that there only wants an occasion promise of practical benefits to follow from the experiment—to ensure its being made."

Mr. Howland proceeds to show that political parliaments, through lack of necessary practical information and a disposition oftentimes to legislate in the interests of party rather than in accordance with justice, are unfit to deal with what he terms "class discontents." In support of this contention he illustrates the case of the Canadian millers, and the treatment accorded to them by the Canadian Government. On this point, he says:

"In 1878, in the depth of the world-wide commercial depression of that year a general election was held in Canada. The party then in opposition, with a suddenness equal to that with which American politicians have recently become students of Henry George, became a convert, immediately before the elections, to the principles of Protection (attractively entitled a 'National Policy,') as the remedy for trade depression. The country was willing to catch at any straw; so upon its National Policy cry the Liberal-Conservative party (as it called itself), to its own great astonishment (almost to its consternation), was carried into power by an overwhelming majority. Into the vexed question of the merits of such a policy, or of its success or failure as a commercial measure in Canada (where it has continued to prevail), I do not propose to enter. But the one particular flaw from which no Protectionist system has yet been found free soon made itself apparent in Canada. To equalize the incidence and benefit of the duties is a problem about as difficult as perpetual motion. To prevent the injustice, continual readjustments become necessary. When that nice balance has to be entrusted to a politician's hand, it may be imagined what additional influences come into play.

"In Canada, after a time, the duties on wheat and flour urgently required alteration. Originally duties had been imposed on flour to compensate Ontario (the great milling province of the Dominion) for a duty placed upon coals in the supposed interest of the mining provinces, Nova Scotia and New Brunswick. Then, as a consequence of the duty on flour, what was no doubt intended to be corresponding duty was placed on wheat, to please the Ontario farmers in their turn. It happened (through some miscalculation, no doubt) that the duty placed on wheat was in fact relatively higher than the duty on flour the manufactured product. But for the time the higher duty on wheat was regarded as a thing of no moment, because Canada as a whole produced a surplus of wheat for export, the province of Ontario itself had hitherto done so. While this was the case the home price would be regulated by the foreign price, without regard to the import duties under the Canadian tariff. The wheat duty was therefore looked upon as a merely illusory provision, a harmless wile of the politicians, by which they gratified the farmers without incurring opposition from any other quarter. It was smiled at then as a very masterpiece of demagogism. Unfortunately, as is well known, one or two bad years recently occurred, making the Canadian wheat crop, for the first time, fall considerably below the home demand, and obliging the Ontario millers to import some of the wheat required to manufacture even for Canadian consumption. The moment this occurred the duty on wheat was no longer illusory. The millers of Canada found themselves suffering from what was practically a discrimination against them, an actual bounty in favour of flour made by the foreign miller. The Canadian millers thus had a last straw added in their case to the difficulties under which all of their trade on the American continent were commencing to labour. Many once prosperous men found themselves reduced to actual ruin, few, if any, escaped the most serious losses. Naturally, they turned to Parliament for relief. They asked that either the duty on flour should be increased, or the duty on wheat reduced to the extent necessary to put an end to the discrimination against them in favor of foreign millers. The petition gave the signal for a very carnival of demagogism.

"The millers pointed out that in the name of Protection the oldest industry in the Dominion was being crushed out of existence, that this could not be to the interest of the country or that of the farmers themselves, and urged that it was the duty of the Government to prevent it, even at some temporary risk to their popularity.

"Had any mutual assembly existed in which a frank conference might have taken place between the honest representatives of these different interests, I believe that the millers' contention, having not only justice but common sense on its side, would have prevailed.

"It seemed to be the duty of legislators to yield to such arguments as the millers presented, but the business of the demagogues is to consult votes rather than to weigh reasons. Since Nova Scotia and New Brunswick (being consumers and not producers of wheat and flour) would not suffer any higher duties to be imposed on flour, it became a question of lowering the duty on wheat. Now, the party in opposition being averse to Protection generally, might be expected to warmly concur in a reduction of that particular protection impost, even irrespective of its unjust and injurious effects. The Government, on the other hand, on Protectionist principles should have favored the reduction, being a reduction on a raw material for the encouragement of a manufacture. In fact, the parties reversed their respective attitudes over this question.

"The Free Trade opposition saw an opportunity to embarrass the Protectionist Government. Indirectly, but effectively, their press stirred up the farmers to resist the reduction of the wheat duties, impressing upon them that the duties had really begun to operate in their favour by raising the local price of wheat above the world's market price.

"But the government, on their side, evaded the dilemma by following a simple principle of decision first enunciated by a certain Dutch governor, of whom it is related that when he found that the suitors' books seemed to be the same weight, he declared that they balanced one another, and so dismissed the suit. The millers' votes, together with their arguments, appearing to be balanced by the farmers' votes, the ruinous and indefensible duty was left unchanged.

"In vain the poor millers protested against being ruined by an unnatural policy. Their arguments were not calculated to affect the minds of politicians. Their answer was in practice like that of Talleyrand to the beggar who asked an alms of him. 'A man must live,' pleaded the man. 'Je n'en vois pas la necessite,' Talleyrand replied."

In the concluding chapter of his book, Mr. Howland says:

"The tendency of the times is towards great industrial conferences in which these problems will be examined by more qualified representatives, free to engage in a frank discussion. Should the experiment of national Industrial Parliaments be undertaken and prove successful, those local assemblies would lead by a very easy gradation, at least to occasional international assemblies, upon the same foundation. Such great assemblies would, probably, make better practical progress by being homogeneous, and representation drawn from the widely-planted British race ought to be sufficiently representative of the diversities of the globe."

In a letter to the editor of this journal, regarding this subject, Mr. Howland throws out the following suggestion, which is well worthy of consideration:

"Would not an Industrial Parliament or assembly of representatives of the farmers granges, the city labor associations, the different manufacturers' associations, and the bankers, corn exchange, and the like sections of the Board of Trade, be of utility in bringing the discussion of the Commercial Union question to a head, one way or the other? It is one thing for a number of able speakers well prepared on one side to obtain a resolution from a meeting of farmers, and another to bring a joint assembly to a nearly unanimous conclusion. Commercial Union with the United States is only one of many solutions of questions connected with the financial policy of this country in connection with this continent and with the Empire that might be discussed if all the manufacturing and mercantile talent and experience of the country could be got together at a non-political gathering."

Mr. Howland's book is a very thoughtful and timely production, and should be read by all interested in the live topics of which it treats.

LESSONS IN WOOD TURNING.

In all turning operations where the chisel must be traversed from place to place along the wood, the rest whereon the chisel bears must be smooth, straight and set parallel with the axis of the work to be turned.

Turning rests are very apt to be sent out just as they come from the blacksmith's hands, or finished only by the painter by means of a coat of tar paint. The rest must be straight and smooth as above stated, and it should be put on a planer or a milling machine and three sides dressed at least.

In case the rest is sent out rough, do not attempt to use it in that shape, but take out the work, slide back the tail stock so there is plenty of room, and "go for" that rest with a 12 or 14-inch bastard file.

With one corner of the file take off the file take off the paint, then file the top of the rest, taking care to make it straight, and to avoid all holes and high places. Next, file off the inside of the rest, or that part which would strike the work were the rest advenced far enough for that purpose.

If there is a vise in the shop (and every shop should have at least two) this part of the rest may be best filed by making it fast in such a manner that shank and the rest both lie horizontal, and then filing while it is in this position. At any rate, make this side of the rest straight and smooth also, then take off the sharp corner, leaving a facet of about one-tenth of an inch. When the finishing touches are put on, this corner may be nicely rounded.

Be sure to file up the inside face of the rest, that is, the part against which the fingers would slide when guiding the chisel. This also may well be done in a good vise.

After all rough places are dressed down, hollows eased out and a good iron surface is obtained over the whole of the rest, it is best to draw-file all three of the sides, rounding the corners while so doing, and causing all file marks to run lengthwise the rest, in the direction the chisel is to move.

After this is done, take a mill file and draw-file with that, then if you have a float file to finish up with so much the better.

A piece of emery paper will put on the finishing touch, and the manner in which a chisel or a gouge will slide over the polished surface of the rest will surprise the man who has tried to turn over a wretched tar-daubed rough iron rest.

A little inside turning often has to be done, and this work is pretty apt to give trouble to the beginner. A new force here ento the economy of turning, and that is centrifugal force. In outside turning it is not noticed, except that the chips often fly far and wide, but it is felt, and the chisel must be forced against it, although this is done unconsciously.

If a block of wood be screwed to the face plate and an attempt made to turn a cavity therein, our young "wood butcher" will probably find his chisel knocked one side, and a pretty little "semi-radial tangential" canal leading off across the block he was working.

To prevent this casualty, the bevel of the gouge must be presented to the outer edge or rim of the cavity, in exactly the same manner that it was brought to bear upon the surface of the work when doing outside turning. This leaves no chance for the tool to catch, and the center of a block can be worked into any shape by exercising a little care and lots of patience.

After a job is turned, the beginner will have to sand-paper it, and sand-paparing is quite as much of a job as the turning itself. Do not take a whole sheet of paper and press it against the work for half a minute and then remove the paper, expecting to find the work nice and smooth.

Double the sand-paper in the middle, then split it in two with the blade of a try square or with any other thin piece of metal. Double each piece again, and cut as before. Now, each sheet of sand-paper has been cut into four pieces, and each of these should be doubled lengthwise in the center, and folded, sand side out, neatly and smooth.

If small beads, little hollows or very "quick" rounds are to be sand-papered, it saves paper and time to cut one of the four pieces into strips about an inch wide, then by wrapping one of these strips around a little gouge or the edge of a chisel, the desired work can be quickly done.

The very smallest beads, or "quirks," may be sand-papered with a narrow strip of paper folded lengthwise, and the crease rubbed down smooth, the paper itself being stiff enough to stand up to the work without the invention of any other support.

Perhaps it is proper to state right here, after telling how sand-papering should be done, that it should not be done at all, or at least very sparingly. The wood should be cut so smooth that sand-papering is unnecessary, a feat easily acquired by practice and done by all good turners.

A piece of wood cut when running at a high rate of speed by a very sharp tool, which was presented to the wood at the proper angle to shear the wood instead of scraping it, will cut smoother than the finest sand-paper can.

If a piece of wood be smoothly turned as above, and the body of the chisel or gouge be pressed firmly against it for a few revolutions, the wood thus pressed at once takes on a very fine polish, and becomes as "smooth as glass," as the saying goes.

For articles to be filled and shellacked, it is not proper to polish in this manner, because the fibers of the wood are bent down and compressed, as it were, into forming a smooth, polished surface. When any filling material is applied to the surface thus prepared the pores of the wood become filled with liquid, which soon swells up the compressed fiber and causes the surfsce te raise up much rougher than before it was polished in the first place.

For surfaces which are to be turned and varnished, I prefer to turn smooth, touch up the roughest places with a bit of sand-paper, and then apply friction to the surface by a handful of shavings or wood turnings from the floor under the lathe; this seems to do much of the work of sand-paper, and to polish without compressing the fiber, and thus causing roughness.

Shellacking is easily done in the lathe by means of a rather stiff brush or a piece of flannel rag. Saturate either with shellac, and apply to the work with very little pressure, taking care to cover over the whole surface with but once going over it. Jas. F. Hobart in *Manufacturers' Gazette.*

Correspondents' Opinions.

A department is set apart for the free use of subscribers in asking or answering questions, expressing opinions, or relating bits of shop practice or experience. The editor hopes to see it usefully employed and intends to enlarge it to any necessary extent to accommodate communications.

"DOWN WITH MONOPOLIES."

LISTOWEL, Sept. 12th, 1887.

Editor Mechanical and Milling News:

DEAR SIR: In your last number you gave us your opinion of the California wheat ring. In your next number will you be kind enough to give us your opinion of the sugar ring, and cotton ring, and other Canadian rings that flourish under the model government that you worship? Yours truly,

A. AUSTIN.

[Our reply to Mr. Austin's letter will be found on page 4 of this paper.—THE EDITOR.]

A NORTHWEST CHAMPION OF THE SHORT SYSTEM.

WOLSELEY, N. W. T., Sept. 19, 1887.

Editor Mechanical and Milling News:

It seems by what I can learn that my letter in your last issue has had quite an effect upon some mill men. They seem to think that there is something in the short system. Of course there is something in three breaks on wheat; also in four reductions on middlings; but five reductions on middlings is all that is needed in a mill of 1000 barrels cupacity. For a mill of less than 100 barrels capacity, *four reductions on middlings* is plenty. But mark this: you cannot run a stream through the rollers as thick as your finger. A thin sheet and even is what is wanted. Many a time have I had second millers come and complain to me that they could not get the same amount through the rollers as I could, when at the same time the rollers were only feeding about half the space at one time with them. See that your feeds feed the whole length, and then if you cannot grind it right, speed up your rollers; but don't get too much differential on your smooth rollers. If you get too much, it is worse than none at all, and causes great heat, and that you do not want. I remember the winter of '73 in Wisconsin. I was working with a Dutchman who used to think he could not make flour unless the stones heated up until the water ran off the feeders. That is all wrong. Keep everything as cool as possible, and handle your stocks just as little as you possibly can. Never let a milling engineer talk you into centrifugal reels, for you do not want them. They are a thing of the past, like the old mill stone. When you hear a man say he cannot mill without a mill stone on fine middlings, and another on red dog, mark him down as one of those millers that know all and still know nothing. Smooth rollers are the only thing to make flour with after the breaks. A short time since I was talking with a friend. "Oh," he said, "a man can do nothing with less than 14 pairs of rollers, or in other words 14 reductions." Now, I can point to mills in Kansas that are making fourteen reductions that cannot compete with another that only makes six reductions. The fourteen reductions take one-third more power to make the same amount of flour, and the long system makes ten per cent. low grade and the short system only four per cent.

I can show samples of bran made here on three breaks which is cleaner and much broader than samples I have from a six break mill with a bran duster to follow. Brother dusties, where do you get your low grade and so much fine bran from? Think a moment then, examine every scalper's stock, and try scalping your stocks on round reels, and the difference will show for itself. If you have a 9x18 on 2nd break, and a 9x18 on 3rd, change the spouts and run both together, and then run them both up to 2nd scalper. Set your roller up close enough to clean the bran ready for the bran roller, just break enough on your 1st break to split the wheat open. Run that way for a short time and see how you like the result. That will give you some idea of what you think of the short system.

I have been asked by letter to state what machinery it will take for a short system mill, so I enclose you below what will make a first-class mill of 100 barrels capacity:

One No. 2 Garden City 1st break; one No. 2 Garden City brush scalper; one double 9x30 corrugated roller mill; 2 double 9x30 smooth roller mills; 1 pair 9x24 smooth roller mills; 2 scalpers 30 in. round, 5 feet long; 5 round scalpers 9 feet long; 5 round flour dressers 9 feet long; one wheat separator; one scourer; one wheat brush; 12 stands of elevators; 2 flour packers; 2 sets of scales; engine 11x22; boiler 44x12. That makes the above mill complete, except two purifiers.

For a 50 barrel mill the following machinery is necessary:

One 1st break and brush scalper; one double 9x18 corrugated roller mill; one double 9x18 smooth roller mill; one double 9x15 smooth roller mill; 2 small purifiers; 2 scalping reels 26x4 ft.; 5 scalping reels, round, 26x7 ft.; 5 round flour dressers 26x7 ft.; 2 flour packers; 2 sets scales; 12 sets elevators; engine 10x18; boiler 40x12.

Either of the above outfits, with the right system and plans, will run out any long system mill in Canada today, but the rollers must have the right corrugations and differentials, as those used on the long system won't do for the short. I expect some of those so-called milling engineers will try to criticize these statements, but let them. I am ready any time to meet them. Mr. Editor, I am intruding too much on your paper, but for the good of those that cannot spend all their bank accounts in putting a mill full of rollers and centrifugals, I hope this will do, as I cannot undertake to answer the large number of letters that I have received since the appearance of my letter in your last issue.

Yours faithfully,

W. D. COOK.

CAN ANY READER GIVE THE INFORMATION?

DESRIVIERES STATION, P. Q., Sept. 12, 1887.

Editor Mechanical and Milling News:

I want an apparatus for scelling oats to make oat meal. Have been told that a composition has been patented in England which can be applied to any old stone, after which it will do the work better than the Derbyshire peak. The composition looks like a species of cement. Please advise me if you know anything about it.

Yours truly,

JAMES CROTHERS.

[We have endeavored to obtain the information sought for by our correspondent, but thus far have not succeeded. If any of our readers can enlighten us on the subject, will they please send the information to this office as soon as possible, and it will be forwarded to Mr. Crothers.—THE EDITOR.]

INFORMATION WANTED.

LONDON, Ont., Sept. 10. 1887.

Editor Mechanical and Milling News:

DEAR SIR,—The boss miller and I had a dispute about dressing stones, and I told him I would write for an explanation through your paper, if you would grant it, and it might prove very useful to others as well as us.

1st. True face on the stone is, I take it, what is desired, but the one in question is not true, the difficulty being that the face is true all but one or two lands, and they show face half way out on the face required, and the remainder of the land is low. Which will bring the stone to perfect face first, and do the best work while doing so, to dress the face of those lands the same as the rest of the face in proportion to its equality of hardness, or to face off the part that now shows face? The stone is grinding on middlings in a 300 barrel roller mill.

2nd. If a stone is in perfect face, the face desired being 8 inches, and the stone in perfect running and standing balance, and the stone 4 ft. 4 in. in diameter with 16 quarters of 3 lands each, and furrow staff 1¾ in. at skirt of stone and 2¼ in. at eye, leaving the lands tapering, and a perfect face is desired, should the stone be dressed any heavier towards the eye than at the skirt? If so, where does the friction arise from that grinds the face away at the skirt?—or should the face be dressed all alike? As the face is so much narrower, will not the friction of the stock keep the face true? Or should the face be dressed finer, gradually approaching to the eye?

If some one will kindly enlighten me on these points through the MECHANICAL AND MILLING NEWS, I shall feel greatly obliged.

Yours truly,

SECOND MILLER.

[We refer our correspondent to an illustrated article in the Jubilee and Exhibition Number of this journal, on "Buhrstone Dress and Work." He may be able to find there the information he seeks.—THE EDITOR.]

TREATING OF LUBRICATING OILS.

A practical question with machinists has long been how to cleanse the thick drop oil from engines, bearings, shaftings, pulleys, etc., so that it can again be used for lubricating. For accomplishing this purpose a little apparatus has now been devised, and which it is claimed, is in a fair degree successful in meeting the need in question. This apparatus is a box-like arrangement, of several stories or divisions, the interior being either lined with lead, or consisting entirely of that material; above, it has a shoulder like a funnel, into which is poured the oil to be cleaned, the purified oil passing off through an escape pipe in the bottom. The different shelves, or stories, are perforated and covered to a height of about two inches with raw, loose cotton, through which the oil must percolate, the cotton serving as a filter, and retaining all kinds of contaminations; after the oil has in this manner passed through the several shelves it is good and clean, and drops into a vessel underneath. The contaminated cotton is, of course, occasionally to be replaced by clean, and the apparatus is to stand in a warm place. As compared with the tedious and doubtful process of cleaning the oil with chemicals, this method is found to possess advantages which render it decidedly preferable.—Boston *Journal of Commerce.*

IMPERFECT LUMBER AND BELTING.

There are two very common kinds of imperfect lumber. The first, known as "washboard or chattering" lumber, is gauged at irregular intervals, and has a rough, uneven surface very damaging to its marketable value. The New York *Lumber Trade Journal* thinks these may be produced by any one of four causes. 1st, by unevenly balanced knives. 2nd, by a loose cylinder head on the mandrel. 3rd, by loose boxes. 4th, by a spring mandrel. The second is perhaps more common than the first. Lumber of this kind is gauged at regular interval. The imperfections may arise from two causes. 1st, the driving pulley may be sprung or out of true. 2nd, the bolting may be imperfect. Belts made from uneven thicknesses of leather, or with lumps on them from lacing, will inevitably produce uneven lumber of the second kind mentioned. Large belt hooks are a too frequent cause for belts running unevenly. Good belts are as necessary as good machines, and good results can not be obtained without the two working in harmony. Nearly two-thirds of the belts are destroyed by foreign substances. In wood-working establishments, belting should be dressed twice a year with castor oil and nothing else used; it will effect a saving of 50 per cent. on the belting in the shop. The jointure should be made with cement, and the belt be run with the hair side down, and the lap striking the pulley. On fast-running machinery the belt should be taut enough to prevent flapping, or in some cases slapping. When the cylinder head overruns, it is safe to conclude that the belt is running too slack. Nothing will rack a good machine to pieces quicker than imperfect belting, and when the lumber turned out is not properly manufactured it is well to investigate pulleys and belting before condemning the machine. Good belting should be cut within twelve inches of the animal's backbone. It is worth its price and cannot be bought cheap.

UNITED STATES SUPREME COURT PATENT DECISIONS.

In a suit for infringement, where the defence was a license to make one hundred machines, and it appeared that the licensee had made more than that number, the hostile conduct of the licensor might make him liable to the licensee for damages, but would not extend the terms of the license.

Where the same inventor had assigned an earlier patent on potato-planters, together with all improvements which he might thereafter make, certain interests in which patent became the property of defendants, they thereby acquired equitable interests in subsequent patented improvements of the same inventor to potato-planters and a right to a legal title to the same.

An assignment of a patent, with future improvements of the same by the same inventor, is valid as to the improvements, as collateral or incidental stipulations connected with the conveyance of the principal subject.

One patented machine is an improvement upon another when the general construction and arrangement of parts, the principles of operation, and the results are substantially the same in both instances, although the later machine may be much better than the earlier one.

The owner of an equitable interest in a patent is not answerable in a suit for its infringement to the owners of the legal interest in the same patent.

Where the patent in suit remedied serious defects in a former machine by the employment of old devices, it would appear to present a new combination involving invention.

To antedate a patent by evidence of an earlier machine such evidence must be very clear and precise to overcome the presumptions arising from the grant of the patent.

Where two old and well-known devices are brought into juxtaposition, and each continues to perform its old function, without any new result issuing from their united action, no patentable combination is produced.

ABOUT THE SHOPS.

By Jas. F. Hobart.

IT is not very pleasant to go into a shop or factory and find everything shut down. It is still more exasperating to hear the engineer answer our question, "What's the matter, Bob?" with "Hot box, sir." Upon looking around, we see the fireman mounted upon a ladder, dropping water from a tin can into a box on the main shaft just beside the main pulley which receives the engine belt. It appears that this box began smoking and would not cool down even under the successive application of lard oil, tallow, cylinder oil and plumbago. The box kept growing hotter, until the engineer, fearing the babbit would melt out, thought it best to shut down.

After the box had been cooled enough to be handled the cap was removed, and then the cause of the trouble became apparent. It was wholly the oiler's fault, although some blame should be attached to the designer for not placing an oil cup upon the box, as should be done with every journal bearing both great and small. When the oiler went his rounds that morning, he found, as usual, a lot of dirt and dust collected upon the cap, completely filling the oil hole, which had to be dug out before the oil could reach the journal. The oiler had provided himself with a brass wire filed half round, for digging out the dust. By some means this brass tool was mislaid and the oiler took the first thing he came across which would answer his purpose. As usual this implement proved to be a ten-inch mill file, the tang of which comes in so handy for almost everything from a screw-driver to a wedge.

About a quarter of an inch of the file had broken off and remained in the oil hole. When the shaft was started up this little piece of steel industriously set itself to work to cut a groove in the shaft. The bit of steel was carried down between the shaft and the babbit, wherein it soon became imbedded, and cut the shaft as if it were a tool held in the tool post of a lathe.

How many shops and mills will bear an inspection of their journals and loose pulleys without revealing a state of things like the above? It would not be amiss to take a trip around the mill, catch the oiler unawares, and see with what implement of torture he probes oil holes for dust and dirt. As long as you are about it, you might also, in a quiet way, of course, see how your oiler dispenses the oil. Generally he uses a lavish hand, and scatters oily favors upon every applicant he meets, truly a wasteful proceeding, but, in the writer's estimation, much better than the rascally deceiver, who, while pretending to oil faithfully, drops an economical drop into easily accessible bearings, but never goes near the hidden box, to which he must climb and crawl in order to oil it.

Every wood-working shop yet built, with hardly a single exception, has to be fitted with shafting at right angles to the main, or the engine shop. There are several ways to do this. Gears were formerly the only method in use, and are still prescribed by some old-fashioned and old-fogy millwrights. Gears, however, are now seldom used for this purpose, and their grinding, clattering shortcomings are so well understood that they are seldom tolerated. The next device used was a belt which ran around a corner by means of two guide pulleys mounted upon a short upright fixed shaft. These pulleys were made, or should be so made, with flanges projecting from their lower edges about 1½ inches. This device permitted the use of one long belt, which connected two pulleys, one on either shaft. This rig meant two loose pulleys to look after, to keep oiled, and to keep bushed. Still it was a great improvement over the gear business, and usually worked and lasted well.

To get rid of the two loose pulleys the writer often puts the upright shaft in a step, also in a box near its upper end, and fixes the two pulleys upon the shaft. Then it is possible to run two short quarter-turn belts, effectually eliminating the loose pulley factor; but this rig is a great failure every time the engineer starts the engine backward to get it off the centre, as the belts will both surely run off whenever that trick is attempted. This trouble, however, will occur only when an automatic engine is used, the slide-valve engine gear not permitting reversing being done. Therefore the engineer is obliged to use main strength and an iron bar whenever he is careless enough to let the engine get stuck nearly on the centre.

The universal joint or coupling has been considerably used for the purpose of running a shaft straight around a corner, but the multitude of connections which must be kept oiled, or else they run dry and cut themselves quickly to pieces, has prevented this mechanism from being used whenever a belt could possibly be made to run, and as belts can be made to connect shafts at any conceivable angle universal joints are seldom seen.

A single universal connection will cover an angle of forty-five degrees, and is not of much use beyond that angle. Therefore, two connections of this kind are necessary to turn an angle of ninety degrees. With a single connection of this kind, there is an irregularity of motion which increases with the angular advance of the shaft, but if two connections are used they can be so connected together that their eccentricities shall neutralize each other and permit uniform motion to be transmitted. Another peculiarity is that these joints reverse motion exactly as it is done by a pair of gears; but that is of little consequence.—*Cabinet Maker.*

POINTS IN MILLING.

"Pooh! What's the use o' that 'ere grader? Wheat grains is wheat grains, and all as goes in gets ground, anyway, so what's the use o' grading the wheat." So spoke a miller to an agent in my presence a few days ago. The miller is an old-fashioned man who is as slow to accept innovations as a Scotchman is to take a joke. The agent tried to convince him that no rolls or buhrs will crack big and small grain alike, either of wheat or middlings, but the old dusty was obstinate and maintained that he could make flour, first-class flour, out of any wheat, no matter if it contained grains of a thousand different sizes. He claimed that if he set his buhrs to grind the smallest grains, "all the others were sure to be ground by the time they get through." Quality of flour was nothing to him. "Flour is smashed wheat, any way, and if you sift it well it don't make much difference about how it is ground." This old man is a type of millers who are rapidly becoming less in this country. He is dying off, and under the present conditions, except in mountainous and remote backwoods districts, there are no successors in training. He will soon be extinct. Unfortunately, he is still numerous enough to exert an unwholesome influence. He owns most of the old cam-shackle wheat-butchering mills, and he is entitled to the name "mossback."—*Milling World.*

FRENCH AND ENGLISH MEASURES.

To convert millimeters into inches, multiply by .03927.

To convert meters into inches (or millimeters into mils), multiply by .6214.

To convert meters into feet, multiply by 3.281

To convert meters into yards, multiply by 1.094.

To convert kilometers into statute miles, multiply by .539.

To convert grammes into grains, multiply by 15.44.

To convert kilogrames into pounds, multiply by 2.205.

TERMS OF POWER.

A Kilogrammeter is 7.23308 foot pounds.

A foot pound is .138254 kilogrammeter.

One horse-power, British measure = 550 pounds per second = 33,000 foot pounds per minute.

One *force de cheval*, French measure = 75 kilogrammeters per second = 542.48 foot pounds per second = .9863 British horse-power.

One British horse-power = 1.01385 *force de cheval.*

One man-power = ⅙ of horse power.

A TABLE OF MEASURES AND LENGTH.

		U. S. Ins.
United States and British	Foot	12.
Amsterdam	Foot	11.144
Antwerp	Fuss	11.275
Austria	Fuss	12.445
Belgium	Elle	39.371
Brazil	Cubit	25.98
Bremen	Fuss	11.38
Brunswick	Fuss, or Schuh	11.23
China	Chick (Commerce)	14.1
Denmark	Fod	12.357
Egypt	Derah	25.49
Florence	Braccio	22.98
Greece	Cubit	18.
India	Cubit	18.
Japan	Fan	12.
Mexico	Pie	11.18
Norway	Fod	12.35
Persia	Arish	18.273
Portugal	Foot	13.33
Prussia	Fuss	12.35
Rome	Pie (Commerce)	11.59
Russia	Foot	13.75
Sardinia	Oncia	16.86
Sicily	Palmo	9.537
Spain	Foot	11.122
Sweden	Meter	39.37
Switzerland (Berne)	Fuss	11.818
Switzerland (Geneva)	Fuss	28.028
Turkey	Pie (Great)	27.9
Venice	Pie	13.68

HEAT UNITS.

The French unit the caloric, is the amount of heat required to raise 1 gramme mass of water from 0 to 1° Cent.

The English unit is the amount of heat required to raise 1 pound of water from 60° Fahr. to 61° Fahr.

USEFUL INFORMATION

To Bronze Steel Easily.—Steel may be bronzed by covering it with olive oil and exposing it to the steam of a kettle of boiling water.

There is no way to temper brass springs except by hammering. There is no chemical or heating process for tempering anything but steel.

The strength of shafts or bars of iron is, for bending and twisting strains, as the cubes of their diameter. Thus a 2-inch shaft is eight times as strong as a 1-inch shaft, while a 3-inch shaft is twenty-seven times as strong.

Why Chimneys Burn Out.—An authority asserts that experiments have shown that numerous angles and pipes entering the same flue tend to the formation of a combustible deposit within a chimney. This may account for the numerous chimney fires which seemed unaccountable.

An engine and pulleys may be made to look like new by first painting the articles a japan color with the following: Asphaltum, three ounces; boiled oil, four quarts; burnt umber, eight ounces. Mix by heat, and when cooling thin with turpentine. Then coat them with a suitable transparent or light varnish.

Belts that have been loosened by getting wet, should be thoroughly dried and fastened together by inserting cement in the cracks with a knife, and hammering until dry. A good cement for this purpose is equal proportions of good glue and Prussian gelatine dissolved in the same manner as ordinary glue.

Glue Which Will Hold in Water.—Powder and dissolve one part of glue in one of thick linseed-oil varnish boiling hot, and mix thoroughly. In using it, heat the two planed sides of the wood, apply the glue warm, and press the pieces together.

To Bend Mahogany or Walnut Moulding.—Take two pieces of lumber, one to fit the inside the other the outside of the moulding (the lumber, of course, cut to the curves required); soak the moulding in boiling water for ten minutes, then put it between the pieces of lumber; then clamp them together, slowly bending the moulding; let it stand three days and it will be fit for use.

A correspondent sends the *Roller Mill* the following convenient rule for ascertaining how much a belt should be lengthened or shortened in changing from one pulley to another of different size without altering the tension: Multiply one-half the difference in inches of the diameters of the pulleys by 3.1416, and the result will be the number of inches to be added on or taken off, as the case may be.

Fireproofing Solution.—For rendering fabrics, wood, and inflammable objects fireproof, a writer in *La Nature* recommends borotungstate of soda, a salt which he states has never hitherto been employed for the purpose. It is made by dissolving boric acid in a hot solution of tungstate of soda. Objets impregnated with this solution are rendered incombustible. The solution gives off no deleterious gas, while ammoniacal salts, phosphate of ammonia, and salts of phosphorous render the air irrespirable.

The curious fact that the usual heat produced by friction is absent when the articles are magnetized is just now being discussed by scientists who are seeking an explanation. Very striking examples are described in a late number of a scientific perodical. A workman fastened a couple of powerful magnets to his lathe to hold more securely a piece of metal which he wished to drill and turn. The presence of the magnet kept the metal so cold that no water was needed to keep the drill moist and cool. This unusual circumstance may lead to important mechanical advantages. It is such circumstances as the one noted above that lead to valuable discoveries. The scientists, who are looking for a reason why the heat should be absent, may not hit upon any valuable idea, but some practical mechanic probably will.

Apparatus for Testing Lubricants.—Various tests have been resorted to for lubricants, but the manager of any mill may, at very little expense, determine for himself all the conditions of safety and economy in lubricants, as indicated by the standard of heat development upon any given shaft. The apparatus required for this purpose is merely a thin brass tube closed at the lower end and two thermometers. The method of using this apparatus is very simple, consisting in placing enough water in the tube so that the thermometer will be immersed; the tube is then inserted in one of the holes in the cap of the journal, so that the lower end of the tube will be in actual contact with the shaft; the other thermometer is hung free alongside, and then is gauged the relative heat developed with oils and with greases.

Interesting Reference Table.—Practical and scientific readers will appreciate the following reference table, which they will find valuable every day:

	Degrees Fahrenheit		Degrees Fahrenheit
Platinum melts at	3080	Mercury boils	630
Wrought iron "	2822	Linseed oil boils	600
Steel "	2462	Water boils	212
Cast iron "	2210	Alcohol boils	175
Gold melts at	1983	Ether boils	93
Silver "	1850	Heat of human body	98
Copper "	2160	Water freezes	32
Brass "	1900	Strong wine freezes	20
Zinc "	740	Brandy freezes	7
Lead "	594	Mercury freezes	36
Bismuth "	476	Greatest cold	220
Tin and Bismuth melt at	283	Snow and salt	0
Tin melts at	421	Acet. fermentation	76
Iron, redhot, day	1077	" " ends	88
" " night	884	Phosphorous burns	68
Common fire	790	Sulphur burns	760

Office of Woods' Mills, SMITH'S FALLS, ONT., Sept. 10th, 1887.

THE GEO. T. SMITH M. P. CO., Stratford, Ont.

Gentlemen: It gives us great pleasure to write our acknowledgement of the mill programmed and built by your firm for us. The flour we are making is giving good satisfaction to our customers and we can make a barrel out of less than four and a half bushels of wheat. Whereas you promised us a mill of 40 barrels capacity in 24 hours, we can make 75 barrels in that time without crowding and without the least trouble, and we believe we have as good a mill of its capacity as there is in the country. And also, farmers that have work done do not want any more stone flour, and they have come twenty miles to us, passing other mills. We think that it would be unfair for us not to state that the work of your millwright is second to none, and we have to find what a choke or a break is. I shall be happy to show any person or persons sent by you the mill.

Yours respectfully,

ALEX. WOOD, of the firm of Frost & Wood.

SMITH'S FALLS, ONT., July 22, 1887.

MESSRS. WM. & J. G. GREEY, Toronto, Ont.

Gentlemen: We have been running our mill over two months, and think it time to let you know something of it. We have been running on full time ever since we started, and have not been able to supply the demand for our flour. It never fails to please and every time they want the same as they had before. You guaranteed us a fifty barrel mill, but owing to the rush of orders we find no difficulty in running out sixty-five barrels, and could use a 100 barrel mill to good advantage if it turned out the same grade of flour. We are satisfied with the mill in every respect.

Yours truly,

SAMUEL LOCKHART.

N. B. We have had several enquiries about the Flour Dressers (round Reels) you put in for us. They are a Bonanza, and worthy of special mention. Their capacity is much larger, they make a cleaner flour, and do not need one quarter of the power of the old reel. No more hexagon Reels for us. S. L.

We take pleasure in calling the attention of the Millers of Canada who contemplate building new or overhauling their old mills to the above letters. Both mills are at Smith's Falls, within a stones throw of each other. Both have been recently overhauled and refitted with modern machinery, with a guaranteed capacity of 50 barrels in 24 hours. An opportunity seldom equalled is here presented for interested parties to examine the two systems, and compare the special machines, arrangement of machinery, millwright work, material used, quality of flour, yield and finish. Both parties seem pleased with their respective mills, and no doubt will afford visitors every facility for a careful examination of them.

Trade Notes.

Mr. J. Carruthers, Carp, Ont., has contracted with Mr. James Jones, of Thorold, Ont., to change his mill to the Jones short system roller process.

The Hercules Manufacturing Co., of Petrolia, write that they are so crowded with orders for their well-known grain scouring machinery that they were unable to make an exhibit at the Toronto Exhibition, much as they desired to do so.

Some idea of the extent of the business done by Messrs. Goldie & McCulloch may be formed when it is learned that one day last week they received among other orders one for an engine and boiler from St. Johns N. B.; engine from Fredericton, N. B.; engine from Prince Edward Island. Two engines from the same establishment are now put in Halifax, N. S.; and in addition they are putting in the machinery for a large elevator at Portage la Prairie and a flouring mill in British Columbia—showing that their machinery is in demand in every province in the Dominion, from the Atlantic on the east to the Pacific in the west. At the present time the works are being run to their full capacity, and difficulty is experienced in keeping up with the orders.—Galt *Reformer*.

A NEW METHOD OF SELECTING MACHINERY.

We have taken from the *N. W. Lumberman* the following account of a new system of choosing wood-working machinery. "The Buffalo Planing Mill Company, Buffalo, N.Y., will employ competitive methods in selecting machines. About September 1 there will be four machines started in the mill—a Glen Cove, a Woods, a Graham and a Connell & Dengler. The fittest, in the eyes of the company, will survive, and the other three will have to get. There has been a great deal of talk among the makers of planing machines, and especially between two of the manufacturers who are to compete in the Buffalo contest: now let them come together and lock horns for the supremacy. Machines are entered at fairs and exposit ons; they win varied ribbons, "honorable" mentions, diplomas and medals, but of what avail in the eyes of practical men are all of these prizes? There are plenty of men who show up well on dress parade, but who, when it comes to battle, are miserable fighters. The value of a machine cannot be determined by locating that machine in an exposition building and running a few boards through it in a play-way fashion. It must be run at its best by a man who knows his business. The opinion of two or three men who come around with patent leather boots and store shirts on, as the judges of fairs and expositions usually do, can never settle the comparative merit of two or more machines. Without doubt the Buffalo Planing Mill Company wants the machine that can turn out the greatest amount of good work in a given time—that is the requirement in every wide-awake planing-mill."

The rules and regulations should be so plain that there can be no sneaking behind the returns of the manufacturers who are defeated. In fact the requirements and promises of the company should be put in cold type, and a copy presented to the competitors, so that there may be no claim of verb almisunderstanding. Never before has there been such a contest planned in the United States, if in the world, and everything should be fair and square. The *Lumberman* will announce the result of the competitive exhibit."

CELERITY OF MECHANICAL CONSTRUCTION.

Some idea of the extent to which mechanical ingenuity and efficiency have advanced, says the Boston *Journal of Commerce*, may be had from the following statement: "It is now possible to construct a complete sewing machine in a minute or sixty in one hour; a reaper every fifteen minutes, or less; 300 watches in a day, complete in all their appointments. More important than this, even, is the fact that it is possible to construct a locomotive in a day. From the plans of the draughtsman to the execution of them by the workmen, every wheel, lever, valve and rod may be constructed from the metal to the engine intact. Every rivet may be driven in the boiler, every tube in the tube sheets, and, from the smoke stack to the ash pan, a locomotive may be turned out in a working day, completely equipped, ready to do the work of 100 horses."

DEFINITENESS REQUIRED IN PATENT CLAIMS.

The United States Commissioner of Patents emphasizes, in a recent decision, the importance of making the phraseology of a claim for a patent definite, instead of leaving it so broad and vague as to cover every subsequent improvement. The commissioner holds that patentees are required to indicate their particular inventions so that future inventors may not be deterred by patents containing equivocal claims, which, in effect, would suppress all other improvements. In particular, he holds that such terms as "means," "mechanism," and "substantially as described," are ambiguous and indefinite, and are not to be allowed. The position of the commisioner in reference to the matter seems to be sound. With the growth of refinement and complexity in mechanical devices, as well as with increase in the number of patents issued, a greater degree of accuracy in the statement of claims would seem to be imperatively necessary, for the days of invention and improvement are by no means over. The Patent Office does a larger business now than it ever did before. The number of patents issued annually now is about double what it was a decade ago, and over eight times what it was three decades ago, and the proportions are not very different as regards applications made. When applications are pouring in upon the Patent Office at the rate of 35,000 a year, or over, it will be seen that greater accuracy in a statement is a prime necessity.

Though electrical storage batteries have attracted attention only within the past seven years, the discovery of the principle is as old as the century. Gautherot having first noticed in 1801 that platinum or silver wires gave off a current being disconnected from a voltaic battery with which they had been used for decomposing saline water. The first secondary cell of Plante was made in 1860.

An exchange says: When you have to repair your boiler furnace, and can't get any fire clay, take common earth mixed with water, in which you have dissolved a little salt; use same as fire clay—your furnace will last fully as long.

PRICES OF LUMBER.

TORONTO Oct. 1st, 1887.

	PER M.
Pine, 1½, 1½ and 2 in., clear	38 00 to 40 00
" " " " picks	28 00 to 30 00
" 1 " " clear	30 00 to 32 00
" 1 " " picks	20 00 to 22 00
" 1¼, 1½ and 2 in., cut up, better	27 00 to 30 00
" 1½ in. dressing	16 00
" 1¼ in. "	16 00
" 1 in. dressing	15 00 to 16 00
" 1x10 and 12 stocks, common	12 00 to 13 00
" " " " dressing	15 00 to 16 00
" 1x4, 5, 6, 7, 8 and 9 in., common	12 00 to 13 00
" " " " dressing	15 00 to 16 00
" Bill stuff up to 16 ft	12 00 to 13 00
" Longer lengths and wider than 12 in., advance in proportion.	
" Shingles, XXX	2 45 to 2 50
" " XX	1 50 to 1 60
" Lath	1 90 to 2 05

BUFFALO.

Oct. 1st, 1887.

We quote cargo lots:

Uppers	$45 00 to 46 00
Common	17 00 to 18 00
Culls	12 50 to 13 50

Assorted lumber in car lots or boat loads:

3 uppers 1 inch	46 00
Do. 1¼ and 1½ in	42 00 to 45 00
Do. 2 in	43 00 to 45 00
Do. 2½, 3 and 4 in., special.	
Pickings, 1 inch	36 00 to 38 00
" 1¼ and 1½ in	37 00 to 38 00
2, 3 and 4 in., special.	
Shelving	30 00
Cutting up	28 00 to 30 00
Sidings, com., 1 in	18 50 to 19 00
" 1¼ in. and over	17 00 to 19 00
Common, stocks	17 00 to 18 00
Box, all thicknesses	11 00 to 12 50
18 in. XXX shingles	3 25 to 3 35
18 in clear butts	2 10 to 2 25
Lath	1 45 to 1 90

We quote wholesale prices of hardwood lumber delivered on cars or boat

Walnut, ½ in. clear	$75 00
¾ in., 1sts and 2nds	70 00
1 in., 1sts and 2nds	80 00 to 85 00
1¼, 1½, 1¾ and 2 in	95 00
2½ in. and thicker	100 00
Counters	150 00
Newels, 5 x 5 to 10 x 10	130 00
Common, inch and thicker	65 00
Culls, inch	45 00
Culls, 1¼ inch	46 00
White Ash, Ohio, 1st and fine 2nds	32 00 to 35 00
Whitewood, inch	30 00 to 34 00
¾ inch	26 00 to 28 00
¾ inch coffin stock, 14 feet	28 00 to 30 00
square, 4x4 to 10 x 10	30 00 to 35 00
Chestnut, 1st and fine 2nds	30 00
Maple	25 00
White Oak Ohio	33 00
Cherry, inch	68 00
Butternut	53 00
Hickory, best Ohio	40 00

SAGINAW VALLEY.

CARGO QUOTATIONS.

Shipping culls	$8 50 to 11 00
Common	15 00 to 22 00
3-uppers	37 00 to 40 00
Bill stuff	8 50 to 10 00
Shingles, XXX	2 85 to 3 00
Shingles, clear butts	1 85 to 2 50
White pine lath	1
Norway Bill stuff	$ 50 to 10 00
Under straight measure	15 00 to 24 00

YARD TRADE.

3 uppers wide and thick	43 00 to 45 00
Do. 1 inch	40 00 to 42 00
Selects	35 00 to 38 00
Fine common	27 00 to 30 00
1, 1¼, 1½, 2 in. cut ups	26 00 to 28 00
No. 1 bxve, 7, 8 and 9 in. (selects)	35 00
No. 2 do. (fine common)	27 00
No. 1 flooring strips	40 00
No. 2 "	27 00
No. 3 "	17 00
Fencing	12 00 to 13 00
Fencing, coarse com	8 00
" mill culls	4 00 to 6 00
No. 1 stocks, 12 in	14 00 to 15 00
No. 2 stocks	12 00 to 12 00
Wine common	12 00 to 13 00
Piece stuff and timber	9 00 to 10 00
12, 14, 16, 18 ft	9 00 to 10 00
Do. do. 20 ft	12 00
Lath	1 50 to 1 75
Lath No. 2 (cull)	1 00
Shingles, XXX	$ 15 to 3 00
Clear butts	1 90 to 2 15

DRESSING.

Surfacing	1 00
Dressing and matching	2 00
aking drop siding	2 50
Making bevel siding and ceiling	3 00

SITUATIONS WANTED.

WANTED BY MAN OF EXPERIENCE, A position as head miller. Able to take charge of mill of any capacity, either rolls or stone. The best of references furnished on application to "MILLER," Galt, Ont.

AS MILLER IN ROLLER MILL—AT PRESENT in charge of one hundred barrel roller mill; satisfactory reasons for changing; good on merchant and exchange work; married; strictly temperate and reliable; recommendations furnished. Address "Miller," care of MECHANICAL AND MILLING NEWS, Toronto.

AS MILLER—BY A YOUNG MAN WITH FOUR years' experience. Can furnish first-class references as to character and ability. Address, "J. W.," care of "MECHANICAL AND MILLING NEWS," Toronto.

AS MILLER—BY A YOUNG MAN OF 4 YEARS experience with rolls and stones. Temperate, and not afraid of work. Single, and can go anywhere. Wages moderate. Address, J. D., Box 237, Paris, Ont.

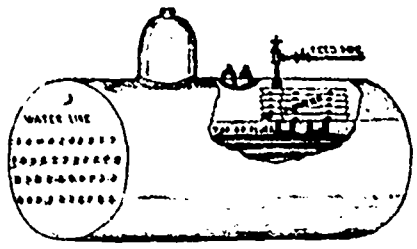
AS MILLER—BY A YOUNG MAN WITH FOUR years' experience on rolls and stones, a situation now or in a month's time. Single and sober, and can furnish best of references. Please state wages and kind of mill. Address "YOUNG DUSTY," Box 237, Paris, Ont.

BUTTERFIELD & CO.,
ROCK ISLAND, P. Q.,

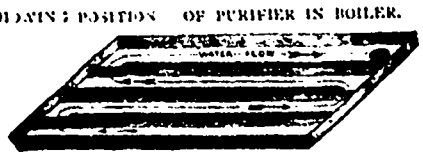
MANUFACTURERS OF TAPS AND DIES

☞ For every use. Send for new Illustrated Catalogue.☜

PATENT BOILER WATER PURIFIER.



SHOWING POSITION OF PURIFIER IN BOILER.



SHOWING ONE OF THE PANS OF PURIFIER.

No Purger Used!

Heat alone does it!

THIS PURIFIER ENTIRELY PREVENTS THE FORMATION OF SCALE UPON SHELL AND FLUES OF ANY BOILER IN WHICH IT IS USED. ALL IMPURITIES ARE EXTRACTED FROM THE WATER BEFORE IT REACHES THE WATER LINE, AND ARE DEPOSITED IN THE PANS OF THE PURIFIER.

THESE PANS CAN BE REMOVED, CLEANED AND REPLACED WITH VERY LITTLE TROUBLE, AND IN A VERY SHORT TIME, WITHOUT EMPTYING THE BOILER OF HOT WATER, WHICH MEANS A SAVING OF TIME, LABOR AND FUEL.

FOR CIRCULARS WITH REFERENCES, PARTICULARS AND PRICES, ADDRESS

J. W. HERMAN, *114½ KING ST. WEST, TORONTO, ONT.*

Toronto Bag Works

—MANUFACTURERS OF—

JUTE AND COTTON **BAGS** **FOR ALL PURPOSES.**

BAG PRINTING

Equal to the Best American Work.

—ALSO—

Hessians for MATTRESSES, PACKING PURPOSES, CANVAS AND TWINES.

DICK, RIDOUT & CO.

11 and 13 Front St. East, - TORONTO.

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Leather

Belting

2518, 2520 and 2522 Notre Dame St.

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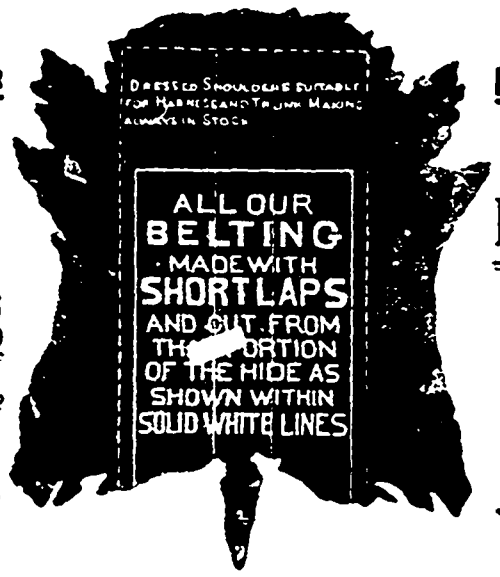

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129 Bay St.

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All Sizes Kept in Stock, and Orders Filled Promptly.

DEALERS IN

COTTON AND RUBBER BELTING.

LACE LEATHER, BELT HOOKS AND MILL SUPPLIES.

LONDON MACHINE TOOL CO.,

LONDON, - ONTARIO,

MANUFACTURERS OF

Machinist-:-and-:-Brass-:-Finishers'-:-Tools.

L. A. MORRISON, with A. R. WILLIAMS, General Agents, TORONTO, ONT.

BOLTING CLOTHS

IMPORTANT TO MILLERS.—Agent for the Dominion for the *Celebrated Rodmer Het Anker Bolting Cloths*, furnished by the yard, or made up to order. Full stock of all numbers on hand.

R. WHITELAW, Woodstock, Ont.

Bell & Brass Foundry

Factory Bells, School Bells, Steamboat Bells, Milkmens' Bells.

And Gongs of all kinds made of Best Bell Metal.

COPPER CASTINGS.

Bronze and Fine Work our Specialties

Orders for Brass Castings promptly attended to at reasonable prices.

DIAMOND ANTI-FRICTION METAL

RATCLIFFE & KENDELL,

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IT—PAYS

To advertise in first-class trade journals.

W. H. BANFIELD,

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Machinist and Die Maker

—MANUFACTURER OF—

Foot and Power Presses, Combination and Cutting Dies,

Tinsmiths' Tools, Canners' Supplies,

KNITTING MACHINES,

CAP SCREWS: : : : : : : : : : PLANER BOLTS: : : : : : : : : : PIANO SCREWS

Cutting and Stamping to order for the trade.

Railway, Hotel Checks and Dog Tags.

SPECIAL ATTENTION PAID TO REPAIRING FACTORY MACHINERY

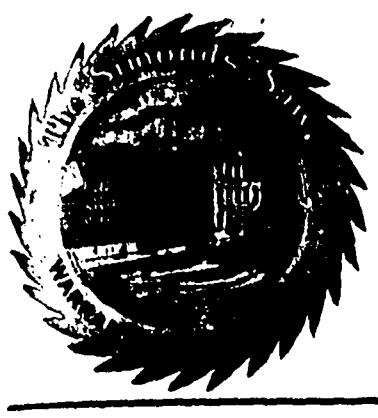
80 Wellington Street West.

J. L. JONES

10 KING ST EAST

WOOD ENGRAVER

TORONTO



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R. H. SMITH & CO.

ST. CATHARINES, ONT.,
Sole Manufacturers in Canada of

THE "SIMONDS" SAWS

AT GREATLY REDUCED PRICES.

All our Goods are manufactured by the "Simonds" process.

Our Circular Saws are unequalled. We manufacture e Genuine HANLAN, LANCE TOOTH, DIAMOND, NEW IMPROVED CHAMPION, and all other kinds of cross-cut saws. Our Hand Saws are the best in the market, and as cheap as the cheapest.

THE LARGEST SAW WORKS IN THE DOMINION.

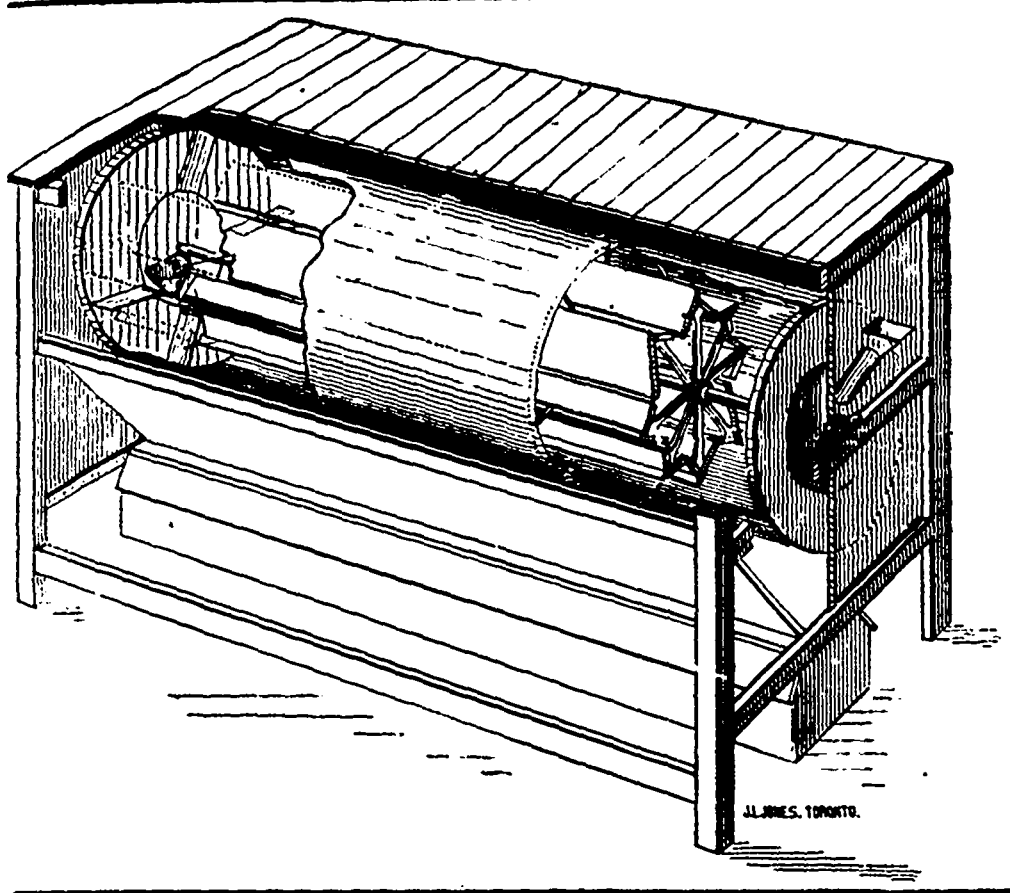
A. E. WILLIAMS & CO.,

Brokers, Real Estate, Loan and Business Chances.

LONDON . . ONT.

WE have for sale a very desirable Flour and Saw Mill in Oxford County, fitted up with first-class machinery; doing good trade; Price, $7,500. We also have a Grist and Flour Mill 10 miles from London, good machinery; excellent shipping facilities; 30,000 bushels capacity; Price only $6000.

CORRESPONDENCE SOLICITED.



DOBSON'S
Patent Flour Dresser

Manufactured by WM. SMITH, Beaverton, Ont.

The cut illustrates our Patent Improved Flour Dresser, designed to take the place of all other Bolts in the mill, being capable of handling all classes of stock. This machine as shown is a circular cylinder with a series of slats forming buckets, each one separate from the other, and so arranged as to distribute the stock over a large portion of the silk and when working to full capacity will carry a portion over the top and drop it on the going down side, and the air spaces between each bucket give the stock a much freer action on silk than can be found in any other Bolt, thus giving this reel a very great capacity with the slow speed of the ordinary Bolt, and doing away with the objectionable harsh treatment found in the use of other reels. There is also attached to the reel a revolving brush by means of which the silk is always free, relieving the miller from the annoyance of brushing, and as a rebolter this machine has no equal. Parties adopting this Bolt will save at least one-third of space and one-third of power and one-third of money in building or remodelling mills.

To Responsible Parties and Intending Purchasers 30 days' trial will be given.

MILLERS Give this Reel a Trial and Judge of its Merits.

For particulars apply to the undersigned,

DOBSON & CAMPBELL,
Beaverton,

Or to **WM. SMITH,**
Agricultural Machine Works, Beaverton, Ont.

JONES'

S-H-O-R-T -:- S-Y-S-T-E-M

OF MILLING FOR MERCHANT MILLS.

Five Rolls Complete the Grinding System.

JONES' SHORT SYSTEM FOR GRIST MILLS

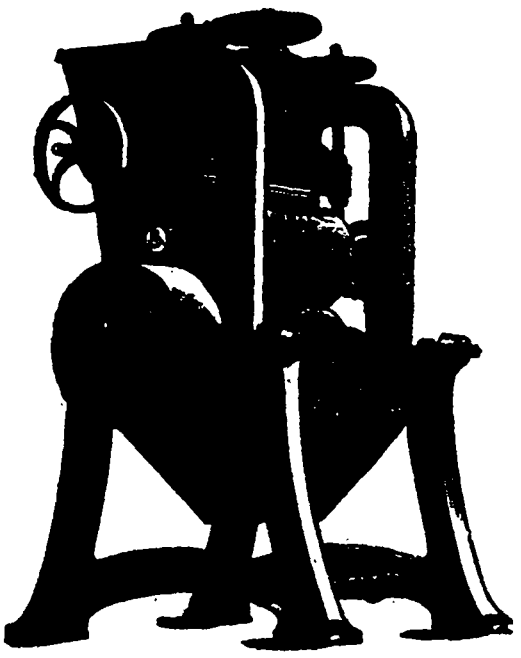
3 Rolls, 2 Bolts and a Purifier, with proper Cleaning Machinery, is all that is necessary to produce as good flour as most of the Roller Mills are now producing.

JONES' NEW ROLL FOR WHEAT MIDDLINGS OR BRAN.

It is the only Roll built on correct mechanical principles. Nothing Better.

JONES' STONE ROLL FOR MIDDLINGS.

This Roll will give Better Results in Purified Middlings than any iron Roll. Nothing better for this purpose.



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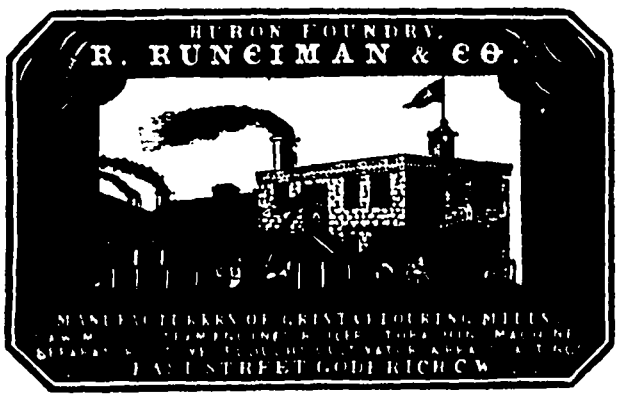
IMPROVED ROLLER DISC MILL

For 1st Break.

This is an improvement on all Roller Dis Machines. It will split the berry in the center, and by changing the concave, it will reduce the wheat to flour to be finishe by one more operation.

GODERICH FOUNDRY AND MACHINE WORKS.



RUNCIMAN BROS. - PROPRIETORS.

WE ARE MANUFACTURING AND SELLING ALL KINDS OF MACHINERY FOR

GRADUAL REDUCTION ROLLER MILLS

— WILL FURNISH PLANS AND SPECIFICATIONS FOR —

FLOUR MILLS, SAW MILLS,

STEAM ENGINES AND BOILERS

We make valuations of all kinds of Machinery when required; we also take contracts to furnish Gradual Reduction Roller Mills with all the Latest Improved Machinery, and hand them over in complete working order, guaranteeing good results. MESSRS. R. and JAMES S. RUNCIMAN will look after the mill work, and give their personal attention to all contracts, and from their long experience in mill work, parties trusting them with contracts may depend on having the work well done. We have a very complete stock of Patterns for mill work and other things, and parties in want of Castings can be supplied here by sending in their orders.

We are making Roller Frames and Cabinets for small or large Mills, using the Genuine American Ansonia Chilled Rollers, Corrugated and Smooth, as follows: 6x12, 7x14, 9x14, 9x18 and 9x24, neatly fitted up and belted at both ends. They run perfectly noiseless.

Centrifugal Reels for Bolting Flour, Bolting Reels with Double Conveyors, Scalping Reels, Purifiers to Clean Middlings, Flour Packers, Oat and Cockle Separators, Smutters, Brush Machines, Dust Catchers, Bolting and Wire Cloth, and all kinds of Mill Furnishings.

MILL AND OTHER REPAIRS ATTENDED TO ON SHORT NOTICE.

Steam Engines and Boilers made, and set up to order. Some second hand Engines and Boilers for sale. SEND FOR PRICES.

To Mill Owners and Manufacturers.

USE

Phœnix -:- Belt -:- Oil,

THE ONLY PERFECT BELT DRESSING.

TO BE HAD ONLY OF

F. E. DIXON & CO,

— MANUFACTURERS OF —

PAT. LAP-JOINT LEATHER BELTING STAR RIVET

Send for Price List and Circulars and our latest Pamphlet on Belting.

70 King St. E., Toronto.

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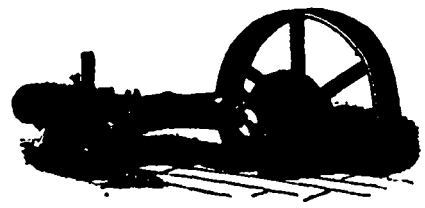
AUTOMATIC ENGINE.



The Simplest, Most Durable and Most Saving in Fuel of all the Automatic Engines Made.

HAS NO SUPERIOR AND FEW EQUALS

— ALSO ALL SIZES OF —

Boilers and Every Description of Mill Machinery and Furnishings.

R. WHITELAW,

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GOLDIE AND McCULLOCH,

GALT, - - ONTARIO

TO PARTIES WHO CONTEMPLATE

BUILDING OR RE-BUILDING FLOUR MILLS,

On the full or combined roller system, we are prepared to furnish estimates or specifications, using a full line of our machines—*NONE IMPORTED*—manufactured under Canadian Patents controlled by us.

ALL WHO INTEND TO MAKE CHANGES WILL DO WELL TO SEE US BEFORE DOING SO.

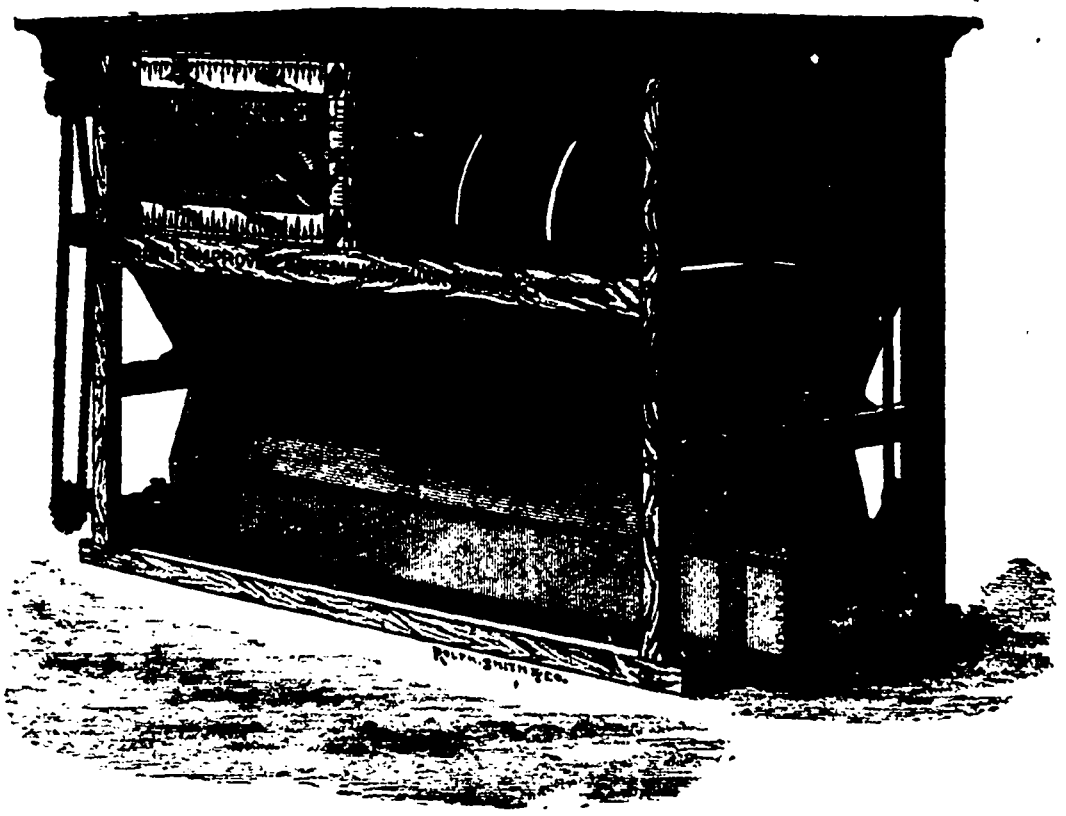
THE WHEELOCK AUTOMATIC ENGINE,

WOOD WORKING MACHINERY,

SHINGLE AND BARREL MACHINERY.

WOOL MACHINERY.

Special Price Lists furnished on application.



FIRE AND BURGLAR PROOF.

SAFES

VAULTS, DOORS, &C.

First Prizes Awarded, Toronto, 1882, 1884.

CORRESPONDENCE SOLICITED AND ORDERS PROMPTLY ATTENDED TO.

CENTRIFUGAL FLOUR DRESSING MACHINE

Our Centrifugal, as shown above, contains important improvements covered by Canadian Patents which we control. Parties purchasing elsewhere, will do well to look out for infringements. All our machines are made under our own immediate supervision, of the best materials and workmanship. Satisfaction guaranteed.

GOLDIE & McCULLOCH.