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# THE CANADIAN MANUFACTURER

## AND INDUSTRIAL WORLD.

DEVOTED  
TO

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INSURANCE,  
RAILWAYS &  
MINING.

Vol. 2.

TORONTO, JUNE 15, 1883.

No. 13.

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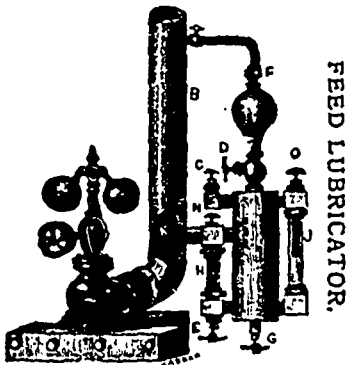
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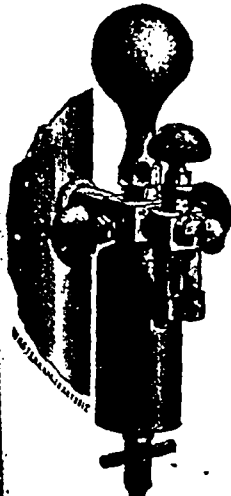
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# AND INDUSTRIAL WORLD.

VOL. II.

TORONTO, ONT., JUNE 15, 1883.

No. 13

## THE PRESERVATION OF FORESTS. AND THEIR ECONOMIC RESULTS.

If any Canadian were asked whether it was a desirable thing to preserve old forests and cultivate new ones, he would without a doubt, assent. Strange to say, everybody would, agree with him, and yet when we come to apply the proposition with some very practical test, as many votes are found objecting to whatever is advanced to conserve our forests. Last year an attempt was made in Montreal to awaken public interest by holding a Forestry Congress, which was addressed by many able men, including the ex-Prime Minister of Quebec and the American Commissioner of Agriculture. The instruction which the Congress diffused was valuable and was disseminated over a large area of the country. Whether it will accomplish anything more than the planting of a few thousand trees may be doubted. The subject is becoming serious, and mere individual effort will not be sufficient to meet the requirements of the case. Whatever improvements have been introduced, and however much manufacturers may economise their use of wood, the fact remains that the resources of the country's forests are yearly becoming less. Hitherto the doctrine of private property in land and all that pertains to it has been cherished here and in the United States with a vengeance. It does not seem to have occurred to our legislators that there were other claims upon them than mere socialistic or communistic ones, which merited attention. The theory and practice of all European legislation has long been based on the principle that the State is but the trustee for unborn generations of the human race. There are all sorts of limitations restricting the use of land and its products in France, Germany, Russia and England. Among these are the Agricultural, Mining and Forest laws. The object of these laws is to ensure the largest aggregate production, and to reduce waste to the very smallest limits. The cutting of wood is regulated in such a manner that the area and quantity of wood of forests never becomes less, but rather shows a tendency to increase. The teaching of forestry, as a special subject of education, is practised just as engineering and chemistry are. Not only so, but France, Germany, Russia and Switzerland have separate schools where forestry is the chief subject of study. In all of these countries there are, of course, State Forests, without which complete instruction would not be practicable. The schools form a part of a department of forestry presided over by a State Commissioner. The teaching is conducted in in-

imate connection with the forests. As no statistics are at hand it is impossible to form any correct estimate of the value of the work done by these schools, the number of students turned out, or the precise character of the effect which these schools have had on the conservation of European forests.

We, however, are still young, and our future is all before us; forest land is yet abundant in all the provinces of the Dominion. It is not a very serious matter to urge the appropriation of a sufficient number of acres of forest as a state reserve for the teaching of forestry, and the creation of a fund for its support. Now, there is no need of doing anything in the way of money doles, as a vote of about four townships, or a block of woodland of twelve miles square, would meet all the requirements of the case. An establishment might be begun for twenty students, which would steadily expand to a hundred. Taking the capitalized value of the 92,160 acres at as many dollars, the endowment would be nearly equal to one thousand dollars per head on a hundred students. Worked on the plan of a high timber productive forest, an area equal to 600 acres could be cropped annually. As fast as the wood was harvested the bare places would be re-sown for a new crop. Several systems might be adopted by which the relative merits of each plan could be practically tested. Although the land would not perhaps need to be kept under crop for a longer period than 150 years, many portions could be cultivated so as to yield a crop in periods varying from 35 to 120 years. In the course of a generation every part of the plantation would exhibit new crops under growth, and a convention held in a tent in such a forest would speak with an authority greater than any institutions of a similar character thousands of miles away over oceans. Boys at the forest school would see trees in all stages of growth from 1 to 150 years; they would see operations for keeping the land clean, and the up growing crop of trees vigorous, analogous in every respect to the weeding of farm crops. Not only so, they would learn to bear their part in the work, and when in after life they found themselves engaged as lumber merchants or farmers, they would know how to crop and plant land, so as to avoid waste, and increase the revenue of their country. What farm of 100 acres is there that would not be better for having upon it at least four per cent. of wood land which might become the preparatory training ground of the future forester? The value of such little scraps of wood on a prairie soil is great, apart from any direct commercial result from sales of wood. In the hot summer suns cattle love shade; and their influence in the storm and the

wind is none less valuable. In the oldernadian settlements a very large percentage of the agricultural land is wooded, and all that is necessary is to preserve by re-planting and judicious cutting what remains.

What is needed most is a forest law for every province, for regulating the cutting of timber. Every lumberman should be required to hold a license to cut under well defined conditions of *cropping and replanting*. The law need not be vexatious either in letter or spirit, but just and liberal in all its provisions. There are even now ample woodlands in Canada, but at the present rate of slaughter they could not remain to us long. Five years' experience would develop an immense amount of interest in the new system. The forests of Quebec might be made to yield a revenue large enough to emancipate her from the enormous burden of debt she carries. In India the revenue in 1870 from forests was £357,000, giving a net income of £52,000, or 1.58 per cent. In 1880 it was £545,000, with a net revenue of £215,000; that is, the revenue had increased 56 per cent., while the charges increased to only 8 per cent. India has 9,820,000 acres of state forests reserved, 2,493,000 of which are protected from fire, and from cattle and sheep grazing. They are now in a condition to reproduce themselves under the natural system.

Australia is fully alive to the importance of the subject, for ten years ago an act was passed authorizing the payment of £2 per acre to landowners in certain districts of South Australia to form plantations of trees. In 1875 a Forest Board was constituted, and certain districts of the colony were formally defined as forest reserves. In 1878 a Forest Act was passed, and a Conservator of Forests was appointed. Last year a quarter of a million trees were planted out, and the forest revenue amounted to £6,517—of which £1,380 was for timber sold—against an expenditure of £6,200. A profit of only £317 is not to be sneered at; it is something that a department of State should pay its way. India did not move in the matter till 1867, and it is only ten years ago that legislation was attempted in South Australia, a colony of one-eighth the population of Ontario. Not only do the Forest Departments in each case pay their way, but manage to make a revenue. Any one visiting Baden-Baden cannot fail to be struck with the great beauty of the valleys of the Oos and the Murg, and the forests in the immediate neighborhood, which furnish a splendid example of the successful working of forest culture as carried out in Germany. As an example of private forests, which are managed in much the same way, those of Prince Furstenburg, near Rippoldsau, may be mentioned.

Our neighbors the Americans are waking up to the importance of this matter, and in 1881 Dr. Hough visited the forest schools of Europe, with a view to establishing a similar institution on this side of the Atlantic. We are accustomed to flatter ourselves that we are ahead of the Americans in educational matters and also in public spirit. The Americans have never very seriously disputed the claim, but if the forest country of Canada allows them to take the lead in this matter the claim will certainly not be strengthened. Under any judicious system of management the annual yield of Canadian woods can be increased without any actual restriction on the just rights of any. The soil of a country is not for a generation, nor for a century, but for all that are yet unborn. The theory and practice of

all systematic management in Europe is that the annual yield of the forests should represent the earnings of the year only, and not any portion of the capital.

#### BI-PRODUCTS AS A SOURCE OF PROFIT.

A few generations back not many men had given much attention to the uses of the refuse matters which were a kind of despised companion in every house of business. One cannot conceive of manufactures without thinking of waste material, or *bi-products*. To begin with some few elementary industries such as coal-mining and lumbering, we shall have a good illustration of what is meant. The most skilled mining managers cannot carry on the work of coal-getting without a large amount of waste. This waste has caused a good deal of anxiety to the people at the colliery, because of the low price at which it has been sold, and attempts have been made to convert it into patent fuel, and induce steam users to buy it for power, but whatever was done did not seem to lessen the difficulty of keeping down the accumulation. The two most promising outlets for this refuse material seem to be the manufacture of fuel blocks, by some such method as Mr. Cory's, which binds the small coal into cubes with soluble silicate of soda, when it is used as a raw fuel; and using it as a gas producer for firing furnaces. Gas producers for other purposes than illumination are coming to be very common, and their size has been so modified and reduced that any small workshop can now use them. Hotels and moderate-sized residences can also employ them for domestic heating. Now, as what is called engine slack has very little value at the coal pit, the main expense of laying down the article at a distance is the freight. From \$1.50 to \$2.00 is about all it would cost laid down at Quebec, Montreal, or Toronto, or any of the intermediate ports, if a return freight could be insured. Recent experiments in England, with slack at 3s. and 4s. per ton of 2240 lbs., have been made, showing that a very useful gas can be made at five and six cents per thousand feet, according to quantity produced. About 12 lbs. of coal and 7 pints of water produce make 1000 feet of gas, which is equal in heating power to 285 feet of illuminating coal gas, at 3s. per thousand. Lumber mills have many bi-products which run to waste for want of some cheap and ready mode of converting them into useful and saleable articles. Such are sawdust and shavings. It may be confidently predicted that in the near future uses will be found for all the surplus shavings and sawdust now made. It is only a year or so since car-wheels were made of paper mache, and why may not sawdust be so changed by mechanical and chemical manipulation as to become equally useful. A few years ago a great cry was raised at Minneapolis on account of the accumulation of sawdust. Notwithstanding that much has been used for packing, stable bedding, and other absorbent purposes, there is a large quantity yet to be utilized. Converted into charcoal by the addition of sulphuric acid, it would be a valuable accessory to the farmer's stable manure heap, as tending to convert the free ammonia of the litter into sulphate, and the charcoal itself has a decided value as a fertilizer.

Straw may also be regarded as a bi-product, inasmuch as

more of it is grown than can be usefully employed as food or litter. Not long ago an effort was set on foot in Kansas city to convert this straw, by a process of compression, into useful articles such as car-wheels, and other forms of machinery. If the paper industry cannot use the whole of it there are others which can, and do it with a profit.

Leather is a marvel of economy, when considered in all its variety of uses. What used to be looked upon as scrap, is now nearly always used as a sort of mechanical compound by compression, for new soles and heels. Only recently there was submitted a new and interesting process of making heels from scrap leather; this was accomplished by cementing the scraps together in molds, then compressing them in a power screw press, stamping them out in a cutting machine, and afterwards cutting the heels off with a band saw. All this seems very simple, but it required thought and energy to do it ere it could take on the shape of a concrete commercial fact. This is not the only outcome of the new process, for in the working of the band saw there is made sawdust of a fine grade, which can be sold at \$10 per ton as a fertilizer. In this condition the manufacturer of chemical manures takes it and runs it into his superphosphate of lime, as a cheap source of ammonia.

Another and most familiar collection of waste substances, are met with in slaughter houses, such as blood, hair, bones and feet. The blood is used for two purposes: one for the manufacture of albumin from the serum, and the other for ammonia, from the cruor or crude part of the blood. Bones have such a variety of uses that their name is almost legion. A few of the principal ones are the manufacture of buttons, knife handles, small ornaments, phosphorus for lucifer matches, gelatine, fertilizers, etc., etc. Amongst the despised articles of the slaughter house are the feet of the animals, which are sold to the glue maker. Perhaps these feet are the most interesting part of the whole collection. From the sinews comes out fine glue, the skin gives a good gelatine, the shanks hold knife handles and other useful articles. In European countries these feet are usually treated for their neatsfoot oil, and sold in the market as food, under the name of cow heel. One of these feet and a bullock's head make a rare soup which forms the basis of many a dish of mock turtle.

Almost as common as the slaughter-house products are those of the modern gas-house, which, in addition to the coke, give us a long array of useful articles, some of which are as delicate as anything made by the druggist or perfumer. In distilling coal for its illuminating gas there is produced from twelve to sixteen gallons of tar per one ton of coal used, and from this tar the beautiful aniline colors are made. Their variety and great beauty are among the great achievements of the last half century. Soap manufacturers also use it for their carbolic acids and coal tar soap. It has powerful antiseptic properties, and can be used in many different forms. From fifteen to twenty-five gallons of ammoniacal liquor remain from the ton of coal, and this is converted into sulphate or muriate of ammonia, according as the acid used is sulphuric or muriatic acid. These salts are now in every market in the world where gas is used as an illuminant. In addition to all the advantages of a gaseous form of fuel, there remain these bi-products of the gas produc-

tion, which, in Great Britain, exceed in value by \$15,000,000 a year the value of the coal used. Chemistry is still engaged in investigating some additional uses of the remaining unutilized waste, such as the free sulphur and other matters.

Added to all these sources of wealth from bi-products, there remain to be mentioned those from chemical works where alkalies and acids are made. The manufacturer of sulphuric acid has as his bi-products copper and iron ores after their treatment for sulphur: the manufacturer of muriatic acid produces salt cake or sulphate of soda, another product. And so the changes go on through all industries. Copper smelting works in Swansea and elsewhere have sulphuric acid as their bi-product, and can afford to sell it at a low price. The development of wastes or bi-products in chemical works has made Great Britain the cheapest country in the world for the production of acids, and of sulphuric in particular. The economies effected by this kind of progress have been at the rate of £1,000,000 per annum for the last generation. It is calculated by competent authorities that the annual value of the bi-products of Great Britain are now more than £50,000,000. This increase of wealth has grown up within little more than fifty years. There is much of waste material in Canada which might be turned to account. The profit is sometimes very great, but it is seldom or never small. The field of enterprise does not become less, but grows with the ever-increasing wants of the age.

#### HOW CELLULOID IS MADE.

A roll of paper is slowly unwound, and at the same time saturated with a mixture of five parts of sulphuric acid and two of nitric, which falls upon the paper in a fine spray. This changes the cellulose of the paper into fine pyroxyline (gun cotton). The excess of acid having been expelled by pressure, the paper is washed with plenty of water until all traces of acid have been removed. It is then reduced to pulp, and passes on to the bleaching trough. Most of the water having been got rid of by means of a strainer, the pulp is mixed with from 20 to 40 per cent. of its weight of camphor, and the mixture thoroughly triturated under millstones. The necessary coloring matter having been added in the form of powder, a second mixture and grinding follows. The finely divided pulp is then spread out in thin layers on slabs, and from twenty to twenty-five of these layers are placed in a hydraulic press, separated from one another by sheets of thick blotting paper, and are subject to a pressure of 150 atmospheres until all traces of moisture have been got rid of. The plates thus obtained are broken up and soaked for twenty-four hours in alcohol. The matter is then passed between rollers heated to between 140 and 150 deg. Fah., whence it issues in the form of elastic sheets. Celluloid is made to imitate amber, tortoise shell, coral, malachite, ebony, ivory, etc., and besides its employment in dentistry, is used to make mouthpieces for pipes and cigar-holders, handles for table-knives and umbrellas, combs, shirt fronts and collars, and a number of fancy articles.

The machinery for Perry's woollen mill at Napanee has arrived and is now being placed in position. It is expected that the cards will be ready for operation in less than two weeks, and the spindles and looms in about a month. This will be a two-set mill, and the machinery being of the most approved pattern and best finish, it is expected that the factory will be better than any that has before operated in this section. A woollen factory is almost a necessity in Napanee, and with first-class facilities, and the benefit of an excellent business management, we think Mr. Perry has struck the road to prosperity.

# Mechanics and Engineering.

## ELEMENTARY PAPERS FOR YOUNG MECHANICS.

### IX. DIFFERENTIAL PULLEY.

In this arrangement of pulley tackle two pulleys of different diameters rotate upon the same axis and are usually cast in one piece. A chain is used instead of a rope, and the rims of the pulleys are shaped so as to gear with the links of the chain, and prevent it from slipping. An endless chain is used, and one part hangs down as a loose loop, by pulling which on the one side or the other the load is raised or lowered.

It will be seen that one side of the loose loop hangs from the larger pulley, while the other hangs from the smaller pulley. The load is suspended from a hook attached to a loose pulley in a running block around which the endless chain passes.

By pulling down on the side of the slack loop which hangs from the larger pulley the weight is lifted, and by pulling down on the other side of the slack loop the weight is lowered. In this arrangement the weight may be left suspended at any point, and can only be lowered by pulling in the chain.

In order that the apparatus may work properly, the diameter of the loose pulley in the running block must be an exact mean between the diameters of the two upper pulleys.

By tracing the motion of the chain around the three pulleys, it will be seen that the rim of the large pulley moves with the same velocity as the chain is pulled down at P. The small pulley makes the same number of revolutions as the larger one, and consequently its rim must move more slowly, and as

one side of the pulley B in the running block is connected to the large pulley, and the other side to the small one, the result is that when the chain moves the distance between A and B must be increased or decreased. The power of this apparatus depends upon the difference between the diameters of the two pulleys in the upper block. Windlasses for hoisting a bucket out of a well are sometimes made upon this same principle, the one half of the winding barrel being made larger in diameter than the other half. The one end of the rope is fixed to the large part of the barrel, and, passing through a pulley to

which the bucket is attached, is made fast on the small part of the barrel. In putting the rope on the barrel it must be wound around the one half before fastening it, so that when turning the crank handle to wind the rope on the large half, it will be *unwound* from the smaller half. The gain in power in this windlass is in proportion to the difference between the diameters of the two parts of the barrel.

Suppose the larger half of the barrel to be ten inches diameter and the smaller one to be eight inches diameter, then one revolution of the crank handle would wind up 31.4 inches of rope and would unwind 25.1 inches, consequently the amount of rope hanging between the barrel and the bucket would be shortened 6.3 inches, and the bucket raised 3.15 inches.

The difference between such a windlass and a common one with the winding barrel ten inches diameter is that the same weight can be lifted with *one-tenth* of the power, but it must not be forgotten that it takes ten times the time to do it. These windlasses are not much used on account of the great length of rope required, but the differential pulley is largely used, the arrangement of an endless chain having been devised to get over the difficulty of the long rope.

In making use of any of the pulley tackle we have described great care should be taken to make sure that all the parts are in good running order and safe condition, and strong enough for the load to be lifted. It must be borne in mind that it is not sufficient when arranging to lift a heavy weight to have the tackle merely strong enough for the weight; there must be a large margin of safety, and, in addition, allowance should be made for sudden increase of load, from the tackle first "jamming" and then "slipping," thus allowing the weight to fall, it may be only a quarter of an inch—the strain from several tons weight falling even a quarter of an inch is a large increase to the steady load.

Sir John Anderson, referring to experiments made at Woolwich Dock-yard on the strength of ropes, says:

"The ultimate strength of ropes is usually considered to be about 6400 pounds per sq. inch of sectional area.

"There is much variation in the strength of pieces of rope, even when cut from the same coil. Thus the strength of 4 inch ropes ranged from  $5\frac{5}{8}$  to  $7\frac{3}{4}$  tons, and of 6 inch ropes from  $14\frac{1}{4}$  to 17 tons.

"There is considerable loss of strength from the tear, wear, and exposure to the weather during a few months' working.

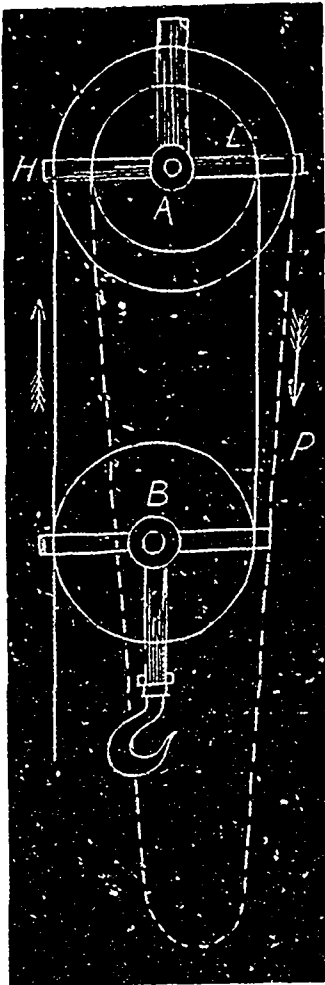
"An old 6 inch Russian hemp rope broke with  $5\frac{1}{2}$  tons, while the new one required  $11\frac{1}{4}$  tons.

"A double rope is in certain cases weaker than would be expected from experiments with single ropes. All the double rope slings, suspended from an ordinary crane hook, broke with less than double the strength of a single rope."

Ropes are measured by their circumference in inches, one measuring three inches in circumference is called a three inch rope, and an old rule for calculating the strength of a rope is that the breaking weight in hundredweights is equal to four times the square of the circumference; thus a three inch rope, according to this rule, would break with  $3 \times 3 \times 4 = 36$  hundredweights.

Improvements in the machinery and methods of making ropes now give better results, but, as ropes soon deteriorate, the old rule may still be a safe one to use.

It is customary for regular work to load a rope to no more than from one-tenth to one-fifth of its calculated breaking load.





**MECHANICAL FIRST PRINCIPLES,**

All mechanics and those employed about machinery, whether engaged in the manufacture of machines or simply in using them, ought to try to obtain clear understanding of the principles upon which the machinery works. The point of supremacy of the man over the machine is that the man thinks, or rather has the power of thought. So far as actual work, such as making a plane surface on a piece of iron, the "iron planer" will do the work much more correctly and more expeditiously than the man could by hand work; and for the purpose of making a "plane surface," the machine is better than a man. However, the machine itself is but the product of some man or men who had the power of thought, and used it to a good advantage. The machine is only a combination of wheels, shafts, and plates of iron, and useless till put in motion and guided by some machine that can think.

This power of thinking is about the only part of mechanical skill which cannot be done and done better by a machine than by a man.

The mechanic who desires to maintain his supremacy, and be worth more than a mere machine, must use his brains and think—think correctly, deeply if he can, and look ahead. Many a one has spent his all, and wasted the best years of his life, in pursuit of some mechanical *ignis fatuus*.

How many have searched and searched in vain for a "perpetual motion" machine, and notwithstanding all that has been done and all the teaching of science schools and classes, men are yet to be found working and hoping for the fulfilment of this dream of ages? As well expect the fire to burn without fuel, or a man to live without eating, as to get a machine to work on for ever without stoppage or renewal of its reservoir of power.

One of the first lessons mechanics ought to endeavor clearly to understand is, that there is no effect without a cause; and next, that in mechanics there is a definite relation between cause and effect. No machine can produce power—no combination of wheels or pulleys can increase power—and power exerted must have produced some result or results equivalent to the amount expended. Power is as indestructible as matter—both may be wasted, but neither can be annihilated.

As an example, look at a large "iron planer." A heavy casting is on its bed plate being planed, the steel tools are taking deep cuts, seemingly with irresistible force, out of the solid iron. We look for the source of all this great power, and we find a light leather belt, running from a pulley on the shaft to one on the machine, and so far as this machine is concerned, the leather belt in motion is the source of its power, and no more power can be exerted by the machine than enters by means of that belt. The use of the various wheels and shafts and screws forming the machine guide and direct the expenditure of the power to some useful end.

The strain on the belt multiplied by its velocity in feet per minute, will be found equal to the strain on the cutting tools, multiplied by the velocity of cutting and the power required to move the machine itself.

This principle of "virtual velocities," as it is called, is one of the most important in the science of mechanics—and clear ideas regarding it, and the habit of applying it as a test, will prevent many a mistake, and will be a sure guide for the "thinking machine" in all his work.

**HORSE POWER OF ENGINES.**

The handy little table here annexed gives the "factor of horse power" of engines of four H. P. at various piston speeds; and to get the horse power of 4" engines (no matter what the stroke), at the piston speeds given in the left hand column, multiply the "factor" by the mean effective pressure, and you have the horse power at once. Thus: If the engine is running 600 feet piston speed, and the mean effective pressure is forty pounds, the horse power of the engine is  $40 \times .2285 = 8.93$ , no matter what the stroke. Other engines have power proportionate to their area; thus all engines of 8" bore have four times the power of the 4"; and with 600 feet speed and forty pounds mean effective pressure, its horse power is  $8.93 \times 4 = 35.72$ .

A 12" engine, 500 feet stroke and thirty pounds mean effective pressure, would have  $30 \times .1905 \times 9 = 51.435$ ; (the nine being the proportion of its piston area to that of a four-inch engine.)

FACTOR OF H. P. OF 4" ENGINES (4) AT VARIOUS PISTON SPEEDS.  
AREA 12.57SQ. INCHES.  $12.57 \div 33000 = .0003809$ .

FEET PER MINUTE.	P. H. P.	FEET PER MINUTE.	P. H. P.
100.....	.0381	900.....	.3428
150.....	.0571	950.....	.3619
200.....	.0762	1000.....	.3809
250.....	.0952	1100.....	.4290
300.....	.1143	1150.....	.4380
350.....	.1333	1200.....	.4670
400.....	.1534	1250.....	.4761
450.....	.1714	1300.....	.4952
500.....	.1905	1350.....	.5142
550.....	.2145	1400.....	.5333
600.....	.2285	1450.....	.5523
650.....	.2486	1500.....	.5712
700.....	.2665	.....	.....
750.....	.2857	1550.....	.5904
800.....	.3047	1600.....	.6093
850.....	.3248	1650.....	.6285

—American Miller.

The managers of the Walkerville grape sugar works are going to put in new machinery and begin the manufacture of starch in connection with glucose.

The Belleville *Intelligencer's* Campbellford correspondent says:—Our paper mill is commencing to do a great business. We understand that a new company intend putting in new machinery to the amount of five thousand dollars, which will be furnished by Messrs. White & Co.'s foundry in this village. Orders for paper have already been received from California.

The Madoc *Review* says:—"The hidden riches of North Hastings have not yet been fully developed, it seems. A few days ago a man was seen back on the Hastings road exhibiting a stone which smelt strongly of coal oil, and which he declared had been found near Marmora. He appeared to labor under the impression that there must be a coal-oil spring on that lot. With oil wells added to the mineral wealth of North Hastings, this ought to be come, surely a great community.

The annual meeting of the Napanee Brush Company was held on last Thursday forenoon. The attendance of stockholders was not large. The president, the Hon. John Stevenson, in making his statement of the affairs of the company, showed that during the year upwards of \$6,000 had been added to the property of the concern. The shareholders propose the issue of new stock for the purpose of consolidating and extending the business. As the Auditors' report was not ready, the meeting adjourned for a month. The election of directors for the ensuing year was also postponed. The manager reported that the past year's business was the largest and best during the operations of the company.



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**Canadian Manufacturer**  
AND INDUSTRIAL WORLD.

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MECHANICS' INSTITUTE (corner Church & Adelaide Streets), TORONTO.

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CARD OF ADVERTISING RATES ON APPLICATION.

FREDERIC NICHOLS,  
Managing Editor

All communications to be addressed CANADIAN MANUFACTURER,  
Toronto, Ont.

**Editorial Notes.**

The office of the CANADIAN MANUFACTURER has been removed to Room No. 5, Mechanics' Institute, corner of Church and Adelaide streets. One stair up, turn to the right.

The Hensall Salt Company (Limited), of Hensall, Ont., is a new venture. Their works have been completed, and their intention is at present to sell outside the Association. Samuel Rennie is President, and James F. Carter, Manager.

The tin plate manufacturers of the United States, met at Pittsburg on the 4th inst., and organized a tin plate association, the object of which is "to introduce, foster and develop the tin plate industry, and to endeavor to have such laws passed as will afford adequate protection to the trade."

Another petition of Canadian hay shippers, in the vicinity of St. Johns, P.Q., numbering about 52, has been addressed to the Hon. J. A. Chapleau, Secretary of State, asking the Provincial Government to represent their claims to the United States authorities for over payment of Customs duties on hay. These claims represent a sum of about \$200,000.

The village of Granby, P.Q., is to have a large foundry for the manufacture of stoves, hollow ware, ploughs, cultivators, and other farming implements. As there is plenty of available water-power at this point the village is agitating for the establishment of a cotton mill to supply the rubber factory with cloth, or some other industry that will utilize the excellent privileges they have to offer.

A welcome addition to our exchange list is the *Industrial Review*, published at 810 Walnut street, Philadelphia, and de-

voted principally to Textiles, its large size, however, enabling it to give considerable space to other American industries. We remember seeing a copy of this journal a few months since, and on looking over the May number now before us, can scarcely credit the great strides it has made in popular appreciation, as shown by the large increase in its advertising patronage, and also by the editorial columns, its several departments being contributed to by a large force of specialist writers.

We publish elsewhere, under the heading of "Lumber Notes," an article from the Winnipeg *Commercial* on North-west Timber. It refers to the probability of considerable American capital being employed in developing the timber resources of the North-West, which up to the present have been but little drawn upon, and to the folly of Canadian capitalists looking for Manitoba investments, allowing our neighbors across the line to secure the rich returns in prospect, while investing themselves in paper town-sites and such. In connection with this question our leading article on the "Preservation of Forests" will prove good reading.

As India tea, principally of the "Himalaya" growth, is at present being extensively advertised in Toronto, and will likely be introduced in other sections of Canada, it may be interesting to some of our readers to learn that a recently published tea chart in London shows that the increase in the consumption of India tea during the past six years has been very rapid. In England the growth is shown in quantities consumed quarterly. In the first three months of 1878 it was 3,215,000 pounds, and in the first quarter of 1883, 5,152,000 pounds. The price has also declined from 1s. 7d. to 1s. 1d. The ability of India to supply tea and its favorable reception in England, as indicated by the above, causes satisfaction.

A joint circular signed by the general freight agents of the Ontario roads has been issued, giving special direction about the shipment of lumber. All cars may be loaded to their full capacity at carload rates, any excess over that up to 2,000 pounds will be charged pro rata, but if the excess be over 2,000 pounds the whole of the overload will be charged for at fourth-class freight rates, and the companies reserve the right to remove the overweight at the expense of the owner. Forty-eight hours will be allowed in which to unload cars after their arrival in the yard, after which time consignees will be required to pay demurrage charges. When cars are ordered to the Toronto esplanade twenty-four hours will be allowed from the time the car is placed on the switch, and as there is no room on the esplanade the consignees will be required to unload from yard sidings within forty-eight hours after arrival.

The Montreal & Melbourne Slate Company (Limited), has been formed with a capital of \$100,000, head office being in Montreal. The Company assume the valuable property formerly owned by Benjamin Walton of Toronto, consisting of 1500 acres of land, quarries fully equipped with plant-tools, dwelling houses for the accommodation of 40 workmen, etc. At the first meeting of directors Benjamin Walton was appointed President and George Varey Secretary-Treasurer. The prospects of the new company are considered excellent.

WELLINGTON  
BUILDINGS,

70 King Street East,  
AND  
11 Court Street.

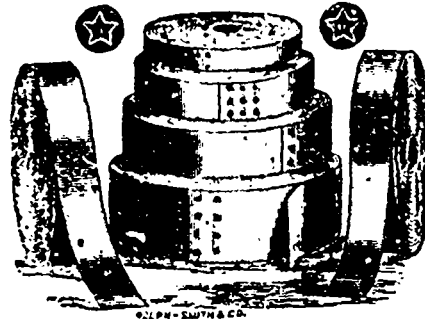
TORONTO.

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Our Leather is Tanned with Bark only, and will do more work and last longer than any chemical tanned leather.  
Our Price List averages Twenty to Twenty-five per cent. lower than the American Price List, at which all American Belting is sold in Canada.

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### WHEN YOU BUY BELTING

Do you want Belting that is made from pure Leather?

Do you want Belting that will run straight and even?

Do you want Belting that is thoroughly stretched?

Do you want Belting that will run without stoppage of machinery to "take up," causing loss of men's time, etc.?

IF YOU DO, BUY

**H. L. FAIRBROTHER & CO'S**

**AMERICAN**

**LEATHER BELTING.**

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SOLE AGENT FOR DOMINION OF CANADA,

WAREHOUSE, 65 YONGE STREET, TORONTO.

as the property contains an inexhaustible supply of the ordinary blue roofing slate, a vein of unfading green suitable for mantles, billiard tables, etc., also asbestos and other minerals.

We are glad to hear that efforts are being made to encourage manufacturers throughout the Dominion to send samples of their productions to the Boston Foreign Exhibition, which commences in September next, and will be open for three months, closing at the end of November. As no American exhibits will be allowed, Canadians should have an excellent opportunity of placing their goods prominently before the representatives of foreign countries, who will be present; and as all exhibits will be in bond, and can be forwarded from Boston to the Brazils, West Indies, and other foreign points, under the same regulations as obtained at the "Centennial", we think this an opportunity that many of our manufacturers will avail themselves of. General C. B. Norton, of Boston, is the Secretary.

The following paragraph, taken from the *St. Stephen Courier* of May 31, is of interest, the facts and figures given proving conclusively that in this industry the consumer not only does not suffer by the tariff which was the means of our cotton mills being built, but can now buy home manufactured goods for less than they could be imported under a purely revenue tariff:—

"Talk about the duty on cotton," said a prominent dry goods' man, as he exhibited a splendid piece of St. Croix Cotton to a *Courier* reporter on Monday, "there is a piece of goods of a quality which cannot be bought in the States for less than 8 cents a yard. Here we get it, delivered at the door and free from all freight and other charges, for 8¼ cents. We can thus sell it as low as we could the same quality of American goods, provided there was no duty to be paid. Such being the case, a duty of even 25 cents a yard could not affect the price. And yet the chronics will grumble about the price of necessaries being increased by the N.P. Pshaw!"

Under the heading of "Financial and Commercial," on another page, will be found that part of Mr. Smithers' speech at the Bank of Montreal annual meeting, in which he deals with the present situation and future prospects. This speech has come to be generally looked forward to, amongst financial and commercial circles, as one of the events of the year, and coming as it does from the lips of one who has exceptional opportunities of judging as to future prospects, it carries great weight. Last year rather an alarmist view of the situation was taken by Mr. Smithers, but this year his views are of a more hopeful character; and it is quite, indeed more than probable, that his caution, given in 1882, was the means of putting a check upon importation as well as upon the over-production of manufactured goods. As we mentioned at the time, "the very truth of the prophecy may go far to prevent its fulfilment." The speech on another page is good and instructive reading, and every business man should digest it carefully.

We reproduce from the May issue of the *Boston Journal of Fabrics*, the following sensible paragraph anent Canadian enterprise:—

"A number of large orders for Cardigan-jacket machinery of American build have recently been placed by Canadian knit-goods manufacturers. This would seem to indicate an

increased production of Cardigans in the Dominion at an early day. The large number of knitting mills which sprung into existence during the past three years throughout the Dominion confined their product almost exclusively to one line, which exerted a most depressing effect upon the young industry; and it is hoped and believed that the introduction of the goods referred to will strengthen and improve the condition of trade. The wisdom of this enterprise is apparent, and is hailed as a measure promising relief. The sale of Cardigan jackets in the Canadian markets during the past few years has been very large, and the manufacture of the article, if in sufficient quantity and variety to supply the home demand, will be severely felt by American manufacturers and jobbers."

To many of our readers it will be welcome news to learn that the Grand Trunk have at length decided to run a fast express between Montreal and Chicago, and vice versa. This move on their part has been long looked for by the travelling public who had almost given up the idea of ever seeing it come to pass, but at a recent conference at Montreal of the leading officials of the road it was arranged to make the change, and the new time tables at present in course of preparation are to have effect on Monday the 25th inst. Through trains between Toronto and Montreal will then make the distance in about nine hours, a saving of from four to five hours. It was also given out at the same meeting, that there is to be no cutting of rates in consequence of the action of the Michigan Central authorities in withdrawing from the compact that has for some time existed between the two companies, as the G. T. R. are confident that their own resources are so great that they will not be put to the least strait in the traffic competition that will naturally ensue.

This item is from the *Lumber Trades Journal* of London England, and evidences the greater interest in Canada, being taken by our friends across the Atlantic. The closing paragraph we can all heartily endorse:

We hear so much of the rapid progress of the United States in population, city building, trade and civilization, that the claims of Canada in the same category are apt to be rather overlooked. In a little pamphlet recently published by Mr. C. N. Armstrong on "Canada, and her Resources," it will be seen that the steady advancement of this great colony has every element of durability, and that its institutions are based on solid foundations, and capable of infinite expansion.

In the year 1800 the population of Canada was only 240,000; in 1881 it was 4,324,810, an average yearly increase of 21 per cent. The revenue of the Dominion is £6,680,000, or £1 11s. per head, and the debt only £30,730,000, or £7 2s. per head. The foreign trade is of the nominal value of £44,350,000, or £10 5s. per head; and of the exports breadstuffs constitute 35 per cent., being of the value of £2 13s. per head. The banking capital amounts to £12,207,931; and the shipping has an aggregate tonnage of 1,310,896 tons. And all this advancement within the lifetime, it may be said, of one man. Long may the Dominion flourish and replenish the earth with its mighty forests, and always in close connection with the Mother Country.

To Messrs. H. B. Rathbun & Sons, of Deseronto, belongs the credit of being the first, in Canada at least, of practically solving the problem of how to utilize the waste from saw mills, and turn the refuse into bi-products that have a marketable value. They have established chemical works adjacent to their mills, and we give a condensed account of the visit of a correspondent of the *Napanee Beaver* to the works:—"It is

now admitted these experiments are about to be crowned with success, and that the solution of the important problem of the utilization of waste material has at length been reached. It has been demonstrated that from the sawdust of the big mill can be extracted acetic acid, wood alcohol and tar; that the charcoal can be disposed of for the manufacture of gunpowder, and that as a bi-product, sufficient illuminating gas of an excellent quality can be produced to light the village and its factories. The chemical works are now being enlarged for this purpose, an excavation is being made for a gas-holder and mains, and it is expected that the whole will be in operation early in August. This department is under superintendence, and the whole of the experiments have been conducted by George Walker, formerly of New York." The article on "Bi-products," to be found on front page, treats of many more instances in which so-called refuse matter is capable of utilization, and the subject is one well worthy of consideration.

—

This year we are to have three exhibitions in Canada which are of more than a local character. First comes the Toronto Industrial, opening in September, and which always scores a success, its popularity increasing with each successive year. Next is the fair of the Agricultural and Arts Association, to be held this year in Guelph, and as the Royal city is the centre of a fine manufacturing and farming district there is no reason why it should not meet with its fair share of support. The Dominion exhibition, so called on account of the grant towards it by the Federal government of ten thousand dollars, is to be held at St. John, N.B., in October, and as this year is also the centennial year of the landing of the United Empire Loyalists in the city, more than usual excitement will be manifested. The last few seasons manufacturers have not been to the fore with large exhibits, mainly on account of their being so pressed with orders as to preclude the idea of getting up anything special for display. It is, however, an open question, whether it is not to their own benefit to make an extra effort to place their goods before the public on such occasions, when large numbers are congregated together for the express purpose of seeing what there is to be seen. It is simply advertising on a broad scale, with the advantage of probable customers being able to personally inspect the goods offered, and not having to depend mainly on descriptive catalogues or circulars. In machinery, for instance, there are often new and valuable improvements, of which it is not easy to give a lucid written description; but, on being examined and tested by those interested, their merits are at once acknowledged, and a trade results.

—

A sign of the times is the many advantages that are being offered by towns and villages in every Province, in order to get manufacturers to locate in their midst. Amongst others, we may mention that Ottawa, after having for years rested content with its great lumber mills, is now alive to the value of diversified industries, and a special committee of the city council is in correspondence with manufacturers with a view to their removing to the Capital, which offers exemption from taxation and a bonus as a "*quid pro quo*." Already arrangements have been made with a Mr. W. H. Lynch for the erection

and running of a factory for manufacturing dairy utensils, and no doubt others will follow suit. The village of Omemee is advertising with a like object in view, and Thorold is also ready and willing to aid any industry desirous of establishing itself there, water power being abundant. In the Province of Quebec the thriving village of Lachute is to the fore, and offers, besides remission from taxes, the natural advantages of cheap land, inexhaustible water power, and favorable shipping facilities. In New Brunswick, a province which has latterly made great strides in manufacturing, St. George is waking up to the value of the splendid water-power it possesses, and the necessity of adding to its prosperity by the erection of one or more factories, and a local paper states that a committee of prominent citizens was recently appointed and instructed to collect information relative to the value of the place, and a site for a factory, and report, when a meeting of ratepayers will be called. It is supposed that the town is disposed to purchase the best water power in the place and the surrounding site, to present them to a manufacturing company, on certain conditions, and to grant exemption from taxation for a period of years.

—

We clip the following item from a recent issue of the *Montreal Gazette*: "In the letter of our Paris, France, correspondent, printed a couple of days ago, reference was made to the introduction of Canadian manufactures into France by two Canadians, Messrs. George M. Smith and George Brosseau, who have established themselves in Paris. On Thursday Mr. William Jackson, well and favorably known in insurance circles in this city, left by the Lake Manitoba for Paris to join the gentlemen named above in representing the Williams Sewing Machine Company and other home manufactures in Europe. A number of friends assembled on board the vessel to see Mr. Jackson off and wish him *bon voyage*, accompanied by their heartiest wishes for his success, in which we join sincerely." To which we would add that many lines of Canadian manufacture are being exported to foreign countries and to an extent that would be a surprise to many. Canadian sewing machines are to be found the world over; our organs have a high reputation abroad; in one of our late numbers we mentioned the fact of the large safe works of Messrs. J. and J. Taylor, Toronto, having shipped a consignment of safes to Valparaiso and to Mexico, and of their intention of establishing an agency at Brussels, Belgium, to meet the growing requirements of their European trade; our implements of husbandry are sold largely in Australia and elsewhere; carriages, iron and wood-working machinery, and many other lines are now exported in considerable quantities. Manufacturing in Canada is but in its infancy, and when our mineral resources are better developed, and blast furnaces erected at our iron mines, we will be in a still better position to compete with foreign manufacturers both at home and abroad.

—

There is a difference of opinion between the United States and Turkey, in consequence of the latter's determination to modify the existing commercial treaty between the two countries, shortly to expire. A Washington despatch, dated the 9th inst., puts the facts of the case as follows:—"The Porte recently informed General Wallace, United States Min-

ister at Constantinople, that the commercial treaty between Turkey and America would terminate March 13, 1884. The Turkish tariff expired on the same date of the present year. After the termination of the treaty the importation of all American meat, lard, and similar products will be prohibited. The Porte has virtually increased the duty on spirits by causing their storage at Smyrna; it also maintains its demand relative to the storage of petroleum. No American delegate has been appointed to negotiate with Turkey concerning the new tariff, although the appointment of one has been twice requested. Gen. Wallace has protested that these measures are arbitrary, and claims that American goods, under the treaty of 1839, are entitled to 'most favored nation' treatment. The relations between the Sultan and Gen. Wallace continue friendly; the former has ordered the payment of all private claims on Turkey, and \$38,000 have already been paid. In relation to the protest of Gen. Wallace it may be said that the Porte was desirous of making a new tariff on the basis of an eight per cent. *ad valorem* duty, but the powers objected on the ground that the tariff was not alterable until the expiration of the commercial treaties. The Porte pointed out that this was impracticable, as the treaties expired at various dates. Almost all the Ambassadors recognized the validity of this argument, and consented to appoint delegates to effect an arrangement for a tariff.

## Railways and Shipping.

Messrs. Manning, McDonald & Co. have been awarded the contract for the construction of the Tay Canal. Work commences this week.

During the month ending May 31st, 300,000 ties were shipped to the end of the C. P. R. track. An average of 15,000 per day is being shipped from Whitemouth.

Traffic on the Thunder Bay division of the C. P. R. is rapidly increasing. Boats, heavily laden with freight and passengers for Manitoba, arrive daily at the Landing.

Upwards of 600 men are now employed in the Canada Pacific machine and repair shops at Winnipeg. They are about to erect in Winnipeg a new car shop and planing mill, to cost about \$120,000.

This week the ratepayers of Gananoque voted on the by-law granting \$10,000 to Rathbun & Son as a bonus towards the erection of a railroad from the G. T. R. to the village. The vote stood 167 for, 25 against.

The aggregate traffic of the Grand Trunk, Chicago & Grand Trunk, and Detroit, Grand Haven & Michigan Railways for the twenty weeks ending May 19th were £1,639,723, against £1,466,983 in the corresponding week last year, an increase of £172,740.

The Nova Scotia Steamship Co. are bringing large quantities of furniture, etc., to the city, consigned to various firms here by the Windsor Furniture Co. and I. B. Reid, of Bridgetown. The Round Hill Wooden Ware Co. also send over a number of pails, tubs, rakes, etc.—*St. John "Sun."*

The track was laid on the Canada Pacific Railway main line west to Medicine Hat, on the South Saskatchewan River, six hundred and sixty miles west of Winnipeg, on Saturday night last. According to the new time-table to-day trains will be operated hereafter from Port Arthur, Lake Superior, to Medicine Hat, 1,095 miles.

From the London *Telegraph* of 31st ult. we learn that on the London stock exchange Grand Trunk securities were buoyant at a decided advance. The position of the market for these stocks is all in favor of holders, as speculative over-selling has been enormous. The second preference is still so scarce that a charge of  $\frac{3}{4}$  per cent. was paid to-day by operators for the fall to postpone delivery. Hudson's Bay shares were dull on rumors of a disappointing dividend, and of the failure of a large holder in the north.

Only a very few years ago no lake vessel had ever carried 100,000 bushels of grain, and when the iron propeller Java managed to take 100,000 bushels of oats from Chicago to Buffalo the feat was hailed as a notable one which marked a new era in our inland commerce. Now the great steamship Onoko, built in Cleveland last year, has landed a cargo of 160,500 bushels of oats at Buffalo, and with some changes in her hold the huge ship could undoubtedly carry a few thousand bushels more. The commerce of the lakes is yet in its infancy.

A despatch from St. Paul, Minn., says:—The officers of the Manitoba express surprise at the quotation of the road's stock in the New York market. They deny absolutely that any rate war with the Canadian Pacific is probable, and say the reduction in rates was only made to meet those of the former road. The Canadian Pacific gave them notice of its reduction in consequence of the opening of the Thunder Bay branch, and the Manitoba reduced simply to compete in a legitimate manner for Winnipeg traffic. The reductions were great, but had to be so because the Canadian Pacific, in consequence of its long water route, could carry freight at a much cheaper rate. The decrease in earnings is occasioned, they say, not by any falling off of business, but because the comparisons made are made with the heaviest months of last year. Business was then particularly heavy because of the accumulation of Winnipeg freight between St. Paul and Chicago, and between St. Paul and St. Vincent, in consequence of the heavy snow blockade, and bad washouts of last year.

One of the largest grain vessels that has as yet come to this port reached Kingston yesterday. She is the steambarge D. C. Whitney from Chicago, and her cargo is 61,000 bushels of corn. She can carry 75,000 bushels. Captain July, of Alexandria Bay, her commander, states that he likes this route first-rate, and that he will endeavor to come this way again. The Whitney is accompanied by a consort carrying 49,000 bushels, making the aggregate 110,000 bushels; value over \$50,000. The Whitney was built in Detroit in 1882 by Mr. D. Whitney, at a cost of \$97,000. She is 256 feet long, and has a 41 foot beam. She has two compound engines, with a 44 and a 47 inch cylinder respectively, on one shaft. She is so complete that 16 hands (the same number as is on an ordinary propeller) is quite sufficient to man her with ease. With her present cargo she draws 14 feet 2 inches forward and 14 feet 5 inches aft. At Port Colborne she lightened 23,000 bushels, but she lightened more than she would have had not the recent gale lowered the water in the canal. The Whitney is an excellent craft, and many visitors have been shown over her by the genial and courteous captain. Her machinery is a grand sight. The captain of the Whitney was told that he should charge 25c. per head before allowing people to board her. If he did he would make money, as about 300 inspected her at the M. T. Co's wharf here.—*Kingston News.*

The directors of the Amherst boot and shoe manufacturing Company, have declared a dividend of 10 per cent. and placed to Rest account the substantial sum of \$10,000. Mr. A. Moffatt was elected President, and Messrs. Hiram Black, J. R. Lamy, J. S. Hickman, C. J. Townsends and M. D. Pride directors for the ensuing year.

The Montreal *Gazette's* Halifax correspondent writes that under the fostering care of the Central Government new life has been infused into our old industries, and new ones are springing up. Our new Cotton Factory is to be formally opened on Monday next by a lunch to the shareholders and their friends. The Sugar Refinery at Richmond is doing well, and another is being erected at "Woodside," Dartmouth, by a wealthy English Company. With the natural advantages of Halifax and the coal lying at its doors, it will indeed be strange, if it does not in time become the great supply house of the Dominion for refining sugars.

**Financial and Commercial.**

The following are the closing quotations on the Toronto Stock Exchange for Wednesday, June 13, compared with those of the same day two weeks before:—

BANKS.	May 30.		June 13.	
	Asked.	Lid.	Asked.	Bid.
Montreal	197	196½	198½	198½
Ontario	111½	110½	112	111½
Molsons				
Toronto	186½	186	187	186½
Merchants'	121½	120½	124½	123½
Commerce	134	133½	136	135½
do xd	130½	130	132½	132½
Imperial	146	145½	146	145½
Federal	156½	156½	159½	159½
do xd				
Dominion	196½	196½	196½	196½
Standard	116	115½	118	117½
Hamilton				113½
<b>MISCELLANEOUS.</b>				
British America	117	115½	118	116
Western Assurance	136	135½	142	141
Canada Life				
Confederation Life Association				
Consumers' Gas	147	146		147½
Dominion Telegraph			89	88½
Montreal Telegraph				
Lybster Cotton				
Globe Printing Co'y				
N. W. L. Co.	74s. 3d	73s.	74s.	73s. 3d.
Ontario and Qu'Appelle	170			

The following are the closing quotations of the Montreal Stock Exchange for Wednesday, June 13, compared with those of the same day two weeks before:—

BANKS.	May 30.		June 13.	
	Asked.	Bid.	Asked.	Bid.
Montreal			199	198½
do xd	197½	197		
Ontario xd	112½	111	112½	111½
People's	79	78	80	79
Molsons	125½	123½	126	124½
Toronto	187½	186	187½	186½
do xd	187	186½		
Jacques Cartier				
Merchants' xd	121½	121½	124½	124½
Quebec				
Union	90	85	93	
Commerce	133½	133½	136½	136
do xd	130	129½		
Exchange			134	132½
Federal	157	156½	160	158
do xd				
<b>MISCELLANEOUS.</b>				
Montreal Telegraph	125	124	126½	125½
Dominion Telegraph				
Richelieu and Ontario Nav.	79½	78½	81	80½
City Passenger Railway	139	138	134	133
Montreal Gas	174	173½	177	176½
Canada Cotton	114		105	102
Dundas Cotton	82	80	82	
Ontario Investment				
St. Paul M. & M.	119½	118	124	123
Canadian Pacific	61½	61	63½	63
North-West Land Co	75s. 3d.	74s.	76s.	73s.

**THE BANK OF MONTREAL ANNUAL MEETING.**

MR. SMITHERS ON THE BUSINESS SITUATION.

We copy from the *Gazette's* report that portion of Mr. Smithers' speech at the Bank of Montreal annual meeting, in which he deals with the present situation and future prospects:—

Now, with regard to the general situation, some remarks I made last year were widely commented upon, and made use

of in a way that I never intended, but that will not deter me from saying in a few words just what I think now. What I said then and what I say now is solely from the bankers' standpoint. Please do not misunderstand me; I am not going to claim any credit for the outcome of anything I said then. I simply thought at the time that I saw a cloud in the financial horizon (perhaps not bigger than a man's hand), and I had the courage of my convictions to say so. I thought I saw it, and it was there and it spread, and although we had no serious calamity, nothing that could be called a panic, still money became extremely stringent, perhaps wholesomely so. We had a good many failures, and probably should have had more but for the check that was given to over-trading, and if anything I said contributed in the slightest degree to mitigate the effects of the dangerous expansion then in progress, there is no reason to regret what was said. I hinted on that occasion at the tendency to over-production in certain directions, which some of us feared, in view of the large additions to several mills which were being pushed forward with great energy. To-day it is hardly necessary to remark that there is no room for difference of opinion. That there has been over-production in certain classes of staple goods is an established fact which I presume no one will question. There is reason to hope, however, that the parties most directly interested are now so fully alive to the fact that they will apply the remedy. What the remedy is it is unnecessary for me to point out, but we need not go far to look for it. As regards the importation of foreign goods, I am not without hopes that wise counsels have prevailed, and that they will be on a more moderate scale; this may not suit the steamship companies, but it will be for the general good. On the subject of losses I have not changed the opinions I enunciated when I first appeared before you, viz., that if we can keep clear of losses the profits will take care of themselves, but, gentlemen, we cannot always keep clear of losses—there comes the difficulty. Mr. Buchanan and I, and Mr. Macnider too, for the matter of that, have all had a life long experience, but I am sorry to say that we have not yet reached the standard of infallibility, and if anyone can lend the amount of funds controlled by the Bank of Montreal without making losses, I should like very much to make his acquaintance. On this subject the keynote was struck by the *Monetary Times* in a recent issue when it remarked: "Nothing is more difficult to do than a banking business safely—to lend millions of money without losing any of it, is a task which taxes the ability of experienced men to the very utmost." Last year I had occasion to refer to the operations of the Canadian Pacific Railway Company, and I shall make no apology for again alluding to the subject, as no review of the past year, either as regards the country or the Bank of Montreal, would be complete without some notice of it. It is known to every one that the work of construction has been pushed forward with marvellous energy. The progress has been even greater than I expected, although I looked for great things. The effects of the success which has attended the efforts of the Company to place its stock upon the leading markets of the world can scarcely be over-estimated. It is a matter of congratulation to us all. It has brought large sums of money into the country, and has had important influence upon the Exchanges. Exchange on the United States has been very much against this country, and would have been still more so but for the large amount of American funds supplied by the Company, amounting in all to many millions. The scarcity of New York funds and the high rates they commanded during the past winter is of too recent occurrence to require any reminder, but had it not been for the supply obtained from the sources I have indicated it would have been difficult to meet the demand. The expenditure of the Company during the coming season is now certain to be large—the works will be pushed forward with undiminished vigor without a doubt, and, in connection with the immigration, which is now certain to be larger than ever before, will do much to promote a high degree of prosperity in that region, if we should



be favored with a good harvest, and to mitigate the disastrous effects of a bad one, if it should unfortunately be in store for us. In making special allusion to the operations of the Canadian Pacific Railway, I do so partly because it is largely a national undertaking, and partly because the public attention has been turned very much in that direction—the prosperity of the country in the immediate future being very much bound up with the successful prosecution of that great work. I do not, however, forget that we have other old and valued clients engaged in the work of opening up and developing the country and transporting the crops, whose relations to the Bank are of long standing and the connection highly prized. Just here I may say that business has been very dull in Manitoba and the North-west during the winter, partly from the natural reaction from what must be considered a somewhat artificial state of things, and partly from the excessive stock of goods held, rendering it necessary for the banks to exercise considerable forbearance in many cases to prevent disaster. There is no denying that things have met with a decided check in the North-west, but that was to be expected. That it will recover quickly may also be confidently expected, and, although uninterrupted prosperity can scarcely be looked for, its progress will probably be very like the incoming tide, rising higher every time after receding. There are indications already that things are working into a more satisfactory shape, and we may, I think, look for another considerable influx of money during the coming season.

A word about the future before I sit down, though I feel that it is very dangerous ground, and I never felt so much difficulty as I do to-day in arriving at a satisfactory conclusion. The safest course would doubtless be to say nothing; but I do not wish to shrink from the responsibilities of my position. I am not sure, however, that it is exactly in order, as we are here to-day to give an account of what we have done during the year just ended—still it has been usual to indicate, in some degree, what the policy will be in the event of your again giving us your confidence. On this subject I have only to say that, in the event of your re-electing the old Board, I think, if one may presume to speak for all, it is scarcely likely that there will be any great change of policy. That policy has been clearly defined; it has not been a fitful or vacillating policy, but has been kept steadily in view, and we shall probably pursue the even tenor of our way under the assured conviction that it is the true policy, a thoroughly sound and conservative policy, and that it must and will come out right in the long run. I do not propose to prophesy; our success for the next year depends largely upon circumstances beyond our control, and you can read the signs of the times as well as I can. In the annual report of the New York Chamber of Commerce the following clause occurs:

“In surveying our own horizon of commercial enterprise, we fail to discover one cloud of menace, and look forward with cheerful confidence to a year of great prosperity to the entire country.”

This is brave language, and it is not for me to question any statement put forth by such a body of men, and yet it is hard to reconcile it with the well-known fact that the iron trade is in a very unsatisfactory condition, and with the fact that mercantile failures are in excess of the same time last year, to say nothing of strikes and of the unfavorable accounts in relation to winter wheat. Assuming it to be correct, I can only say that it is a most highly favored country; and I doubt whether as much can be said of any other country in the world. I am quite sure that it is not true of England, where they have suffered from a series of bad harvests, and where the Bank of England reserve is at the lowest point touched for years, and the supply of metals gradually on the decline. But now we come to this country, in which we are more immediately interested. Can it be said of this latitude? Would that I could adopt this language in relation to Canada, in the full confidence that I was justified in doing so; but in the exercise of the most sanguine view of the outlook, I dare not go so

far. I am afraid I should be regarded as a very unsafe counsellor if I did. I fully understand that I am not speaking merely to those here present; but that what I say to-day will be read all over the country; and, fully realizing the responsibility that rests upon me, I repeat that I dare not adopt the language of the New York Chamber of Commerce in speaking of this country.

I am not a croaker, but, rather than inspire false hopes, I prefer to take the chance of being misunderstood. Now, what are the facts? I have already pointed out that there is unquestionably over-production of certain kinds of domestic goods, and it is useless to shut our eyes to the fact that, after all, Canada is a very limited market. Then, as regards our great staple, lumber, I am informed by those largely engaged in the business that the English market is not very promising for deals, though better for square timber; the American demand for sawn lumber will probably be good.

I have said nothing so far about the crops, because it is utterly impossible to form a correct judgment at this season of the year, and yet so much depends on them that the subject cannot be passed over in silence. I am afraid that there is no denying that, up to the present time, the reports are not satisfactory; and yet I think there is no necessity for alarm. Wonderful progress is made when summer once fairly sets in, and we have sometimes seen a late season turn out a very good one. *Nil desperandum*, is all that can be said on this subject.

As regards general business, as far as I can learn by diligent inquiry, extreme dullness is the great feature of the day. No doubt stocks of certain classes of goods are being carried over, and the load is probably heavy in some quarters, but if it is true, as many seem to think, that the retailers are not as a rule overstocked, that is a very favorable feature, and, taken in connection with reduced importations, is very reassuring. On the whole, while caution is decidedly in order, there does not seem to be sufficient cause for distrust or anxiety. While I cannot go so far as the gentleman across the line I have quoted, I do not wish to err on the other side. Far be it from me to put, unnecessarily, a damper on the hopes and expectations of any. Neither do I think the occasion calls for it. The circumstances are very different from what they were a year ago; then things were booming, and a check was wholesome, while, for some time past, there has been a feeling of depression, which has tended to make men cautious, and that is a step in the right direction. There is a prevailing conservatism among an important class of the community which is itself an omen of better things to come—the brakes have been put on, and it will do no harm to keep them on a little longer. The tendency to inflation does not exist to anything like the same degree that it did a year ago, and that was what gave rise to the necessity for hoisting the danger signals. I am inclined to think that the best advice that can be given to the commercial community to-day is to keep credits within prudent limits, both as regards time and amount—they are unquestionably too long—this done and I think, or rather hope, we may look for a fair degree of prosperity.

#### A MATTER OF INTEREST.

Peter Cooper was always a careful and prudent man of business. He was strongly opposed to the methods of many merchants, who launched out into extravagant enterprises on borrowed money, for which they paid exorbitant rates of interest. Once, while talking about a project with an acquaintance, the latter said he would have to borrow money for six months, paying interest at the rate of 3 per cent. per month. “Why do you borrow for so short a time?” Mr. Cooper asked. “Because the brokers will not negotiate bills for longer.” “Well, if you wish,” said Mr. Cooper, “I will discount your note at that rate for three years.” “Are you in earnest?”

asked the would-be borrower. "Certainly I am. I will discount your note for \$10,000 for three years at that rate. Will you do it?" "Of course I will," said the merchant. "Very well," said Mr. Cooper, "just sign this note for \$10,000, payable in three years, and give me your check for \$800, and the transaction is complete." "But where is the money for me?" asked the astonished merchant. "You don't get any money," was the reply. "Your interest for 36 months, at 3 per cent. per month, amounts to 108 per cent., or \$10,800; therefore your check for \$800 just makes us even." The force of this practical illustration of the folly of paying such an exorbitant price for the use of money, was such that the merchant determined never to borrow at such ruinous rates, and he frequently used to say that nothing could have so fully convinced him as this rather humorous proposal by Mr. Cooper.

The estate of G. H. Pedlar & Co., Oshawa, is advertised for sale by sheriff.

The death of L. M. M. Willett, an extensive ship builder of Yarmouth, N.S., is announced. His estate is a valuable one.

A. E. Ouellette & Co., general merchants, Trois Pistoles, Que., have assigned. This has been expected for some time.

Charles Cadotte, a boot and shoe dealer of Montreal, has assigned in trust, with liabilities of \$3,500, creditors are offered 60 cents on the dollar.

C. D. Edwards, safe manufacturer, of Montreal, is again in trouble, an execution being in the hands of the Sheriff against his effects.

One of the sufferers of the late fire in Leamington, C. Tedrow, a grocer, is offering creditors 75 cents on the dollar. His loss amounted to about \$1,500 over insurance.

The stock of J. A. Young & Co., wholesale boots and shoes, Montreal, is offered for sale by assignees. The liabilities are about \$35,000.

T. W. Arthur, books and stationery, of Halifax, has assigned in trust. The liabilities are light, the account having been regarded a weak one for some time.

A. Williams, storekeeper, etc., Sutton, who has been in business several years, has assigned in trust. His liabilities are stated at \$8,000. The estate should pay a good dividend.

Frank Wetherbee, proprietor "Hub" saloon, Montreal, is reported to have left. A large number of creditors regret his departure.

The creditors of J. J. Campbell & Co., general merchants, Regina, N. W. T., have granted this firm an extension of time. The business was commenced about a year ago, and the firm has been carrying too heavy a stock.

The extensive grain firm of Trail, Maulson, and Clark, of Winnipeg, has dissolved. Chambers & Co., biscuit manufacturers, and T. H. McMurty & Co., grocers, of the same city, have sold out.

John Schwarz, manufacturer of cigars, Hamilton, is offering to compromise with creditors on liabilities of about \$7,000, which is a respectable amount considering he has only been in business a short time.

Mrs. Vanzant, milliner, of Leamington, has been completely ruined by the fire. Commencing several years ago with but limited means, she acquired a surplus of about \$3,000 which has been swept away, and she has not sufficient capital or courage to resume again.

We have to announce the first failure amongst the Mennonite storekeepers in Manitoba. Hermann, Dyck & Co. were pioneers, and up to recently they have enjoyed excellent credit, and the Estate, it is thought, with proper management should turn out well. Overstocking and crediting is the cause of trouble—the liabilities of the firm being \$30,000.

The estate of C. Strubing & Co., of Berlin, is being administered by D. B. Dewar, local agent for the Bank of Commerce. The liabilities so far as can be ascertained amount to about \$120,000, and the assets about \$100,000. With careful administration the estate should pay, it is said, about 60 per cent of the liabilities. The intention is to continue the business and run off the stock if possible in the usual way.

H. H. Stovel, of Mount Forest, formerly in tailoring business, and latterly in foundry, has suspended. He is also in the publishing business firm of Stovel & Son, and has been regarded a fair credit mark. He himself claimed to be worth \$10,000 a short time ago, and local authorities considered him worth something near the amount claimed. Particulars of his troubles have not transpired.

The wholesale dry goods house of Davidson & Crichton, Halifax, N.S., suspended on the 4th inst., and are offering their creditors 50 cents on the dollar in three months secured. They have been doing a business of 250,000 dollars per annum on a capital of about \$15,000. Losses by bad debts is one of the causes of their troubles, and it is also said that one of the partners has not been so attentive as he might have been. The liabilities are heavy and largely in the European markets.

In July, 1882, the firm Hewetson & Smith, general dealers, Milton, submitted a statement claiming a surplus of \$10,000 and on the strength of this have worked up a very fair credit. While the statement was generally regarded a roseate one, the firm appeared to have means and the announcement of their having called a meeting of creditors has caused considerable surprise. No doubt those interested will be anxious to know how their capital has vanished so rapidly, as it is understood their assets and liabilities stand about equal.

Davidson & Davidson, late storekeepers of Palmerston, and latterly of Listowel, have assigned for the benefit of creditors. The ruling spirit of the firm, who has been using the name of his wife, was burned out in July, 1881, it is said under suspicious circumstances, and he compromised with creditors at 30 cents on the dollar, which, however, was never paid. Notwithstanding the firm has made several very glowing statements it has not succeeded in establishing much credit.

Owen Carson, general dealer, Brandon and Regina, made an assignment on the 9th inst., to Andrew Strong, of Winnipeg. The liabilities are reported heavy, about \$60,000, and the assets so far do not appear to have turned out well. Carson formerly had a tent store and hotel at Rat Portage, and made money. He started in Brandon in 1881, and has been doing an extensive trade. He and one Caulfield have been carrying on the largest hotel there, and although the property is believed to belong to Carson, the title stands in the name of his partner. Doubts have always been expressed as to the line of Carson's conduct in the event of failure, and the developments so far prove good grounds for doubting his desire of treating creditors fairly.

In February, 1882, Alexander and Bryce purchased the dry goods stock of R. J. Whittle, of Winnipeg, paying about \$10,000 cash on the purchase. They were formerly engaged in the same line in Oshawa for about five years, and on opening in Winnipeg the prospects of the firm were regarded as good. Their predecessor had accumulated considerable money, but they did not appear satisfied with his mode of doing business. They bought too largely, and over-stocked themselves; this, with dulness in trade during the past winter, rendered them hard up, and in February last they obtained an extension, making the payments mature in June and July. The firm has not been able to retire the paper, and an assignment in trust has been made for the benefit of creditors. Liabilities are estimated at \$160,000, and assets less than \$100,000, although a few months ago the firm showed a surplus of \$50,000.

## Textiles.

### CHALK YOUR BOBBINS.

[The story of "Chalk your Bobbins" has been often told before; but it will bear telling again. We repeat it now as we find it in *Wool and Textile Fabrics* (London England), an authority which is likely to have the correct version.]

Everyone knows that old Sir Robert Peel, father of the late Prime Minister of England, made his money by cotton spinning. In the early part of his career his business was not remarkably extensive; but suddenly he made a tremendous start, and soon distanced all his rivals. He grew immensely rich, as we all know; but we do not all know the lucky accident, as men call it, to which he was indebted for his enormous wealth. In the early days of cotton-spinning machinery, a great deal of trouble used to be caused by filaments of cotton adhering to the bobbins or tapes, which then formed portions of looms. These filaments accumulating, soon clogged the wheels and other parts of the machinery, and rendered it necessary that they should be cleared, which involved frequent stoppages and much loss of time. The great desideratum was to find out some plan of preventing this clogging by the cotton, and Sir Robert, or Mr Peel, as he was then, spent vast sums of money in experiments. He employed some of the ablest machinists in the kingdom—among them was James Watt—but, in spite of all they could do, the inconvenience remained, the cotton would adhere to the bobbins, and the evil appeared to be insurmountable. Of course these delays seriously affected the wages of the operatives, who, on Saturday, generally came short in proportion to the stoppages during the previous days.

It was noticed, however, that one man always drew his full pay; his work was always accomplished, in fact his loom never had to stop, while every other in the factory was idle. Mr. Peel was informed of this, and knew there must be a secret somewhere. It was important that it should be discovered, if possible. The man was watched, but all to no purpose. His fellow-workmen tried to "pump" him, but they couldn't. At last Mr. Peel sent for the man into his private office.

He was a rough Lancashire man, unable to read or write—little better, indeed, than a mere animal.

He entered the "presence," pulling his forelock, and shuffling on the ground with his great, clumsy wooden shoes.

"Dick," said Mr. Peel, "Ferguson, the overlooker, tells me that your bobbins are always clean, is that so?"

"Ees, master, 't be."

"Well, Dick, how do you manage it; have you any objection to let me know?"

"Why, Master Pill, 't be a soart a sacret loike, ye see: and if oi told, t' others 'd know 's moch as oi," replied Dick, with a cunning grin.

"Of course, Dick, I'll give you something if you'll tell me, and if you'll make all the looms in the factory work as smoothly as yours."

"Every one 'n them, Master Pill."

"Well, what shall I give you? Name your price, Dick, and let me have your secret."

Dick grinned, scratched, and shook his great head, and shuffled for a few minutes, while Mr. Peel anxiously awaited his reply. The cotton lord thought his servant would probably ask a hundred pounds or so, which he would most willingly have given him. Presently Dick said:

"Well, Master Pill, I'll tell 'ee all about it if you'll give me—a quart of beer a day as long as I'm in the mills. "You'll save that ten."

"Mr. Peel thought he rather should, and quickly agreed as to terms.

"You shall have it, Dick; and half a gallon every Sunday into the bargain."

"Well, then," said Dick, first looking round to see that no

one was near, "this it be"—and putting his lips close to Mr. Peel's ear he whispered—"chalk your bobbins!"

That, indeed, was the great secret. Dick had been in the habit of furtively chalking his bobbins, which simple contrivance had effectually prevented the adherence of the cotton. As the bobbins were white, the chalking had escaped detection. Mr. Peel was a sagacious man, and saw through the affair at a glance. He at once patented the invention, had "chalking" machinery contrived, and soon took the lead in the cotton-spinning department. This was the foundation of his princely fortune. It is but right to add that he pensioned off Dick handsomely.

### GLASGOW HIDE AND WOOL MARKET.

Messrs. Robert Ramsey & Co., Hide and Wool Brokers, Glasgow, in their weekly report, dated 29th May, write:—

*Wool.*—The market for the week is quiet, and rather discouraging. As old stocks are in small compass they are firmly held. The new season being late, has as yet produced very little, and all parties seem waiting. Business is mostly confined to blackfaced and skin wools, and when late quotations can be made sellers are satisfied.

*Hides.*—The numbers were rather in excess of the previous week, and of fair quality, the feeling is more hopeful, and although quotations are scarcely changed, the tendency is towards advance.

*Sheepskins.*—There was a fairly good supply, with a larger proportion of prime hogs. Competition was active and prices fully maintained, pelts, however, are easier, which is rather against the prospects of shortings.

*Tallow.*—A moderate trade, without change in quotations.

The French textile manufacturers are in a peck of trouble over the success with which foreign competitors are imitating their goods and copying their trade-marks. The syndical chamber of the Parisian commission agents has investigated with great care into the extent to which the trade of France has been interfered with by foreign competition. Three different causes have been assigned: First, the development of foreign industries and manufactures; second, the imitation of French trade-marks and manufactures; third, the revival of Protectionist tariffs in foreign countries. The French, the chamber says, are fighting the rest of the world on unequal terms. German manufacturers make cheap imitations of French goods in all trades, and deceive the buyers. Even in the ceramic arts, every new model at Paris is faithfully copied in every detail. In the German papers, the United States are credited with industrial ability on a large scale; and not only are designs, models and trade-marks copied, so it is alleged, but the names of well-known firms are freely used. Counterfeiting of French goods is conducted on an extensive scale in some Central and South American countries, which complaint is laid at the door of the protective tariffs. The pirating of French ideas, models and trade-marks is doing much, in the opinion of chamber, to permanently damage French industrial interests, for which there is no effective remedy.—*Industrial Review.*

The N. P. is marching on. A few years ago The Amherst, N. B., Boot and Shoe Company was a comparatively unimportant concern. Last year the sales amounted to \$145,500, an increase of \$25,500 on the previous year, and more than double what they were in 1879.—*Moncton Times.*

So thick and fast do orders arrive at the St. Croix Cotton Mill, at St. Stephen, N. B., that night work in some departments has become a necessity. It is said that, in order to keep up with the demand for their goods, regular work, three nights in the week until 9 o'clock, will be commenced throughout the entire mill.



# Iron and Machinery.

## INDUSTRIAL ENGLAND.

BY ROBERT P. PORTER, MEMBER OF THE LATE AMERICAN TARIFF COMMISSION.

THE NEWCASTLE COAL AND IRON DISTRICT.

(From the New York Tribune.)

MIDDLESBOROUGH, ENGLAND.

I come now to a district which in 1880 produced 35,000,000 tons of the 147,000,000 tons of coal produced in the United Kingdom, or one-quarter of all the coal; and over 6,000,000 tons of the 18,000,000 tons of iron ore produced in the United Kingdom in that year, or more than one-third of all the iron ore. The relative importance of this district in its production of pig iron may be seen from the following statement of the output for 1882, given me this morning by Mr. Edward Williams, president of the Iron and Steel Association of Great Britain:

District.	Total production of pig-iron for 1882.
	Tons.
Cleveland.....	2,688,650
Scotland.....	1,126,000
West Cumberland.....	1,001,181
South Wales.....	883,305
North Wales.....	48,713
South Staffordshire.....	398,443
North Staffordshire.....	317,117
Lincolnshire.....	201,561
Lancashire.....	782,739
Northamptonshire.....	192,115
West and South Yorkshire.....	279,253
Derbyshire and Notts.....	445,735
Shropshire.....	80,475
Gloucestershire, Wiltshire, etc.....	48,000
<b>Total.....</b>	<b>8,493,287</b>

Within this region, which is full of interest and of economic importance to Americans, is the great northern coal-fields of Durham and Northumberland, the oldest worked mines in England, as yet to day the most prolific. This area, comprising an exposed coal-field of 460 square miles, and a concealed area of 225 square miles, possesses some of the most important coal-seams worked in Great Britain. The rivers Blythe, Tyne and Wear naturally give their names to the three great divisions of the coal-field. As will be seen by the little map which I have drawn to accompany this letter, the Blythe coal-field, the Tyne coal-field, and the Wear coal-field are really one, extending from near Warkworth, at the mouth of the River Coquet, on the north, to near the north bank of the Tees (within six miles of Barnard Castle) on the south—an expanse of nearly fifty miles in length by twenty miles in breadth; its greatest diameter being near the centre, along the course of the river Tyne, narrowing in the north after passing the river Blythe. From the Coquet, near Warkworth, to the river Tyne, the North Sea limits the coal-field to the east. To mine the 35,000,000 tons of coal annually produced in this district, in 1880, 95,000 persons were engaged, making an average of about one ton of coal per day for each man, or 365 tons a year if we include Sunday. Of the 95,000 about 76,500 are employed under ground. Wages have fluctuated in the last twenty years as greatly as the price of coal, which averaged in London coal markets in 1860 18s. 4d. or \$4 60 a ton, to 30s. 9d. or \$7.70 a ton in 1873, and gradually decreased until the average price for the year 1880 was 14s. 11d., or about \$3 75 a ton. A sliding scale has been adopted by which the price per ton paid the men varies with the market price—a maximum and a min-

imum rate being fixed. So great has been the fluctuations that in the last decade both of these rates have been reached. According to the employers' information the miners, in 1870, were paid 4s. 8d. or \$1 12 a day for an average output of 4.67 tons of coal, and 4s. 8¼d. in 1878, or a farthing more, for an average output of 4.02 tons, being a decrease of 16 per cent in the quantity of work done for the same wages. Certain it is that the earnings in this dangerous and disagreeable work do not exceed, at the present time, 5s. or \$1 20 a day for a steady day's work. The available coal remaining in this great Northern coal-field is estimated at upward of ten thousand million of tons. At the present rate of production the supply will last 280 years.

So much for the coal supply of this district. Now for the Cleveland iron mines, which are included in the area I am considering. The existence of an iron ore on the north-eastern coast of Yorkshire appears to have been long known; indeed the constant discovery of iron slag on the hills of Cleveland shows that ores were worked in remote antiquity. About thirty years ago local iron masters began to employ the Cleveland ore to supplement the supply of ores to their furnaces. It answered well and soon it was found that the Cleveland Hills were full of iron. Then began that remarkable development of the district which reminds one more of the development of the industrial towns of the United States than of anything in the history of British industry. From a place of 7,000 people in 1851, Middlesborough has in thirty years leaped to 60,000, and the whole surrounding district is a marvel of industrial energy. The area of the Cleveland Hills containing the deposits of iron ores extend on the northern escarpment from Ormesby, near Middlesborough, to the coast, and southerly to the Eskdale and Rosedale valleys, the workable portion of the ore being found most fully developed in the north-west portion of the area, diminishing both in the thickness of the beds and the quality of the ore in the south and eastern part of the area. The growth of this region has been unparalleled. Commencing with the year 1854, when returns of production first appear, 650,000 tons of ironstone were raised in the Cleveland district. Two years later it had increased to 1,148,488. At home the development of the Lake Superior district is regarded as remarkable, but the following table, which I have compiled from A. P. Swineford's statistics of the Lake Superior mines, or for the Cleveland mines from John Marley's Memoir on Cleveland Ironstone, etc., shows the magnitude and richness of the Cleveland Hills even when compared with the Lake Superior Iron Region;

YEARS.	Production in tons of Iron Ore, Lake Superior District.	Production in tons of Iron Stone, Cleveland District.
	Gross tons.	Gross tons.
1858 .....	22,876	1,367,395
1859 .....	68,832	1,520,342
1860 .....	114,401	1,471,319
1861 .....	114,258	1,242,514
1862 .....	124,169	1,689,966
1863 .....	203,055	2,078,806
1864 .....	247,059	2,401,890
1865 .....	193,758	2,762,359
1866 .....	296,713	1,809,061
1867 .....	465,504	2,739,039
1868 .....	510,522	2,785,307
1869 .....	639,097	3,094,678
1870 .....	859,507	4,072,888
1871 .....	813,984	4,581,901
1872 .....	948,553	4,974,950
1873 .....	1,195,234	5,617,014
1874 .....	935,488	5,614,322
1875 .....	910,840	6,121,794
1876 .....	993,311	6,562,000
1877 .....	1,025,129	6,284,545
1878 .....	1,125,093	5,605,639
1879 .....	1,414,182	4,750,000
1880 .....	1,987,598	6,486,654

Until the year 1873 the number of persons employed in the Cleveland district was not accurately known. That year, ac-



According to the report of Her Majesty's Inspectors of Mines, 9,350 men were employed, 6,947 of whom worked underground. The average for each man employed was then 581 tons per year; it now exceeds 800 tons. The total number of hands employed in 1880 was only 7,972, yet nearly two million tons more ore was raised. This, Mr. Edward Williams told me, was largely brought about by the economy of labor in the way of improved machinery, and was hastened on account of the demand for labor in this district, and its consequent high price when extensive operations were begun twenty years ago. The average wages paid here, as in the great northern coal district, fluctuate with the price of iron; 5s. 6d. or \$1.32 per day as a minimum rate, increasing plus 10 per cent. plus 15 per cent. or plus 20 per cent., or retarding, as iron advances or decreases in price. Mr. Edward Williams agrees with the Tariff Commission report in the fact that iron rails are doomed to ultimate disuse, but he says it is no less true that Cleveland has fairly started the manufacture of steel rails from its native iron that are bound to become the cheapest in the world. I should hardly be credited in some quarters if I were to say that this immense iron district which I have attempted to describe is one of the most absolute monopolies in the world. I will therefore merely quote the following from an address of the president of the Iron and Steel Institute of Great Britain:

The firm of Messrs. Bolckow & Vaughn, who were the pioneers of the Cleveland iron trade, and who now produce one-third of the total quantity of iron produced in the district, have also taken the lead in the establishment of steel works.

"One-third of the amount produced in this district."

What does that mean?

My table shows that it means an amount of iron ore far exceeding the total product of the entire Lake Superior district in 1880.

The fact is, people in the United States have no conception of the vastness of the monopolies in England. A few firms control this entire district; own every acre of it.

What does that mean?

It means the control of an area of ironstone of 420 square miles, with an average yield per acre of 20,000 tons and estimated contents of five thousand million of tons of iron ore. I have already shown the amount of coal yet in the great adjacent northern coal field to be ten thousand millions of tons, so that there is sufficient fuel in the coal district to smelt the main seam of iron ore in the other.

This district is capable of supplying the world with steel rails for a couple of centuries to come, controlled by a few wealthy men, capable, if the barriers of foreign tariffs were removed, of crushing out the steel interests of every country on the globe, and of then controlling the world's markets and prices. The truth of the monopoly is substantiated by the president of the Iron and Steel Association of Great Britain and by a visit to the district; the truth of capacity in wealth of coal and iron and economy of manufacture by the best scientists. Comment is not necessary. Let every one judge from the facts I present.

And yet the manager of the firm producing one-third of this immense output calmly sat down with me and unblushingly talked of "the grinding monopolies of the United States preventing the free importation of steel rails," and actually spoke disparagingly of "such an otherwise sensible man" as the Hon. Abram S. Hewitt for his "absurd protection heresies."

It did not seem to occur to him that the iron manufacturers of England are worth millions of pounds, while American manufacturers are worth millions of dollars; the British iron districts are crowded within an area of a hundred square miles, while America's spread over a vast continent, every State producing iron ore; the manufactories of England are controlled, as I have shown in the Cleveland district, by a few enormous capitalists, the annual product of one firm alone exceeding that of the entire Lake Superior district, while American iron and steel industries are scattered over a continent, giving employment and building up towns in the agricultural districts,

and making more permanent the progress of the mining States; it is an exception in England to find a situation in which the ore and the coal and the coke and the limestone are separated 100 miles, while in America 1,000 miles often intervene. From the ore mines of Lake Superior and Missouri to the coal of Pennsylvania is 1,000 miles; Connellsville coke is taken 600 miles to the blast furnaces of Chicago, and 750 miles to the blast furnaces of St. Louis. The average distance over which all domestic iron ore which is consumed in the blast furnaces of the United States is transported is not less than 400 miles, and the average distance over which the fuel used to smelt it is transported is not less than 200 miles. And yet here, within a rectangle of 75 miles by 30 miles and a square of 40 miles, is produced over one-third of England's annual ore supply and one-fifth of her annual coal supply.

The following is a table of population of the places named

Population.	Population.
Brinkburn..... 5,000	Redcar..... 3,000
Bellingham..... 5,000	Marske..... 2,000
Morpeth..... 4,500	Saltburn..... 2,000
Blyth..... 2,000	Guisborough..... 7,000
Tynemouth..... 45,000	Middlesborough..... 60,000
North Shields..... 10,000	Stockton..... 42,000
South Shields..... 58,000	South Stockton..... 11,000
Newcastle..... 150,000	Darlington..... 36,000
Gateshead..... 68,000	Rosedale..... 4,000
Sunderland..... 120,000	Whitby..... 14,000
Durham..... 15,000	Thirsk..... 4,000
Allenhead..... 4,000	Bishop-Auckland..... 10,000
Stanhope..... 4,000	Barnard Castle..... 5,000
Hartlepool..... 17,000	Scarborough..... 30,000
West Hartlepool..... 28,000	
Weardale..... 5,000	Total..... 870,500

The statistics I have already given sufficiently attest the importance of the region indicated. Some of the cities mentioned, and at least three of the rivers, the Tyne, the Wear, and the Tees, are important enough for a special letter, but space forbids more than two letters from this part of England; so, in concluding this general account, I shall attempt a brief description of by no means the least important feature of the region—the ports of the Tyne, the Wear, and the Tees.

Beginning at Newcastle, it has been aptly said that for six miles along the Tyne there is absolutely not a break in the connected links of industry. The finest view of Newcastle can be obtained on the high bridge across the Tyne. Standing on this magnificent structure, on the right is Gateshead, picturesque in stern defiance of the gloom and grime of its waterside buildings, with tall chimneys in the distance rearing their heights out of acres of huddled and rickety tenements, every chimney contributing something to the fog of dark vapor that blows away to the southward. On the left is Newcastle, says one enthusiastic eye-witness of this busy scene, the famous lantern-tower of its cathedral church conspicuous above the roofs with a river-flanking of tall, handsome, modern buildings, spacious offices, gradually softening down near Sandgate into ancient relics of the borough—gable-roofed houses with old fashioned red tiles—the whole overlooking a fine quay, on which from the bridge you may see active groups of merchants, "Change men, clerks, laborers, mixed up with bales of merchandise, railway sleepers, timber, casks of American apples, cases of provisions, cheeses, and grindstones and herds of cattle. Flowing beneath, mud-colored and sometimes with a current that gurgles harshly around the massive piers, is the river, alive with craft of all kinds, screw-steamers, tugs screaming and darting to and fro, or toiling along with a string of barges in their wake, steamers newly launched, tall, gaunt and bare, in spite of their ugly livery of slate and red, colliers as black as the faces of the crew, who lounge around the galleys, and large sailing ships abreast of the huge grain warehouses. Such is the scene on the busiest of these rivers.

"To do the Wear justice, in such a light, in such an atmosphere, on such a day as I saw it," said a gentleman who was there in the same month that I was, "requires the brush of a

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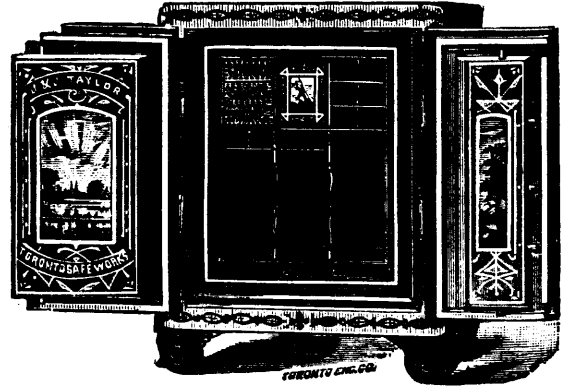
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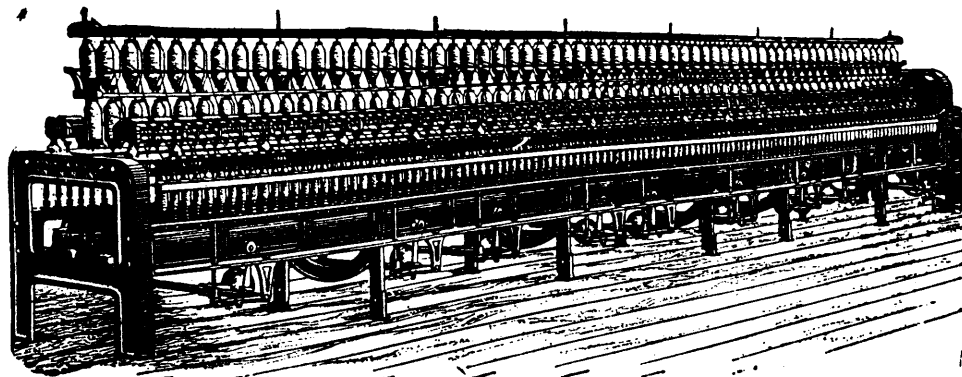
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Turner. Figure a slate-colored river reflecting a long, tremorless beam of light from the red and rayless sun shining luridly through the smoke and fog that overhang the sky in the west; shores on either hand flanked with factories, yards, works with furnaces roaring, gigantic outlines of ships looming upon the stocks, huge vessels newly launched lying abreast of the yards, lines of staiths pouring hundreds of tons of coal into the bottom of steamers and sailing colliers, rows of coalmen at anchor in the stream, tugs towing ships to sea, or with iron shells of steamers in their wake, with always the chimneys of iron works, breweries, bottle works, cement works, saw mills pouring their coils of smoke along and producing the very fittest atmospheric effects in the world in which to survey this striking scene of human industry. Such is the Wear near Sunderland."

Said a citizen of Sunderland: "At the present moment our town is unsurpassed on the north-east coast as a ship-building port. Vessels 400 feet long have already been launched on the Wear, and there is nothing to hinder vessels of the largest size being turned out from many of our yards here. Before long I believe Sunderland will have the distinction of being the largest shipbuilding port in the world as regards both size and number."

In Hartlepool on the north side of the Tees, besides shipbuilding, are many rolling mills, iron works, blast furnaces, saw-mills, cement works, potteries, bottle works, marine-engine works, and creosoting works, some belonging to companies and some to private firms. The salt industry of Bell Brothers and others has a great future, I was told. Thirty-five years ago West Hartlepool had no existence: since then a flourishing town, teeming with population, has arisen upon a barren tract of coast land, and a port has been created "second to none for its docks, situation and accessibility," and with steamers running to Hamburg, Gothenburg, New-York, Boston and London

I will close with a view of Middlesborough and the Tees from the summit of a blast-furnace, a gigantic structure eighty feet high, which seem to abound on all sides. It is graphically described by one who ventured up this giddy height. From such an eminence you look forth upon a panorama or map of scientific wonders. Far below was the broad river coiling steadily seaward; on the right is Middlesborough, scores of tall chimneys rising out of the houses, shipyards on the water's edge crowded with fabrics, a portion of the famous works which I have said produced one-third of the iron ore of this region, darkening and deepening the massive conformation of the district with their rugged, black, massive grouping, every outline of which seemed to be tinged with the scarlet of furiously blown furnaces, steamers alongside the wharves receiving their ponderous freights of pig iron, flames breaking from tower-like structures in the distance, and a horizon of chimneys, always chimneys, intercepted by the spars and yards of ships in the dock. In another direction on this side were the Anderston Foundry Works, and beyond them, on the left, across the water, another portion of Middlesborough, with spires, chimneys, wharves, flour mills, rolling mills in the misty distance, St. Hilda's Church towering above the roofs, and spots of color between furnished by the painted funnels of tugs and cargo-boats. And all this activity and wealth within the area described in our map. Well may Americans marvel at the economic greatness of England. In this letter I have not only endeavored to give a bird's-eye view of the greatest coal and iron region in the world from an economic standpoint, but alike to picture its three great rivers and the centres of industrial energy that its geographical and geological richness has brought into existence—and the greater part within the memory of the present generation.

ROBERT P. PORTER.

Messrs. Johnston & Co., of Brussels-street, St. John, have just issued a book of 72 pages, entitled "Our Roll of Honor," bearing the names of over 6,500 New Brunswick farmers who have patronized the farm implements and machinery turned out by this enterprising firm.

## THE MALLEABLE IRON WORKS OF BURROW, STEWART & MILNE.

A BIG ESTABLISHMENT IN THE HEART OF THE CITY—THE DIFFERENT DEPARTMENTS DESCRIBED—THE WORKMEN EMPLOYED AND OTHER DETAILS.

(From the Evening Tribune.)

In the front rank of Hamilton industries is the Hamilton Malleable Iron Works, owned and operated by Messrs. Burrow, Stewart and Milne, whose enterprise, courage and honorable dealing, crowned by success, has won for them the esteem of their fellow-citizens. The history of this firm would be read with interest and contain a depth of advice to the young men of Hamilton.

In 1864 these three enterprising young tradesmen started business in a small shop on Caroline-street, which was to be the foundation of their present extensive manufactory. In this small shop was made the first malleable iron in Canada. Their business so steadily and rapidly increased that thirteen years ago they were compelled to erect a more commodious building on the corner of Cannon and John-streets. Their trade continued to grow and prosper, and to the manufacture of malleable iron goods was added a foundry for working gray iron into stoves and other castings. Year by year the steady growth of their business caused them to increase their facilities until the establishment approached its present dimensions about a year ago. The firm now employ 180 hands engaged in the manufacture of a full line of malleable iron goods such as saddlery, carriage and house furnishing hardware; gray iron goods, such as stoves, and heavy castings; weigh scales and all the goods appertaining.

A reporter for THE TRIBUNE called at the manufactory Saturday, and was courteously conducted through the various departments by Mr. Charles Stewart, to whom the scribe is indebted for all information concerning the establishment.

### THE GRAY-IRON SHOP.

In this department are engaged forty workmen in moulding stove-plates, and other castings, and is now running at full blast. An extensive line of stoves and special castings are made here. Small castings, the labor connected with the making of which is called "bench work," are also moulded in this department. The moulding shop is one of the best appointed in the city, and special attention is given to the comfort of the workmen.

Not many people know the difference between malleable and gray iron. The pig iron from which the malleable is made is smelted with charcoal instead of ordinary coal, which is used in smelting gray iron. After casting the malleable iron is of the consistency of steel, being as hard and brittle as that metal. In the malleable moulding shop the iron is moulded into saddlery and other small hardware, which, previous to the discovery of the process of annealing, had to be forged from wrought iron. The castings are cleaned in the milling room, and then packed in iron boxes with layers of carbon. The boxes are then placed in the annealing ovens, which are afterwards sealed so as not to admit the air. The temperature of the ovens is raised to a white heat, and the castings are baked therein for a week. When taken out the once steely castings are so soft and pliable that they can be forged, cold, into any desired shape without any possibility of their breaking. Three annealing ovens, with a capacity averaging five tons of castings per week, are used in the annealing department.

### MACHINE SHOP.

A large number of workmen in this department are engaged in finishing the work begun in the lower rooms. The line of goods which passes through the modern machinery operated by skilled workmen in this room is so extensive that it would be impossible to go into detail.

At the Paris exposition in 1878 Messrs. Burrow, Stewart & Milne received a bronze medal for their Imperial standard

Scales, Every variety of weigh scales, from the letter balance to the five-ton railroad and hay scales is manufactured at this establishment. In the scale shop proper the rough castings are fitted, the balances adjusted, the weights turned, and the principal part of the work done. Adjusting a scale is a very delicate operation and but little machinery is used, the work being chiefly done by hand. A first-class scale maker is "a man you don't meet every day," and he is generally in a position to command a handsome remuneration for his labor. In this shop none but "the finest" are employed, ample evidence of which is given by the quality of work turned out. One hundred and fifty scales are constructed on an average each week.

On the same flat with the machine and scale shops, namely the third storey, is the woodwork department. This department is furnished with the latest appliances. The wooden patterns used in the foundry are made in this shop, as well as all the woodwork required in finishing the goods manufactured in other departments, such as rake and curry-comb handles, scale uprights, etc.

#### MINOR DEPARTMENTS.

The nickel-plating department occupies a part of the upper flat and gives employment to a number of skilled workmen. Stove ornaments, fine hardware, and other castings also receive the finishing touches in this department.

Another department on this flat is devoted to the tinning process. Parts of the saddlery hardware, such as buckles, bits, etc., are plated with tin to prevent rusting and to improve their appearance. The tinning is done by a half-chemical, half-mechanical process. The visitor to the department cannot make himself so much at home as in other departments for the fumes of the muriatic acid are so strong that they enter his very soul, so to speak, and are liable to bring on a fit of sneezing. But the workmen have grown accustomed to the atmosphere, and it seems to be more agreeable to them than otherwise. Another department is devoted to japanning. The castings, after receiving a heavy coat of japan by either the brush or, as in the case of rough castings, by dipping, are placed in the kiln. The work of ornamenting japanned work is also carried on in this department.

#### STOVE MOUNTING.

The work of fitting the stove-plates together is called stove-mounting, which is a distinct trade, and one that has a large number of followers in this city. Stove-fitting involves skillful workmanship, but the trade is more easily learned than that of a moulder and consequently does not command so large a compensation. There is a chronic difference of opinion between the employers and employed as to what is a reasonable rate of wages for stove-mounters, and the recent strike did not settle the dispute. To the mind of a stove-fitter his trade is of great importance. The mounting room of Burrow, Stewart & Milne's establishment is commodious, well lighted and aired, and a large number of workmen are employed therein in the busy season, which is the fall of the year. The castings are made to fit by applying the edges to emery wheels, a number of which are arranged along the benches. The work of fitting a box stove, for instance, is comparatively easy, but to erect a modern self-feeder out of the heap of large and small castings, and make every joint fit as though it was made in one solid piece, is rather a delicate operation, and one that the uninitiated can be interested in witnessing. The mounting room is situated on the second storey of the Canon-street wing, and when the stoves are mounted they are loaded upon a car and conveyed by means of an elevated railroad to the store-room at the opposite side of the yard. The stove store-room is situated in the second story of a large three-story brick building, the other apartments of which are used for the storing of other products of the manufactory. Here the stoves are blacklead and prepared by the packers for shipment. The storehouse is of easy access from Hughson-street, and it is the intention of the firm to extend to that thoroughfare.

The engine bears the same relationship to a manufactory as the heart does to the human system. Its power is felt throughout every department, and when its fly-wheel ceases to revolve a wonderful stillness follows. A powerful and healthy frame must needs have a healthy heart; so also a manufactory like the one described must have a powerful engine to turn the shafting and pulleys, which in turn moves lathes, punches, fans, stones, etc. The engine in use here is a 100-horse power, automatic cut-off, manufactured by J. H. Killey & Co., whose works adjoin, and was placed in position last year. Everything about the engine is cleanliness and neatness itself. Notwithstanding the clatter the motion of the engine causes in the factory, the noise is perfectly subdued in the engine-room. The high fly-wheel revolve as silently as if they were vapor instead of iron, and nothing disturbs the stillness but the dull and regular beat of the piston. The pride an engineer takes in keeping everything "just so" about his engine is proverbial, and the appearance of this engine room denotes that the genius who presides there is careful of his charge. The work in the several departments of this industry is carried on under the direct supervision of the partners, and notwithstanding the miscellaneous products turned out, an air of regularity pervades the whole, which makes one's visit all the more agreeable.

#### THE WANZER FACTORY AT HAMILTON.

Twenty years ago it occurred to Mr. R. M. Wanzer, a gentleman then engaged in the sewing machine business in Buffalo, N. Y., to remove his business to Canada. Accordingly he transferred his enterprise to this city and quickly obtained a high class reputation in the country for the superiority of his machines. Gradually he extended operations, cultivating an export as well as home trade. At length his machines earned a European name, being largely sold in England, Ireland, Germany and many other countries. He has now valuable connections in almost all countries having any pretensions to civilization. Circular instructions are printed in upwards of thirty different languages, showing strikingly among how many nations his machines are used. For years it was Mr. Wanzer's desire to have an opportunity for manufacturing and selling in the States. At length this came, and in November, 1877, he entered upon suitable premises on Broadway, Buffalo, N. Y., to pursue the industry. The firm is known under the title of "R. M. Wanzer & Co." In catering for American business the firm determined to put into operation the simplest, most economical, and at the same time effective plans for placing their machines before the public; this with the view of selling at the lowest possible prices. The writer has thoroughly examined their business modes and is convinced that nothing more in the public interest could be conceived. Instead of, as sewing machine manufacturers usually do in the cities and towns of the country, engaging a store solely for the sale of their machines at a considerable rent and placing a manager in it at a high salary, and employing agents under him at a heavy commission, the Wanzer Company come to an understanding with a leading dry goods house to act as their agent. A suitable space is railed off in the store for the display of machines and their examination by buyers. The only special help the agent need employ is an expert in sewing machines. The success in business, like that of other Hamilton manufacturers, has been great. Their immense premises on the corner of King and Catharine streets, is a regular hive of industry. One hundred Wanzer machines are turned out daily; between four and five hundred hands are kept constantly employed, and the end is not yet. The company are now erecting, on the corner of Barton and Elgin streets, another immense factory, 232 feet long, 60 feet wide, and two storeys high. This factory, which will give employment to a large number of men, will be devoted exclusively to the manufacture of sewing machine cases, which, of itself, is an immense

industry. The engine house in connection with the new factory will contain four boilers and a compound engine of 150 horse power. The smoke stack will be 100 feet high. Faults are found with all machines, especially by rival agents, but as a whole a sewing machine seems to be a necessity in every house, although a sewing machine agent could well be done without. From the source of information at hand, we think the Wanzer sewing machine equal to those produced by other houses.

One fact which shows the superiority of the Wanzer machines is that their sales stand third in number of machines manufactured by companies throughout the world, and their progress since establishing here has been remarkable. A walk through their factory is an hour well spent. There seems to be a place for everybody, and everybody seems to be in his place. In the office their telephone is continually bringing in orders for machines; a shorthand writer is kept busy replying to letters, and it looks as though every person outside the factory wanted a machine. Unfortunately, when sewing machines were first discovered a few unscrupulous manufacturers endeavored to keep up the price. This, however, by fair and honorable competition, has been done away with, and machines can now be had low. It is wonderful to stand at the door of their shipping office and see the different addresses on their machines. One lot is labelled South Africa, another New Zealand, and still another China. People may think that in these distant countries sewing machines are unknown, but one day with Wanzer & Company's shipper will convince the most sceptical that sewing machines, like missionaries, can be found with the Mongolian, the Kaffir, and the New Zealander.—*Hamilton Tribune*

### HOW TACKS ARE MADE.

INGENIOUSLY CONTRIVED MACHINES THAT BITE OFF THOUSANDS  
A MINUTE.

(From the *Mechanical Engineer*.)

The iron is received from the rolling mills in sheets from three inches to twelve inches wide, and from three feet to nine feet in length, the thickness varying according to the kind of work into which it is to be made, from one-eighth to one thirty-second of an inch. These sheets are all cut into about thirty inch pieces, and by immersion in acid cleaned of the hard outside flinty scale. They are then chopped into strips of a width corresponding to the length of the tack or nail required. Supposing the tack to be cut is an eight ounce carpet tack, the strip of iron, as chopped and ready for the machine, would be about eleven-sixteenths of an inch wide, and thirty inches long. This sheet is placed firmly in the feeding apparatus, and by this arrangement carried between the knives of the machine.

At each revolution of the balance wheel the knives cut off a small piece from the end of this plate. The piece cut off is pointed at one end, and square for forming the head at the other. It is then carried between two dies by the action of the knives, and these dies, coming together, form the head, and while held firmly by them, a lever strikes this projecting piece into a round head. This, as we have said before, is all done during one revolution of the wheel, and the knives, as soon as the tack drops from the machine, are ready to cut off another piece.

These machines are run at the rate of about 250 revolutions a minute. The shoe nail machines, for cutting headless shoe nails, are at about 500 revolutions per minute, and cut from 3 to 5 nails at each revolution.

The Oshawa Malleable Iron Company are erecting a large addition to their already extensive works.

The addition to the Oshawa Stove Foundry is now complete, making the capacity of the works about half as large again.

H. Mackenzie & Sons, Petrolia, Ont., have completed the brick work of their new foundry, and will be ready for business about the 1st of July.

As an evidence of the increase still going on in home industries, the machine factory of Miller Bros. & Mitchell of Montreal, is going to be greatly enlarged.

The "Canadian Silver-Plating Company" is the name of a new industry just started in Sherbrooke, P. Q., whose title sufficiently indicates their line of business.

The Joseph Hall Works of Oshawa shipped yesterday a galvanized engine to Serpent River, for a saw mill there. It was one of the finest pieces of work ever turned out of the works.

Forty men are employed in the erection of the Harte stove works at Belleville. The brick work of the foundry building has been finished, the second story of the main building and the third story will be up by the time this reaches our readers, if the weather permits.

The steam engine for the boot and shoe factory of the Messrs. Hanson Bros. of St. Stephen, N. B., arrived last week and is now set up ready for work. Just as soon as the shafting is all in place operations will begin, and then the firm expect to be able to boot every man, woman and child in New Brunswick.

Mr. Geo. Waring has 32 bands employed in his foundry at Indiantown, N. B., and has on hand at present a large amount of work for the different mills. Mr. Waring is building two inclined engines for a tugboat now being built at Quebec for Mr. J. D. Sewerby, to be run on the Restigouche river. The foundry is so busy at present that the men are working day and a quarter time

In pursuance of a notice issued by the mayor of Windsor, a meeting of the ratepayers was held in the town hall on Friday night of last week to consider the question of supporting the two by-laws now before the people to be voted on Monday the 11th inst., granting a bonus of \$10,000 to Messrs. Seegmiller & Co., now of Goderich, on condition that they establish in this town their works for the manufacturing of their very excellent ploughs and other farming implements; and also a loan of \$6,000 to Mr. F. B. Scofield for five years.

We understand that arrangements are almost completed for the formation of a Joint Stock Co., for the manufacture of plows in Ayr on a large scale, in connection with one of the largest makers of plows in the United States. This new enterprise will be more especially for the Manitoba and North-West trade. The increased duty placed on this class of goods makes it absolutely necessary that they should be manufactured in Canada, as American goods are virtually excluded, and the demand must be met. When we consider the fact that about a quarter of a million dollars worth of plows were sent into Manitoba last season, by the American makers, and that they are now excluded, this enterprise is surely a grand opening for capitalists.—*Recorder*.

Probably the largest conveyance of real estate ever made in the Dominion to a private individual was made in Quebec on Thursday, June 7, the vendors being the executors of the estate of the late G. B. Hall, of Quebec, the well-known timber limit and saw-mill owner. The purchaser was L. A. Senecal, and the property transferred comprising among other features, the famous saw-mills at Montmorenci Falls, the Radnor forges, near Three Rivers, and over 2,662 square miles of timber limits in this Province alone, besides various other lands in the Eastern Townships and elsewhere. The deed, which covered 260 pages, was signed on his own behalf by Mr. Senecal, who paid down \$250,000 cash on account of the purchase price of \$1,600,000. Hon. Geo. Irvine, who leaves shortly for Europe on professional business, acted as legal adviser of the Hall estate.

## Lumber.

### NORTH-WEST TIMBER.

The timber supplies of the Canadian North-west are beginning to attract the attention of American lumber manufacturers, and it is not at all unlikely that considerable capital from the south side of the boundary line will be employed within a few years in developing the resources of this country. Americans have opened their eyes to the fact that with railway and water communication between the North-west and the Ontario lumber districts, they must soon lose the extensive market they have hitherto had in Manitoba. Had they only the reduced freights, and quicker transportation furnished by the opening of the Thunder Bay route to compete with there would be little fear but they would still manage to maintain a footing in this market. But when a tariff is taken into consideration the case is entirely altered, and the supplying of Manitoba and the North-west will soon be beyond even the elastic power of the American manufacturers' price doctoring. It would be altogether out of the limit of American trade ingenuity to suppose that these manufacturers would quietly yield up their privileges in such a valuable and increasing trade field, without exhausting every plan for continuing competition. Logs are admitted duty free in the Dominion, but to float them down the Red River into Canadian territory, and for Canadian mills to saw, savors too much of dealing in raw material to suit the ideas of the enterprising class who are connected with the lumber industry in the North-western States. As a natural consequence American lumbermen are casting their eyes towards the timber fields of the North-west, with a share of which as resources in raw material they can take their place among the manufacturers of this country.

It is a fact that the timber of this country, or at least that portion of it fit for lumber manufacture, has as yet been very little drawn upon. Hitherto lumbering has been little more than a system of culling from the best districts within easy reach of Winnipeg. The lower portions of Lake Winnipeg were until very lately the only locality where operations were carried on to any extent, and these have only recently been supplemented by cutting in the Lake of the Woods country. As yet the vast timber fields on the upper Lake Winnipeg, where the finest spruce limits in the North-west are known to exist, are almost untouched, although the establishing of a more extensive system of navigation on that lake is all that is necessary to bring these timber lands within easy reach of the Manitoba lumber market. It can scarcely be expected, with the present system of rapid development, and ever increasing demand for lumber which is now going on in the North-west, these timber resources will long remain untouched, and it is just possible that American capital and American enterprise will soon assist much in their development.

A few days ago Mr. Platt B. Walker, editor and publisher of the Mississippi Valley *Lumberman*, was in Winnipeg accompanied by his brother, of the well-known Minneapolis lumber firm of Camp & Walker, with a view of enquiring in the timber resources of this country. This visit was only a preliminary one we understand, and as soon as lake navigation opens he intends to return and arrange for a system of lumber prospecting on a large scale. No man is better able to form a correct idea of the lumber resources of a country, and before the close of the present season he will no doubt be in a position to furnish reliable information regarding those of the North-west. Numbers of Americans besides Mr Walker have contemplated such an undertaking, and it is not at all unlikely that during the summer months quite a few lumber-exploring parties from the United States will be at work on Lake Winnipeg and other timber districts. Should these explorations result in the discovery of valuable lumber fields, they will soon be brought under the influence of the lumberman's axe, and prove a

source of great profit to those who aid in their development. It would be rather a takedown to Canadian capitalists looking for North-western investments, if these enterprising Americans should open up fields that would give rich returns, and greatly extend a valuable industry in the country, while they—the Canadians—were bothering with paper town sites, worthless charters for imaginary railways, and such like; and there is a strong probability that such will be the case. Practical manufacturing enterprise cannot but produce satisfactory results, especially when prosecuted in such a promising field as the timber resources of the Canadian North-west.—*Winnipeg Commercial*.

Considerable timber has been stuck in the upper Ottawa tributaries, and it is now thought that not more than 75 per cent. of the whole cut will be marketed.

In a few days some new machinery will arrive for the Wilbur Iron Mine. It will include a hoister and other modern apparatus. This mine will be largely worked this summer.—*Kingston "News."*

Stalker & Co., wholesale dry goods, Toronto, have effected a settlement with creditors at 40 cents on the dollar, secured by John Brimer, who has been buyer for the house for some years. The liabilities amount to \$42,000, and assets \$35,000. The arrangement leaves Stalker a margin of about \$9000.

E. T. Riordan was for several years buyer for MacNab & Marsh. When that firm failed he commenced as a hardware broker, and through a long connection with the trade he has worked up a fair credit. He disappeared about a week ago, and several notes are reported past due. The property formerly claimed as his is now in the hands of a relative.

Chisholm, Jones & Co., manufacturers of Barb Wire, Winnipeg, have failed with liabilities of \$57,000—assets nominally about \$40,000, but their bankers and some other creditors hold preferences, and the estate will pay but little to the unsecured. Jones became a partner about a year ago, adding about \$3,000 to the capital. He was formerly in the employ of the Merchants Bank.

We hear from Ottawa that in one day Thomas Hall, with 80 hands, 75 Indians and 5 whites, put over the Chats slides and rapids a raft containing 170 cribs of white pine, and other cribs amounting in all to 206 cribs, which were rafted and got off the same night. This is probably the biggest day's work of the kind on record.

It is said that at a meeting of the directors of the Quebec woolen factory, held recently, a proposition was made by a wealthy gentleman of Bradford, England, and submitted to the meeting, to lease the factory for a space of five years, the party furnishing ample security. The matter is left in abeyance until next week. Holders of stock are in favor of the new arrangement.

Rapid progress is being made in the construction of the Marysville, N. B., Cotton Factory. A large number of men are excavating and preparing for the foundation of the buildings, erecting the machine shop, &c. The different materials and machinery necessary for the work are expected to arrive soon. The engine for brick making will arrive probably by next week; the cement arrived this week, and in a short time the stone cutters and masons will make things lively round Marysville.—*Ex.*

The *American Lumberman* of New Orleans says:—"Squatter sovereignty" is a persistent enemy to our magnificent pine forests, and its rule is everywhere found in the shape of thousands of trees girdled and left to decay around thritless and abandoned homes, hundreds of which are found throughout the pine lands of the South. The vandals generally remain long enough to destroy what they can of what is valuable, and then move to some other section to repeat their work of devastation, an evil as far reaching and as pernicious in its effects as the forest fire. Both are evils which should as far as possible be cured by prompt and proper legislation.

**NICKEL PLATING FACTORY AT THOROLD.**

At a recent special meeting of the Thorold Town Council, Mr. Ira B. Smith stated that he represented a company who were wishing to establish a factory in town for the manufacture of plated goods, and he exhibited samples of the goods they would produce, which were nickel and silver plated spoons, forks, etc. There was nothing of the kind manufactured in Canada, and there was a splendid opening for such a factory. From thirty to forty men would be employed at first, and before long he hoped to increase them to one hundred. In answer to various questions put by the councillors, Mr. Smith further stated that the company wished the Council to grant them an exemption from taxes for five years, and a bonus of \$2000 payable in yearly instalments of \$400. The average wages paid would be \$2.00 per day. The site the company fixed upon was at Mr. McDonagh's mill. As soon as arrangements were made the factory would start, and the company intended to stay in town as they were well pleased with it. After hearing Mr. Smith, the following resolution was carried unanimously: — "Whereas this Council, having heard Mr. Smith, Superintendent of the Nickel Plating Co., in reference to the establishing of a manufactory for the manufacturing of nickel plated goods in our town, and whereas Mr. Smith agrees to employ from thirty to forty skilled mechanics to begin operations with, at an average daily pay of \$2.00 (the number of employees to increase), and whereas the said company agree to carry on the business for at least five years, it is moved by W. McCleasy, seconded by A. Fraser, that this Council pledge itself to pass a by-law exempting the machinery and stock of the said company that may be used in the said business for the period of five years, and also for the submitting of a by-law to the ratepayers for the granting of a bonus of \$2,000 payable in yearly instalments of \$400." Mr. Smith expressed himself as well pleased with the reception he had received at the hands of the Council, and his company would, as soon as they could make arrangements, go right to work.

The Montreal and Melbourne Slate Company is the name of a new corporation organized in Montreal, last week. The meeting was held at the office of Messrs. MacLaren, Leet and Smith. Mr. Benjamin Walton was elected President and Mr. G. Varey, Secretary. The capital will be \$100,000 in \$100 shares. The Melbourne slate quarry has been purchased, and the company will do business at their office, 213 Bleury-street, for the present.



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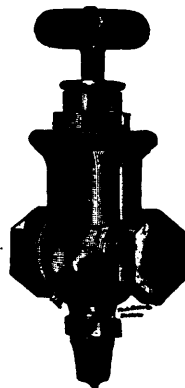
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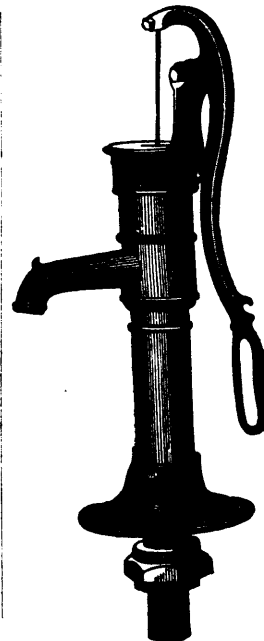


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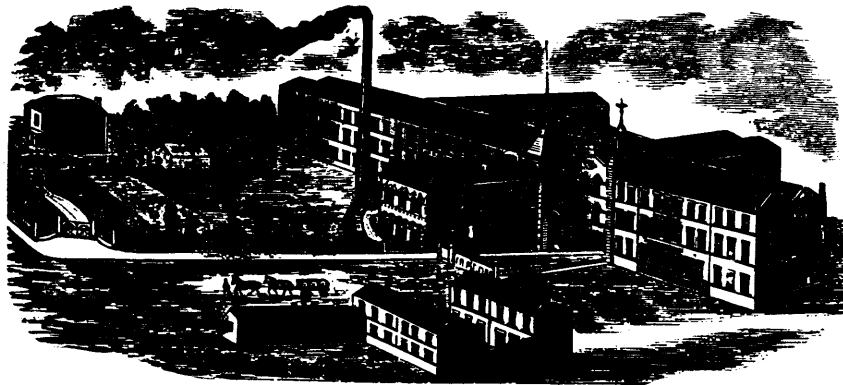


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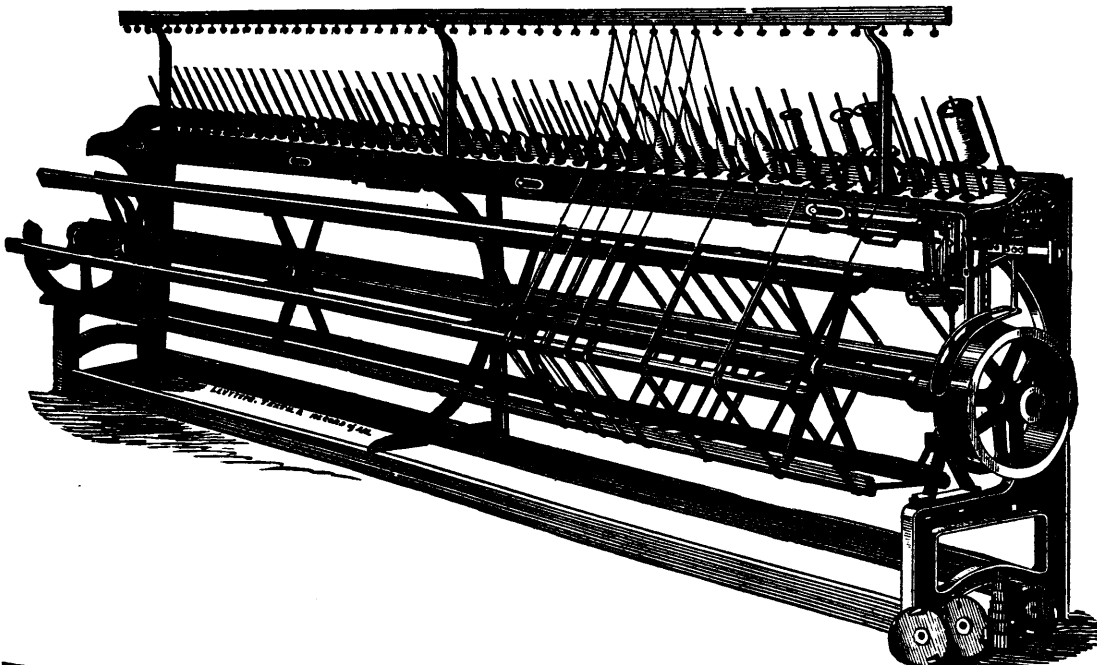
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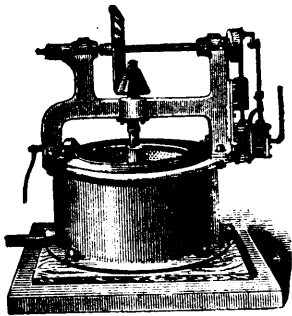
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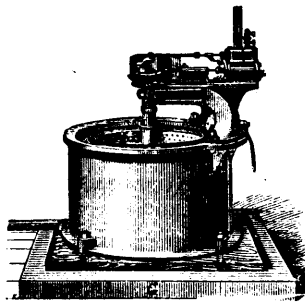
# IMPROVED CENTRIFUGAL HYDRO-EXTRACTORS

MACHINE **A**



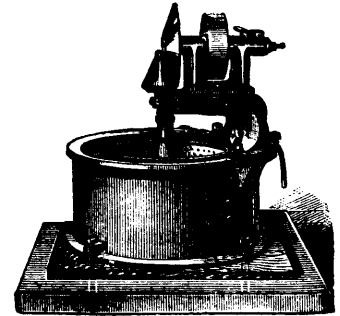
For Silk Dyers, with vertical engine on the side and cone pulley friction.

MACHINE **B**



For Wool and Cotton Dyers, with direct acting steam engine.

MACHINE **C**



Runs by Belt and Friction Cones, Suitable for water-power.

THREE SIZES OF EACH KIND BUILT BY

**W. P. UHLINGER, Nos. 38 to 48 East Canal-st., PHILADELPHIA, Pa.**

East of Front-st., between Laurel and Richmond-sts.

✉ SEND FOR CIRCULAR AND REFERENCES. ✉

## MORRISON BROS.,

“Soho Machine Works,”

**TORONTO.**

Esplanade, near Union Station,

DEALERS IN

**Iron and Wood Tools,**

**Mill Machinery,**

**Foundry Supplies,**

**Planing Mill Supplies,**

**&c., &c., &c.**

MANUFACTURERS OF

**Iron Tools,**

**Wood Working**

**Machinery,**

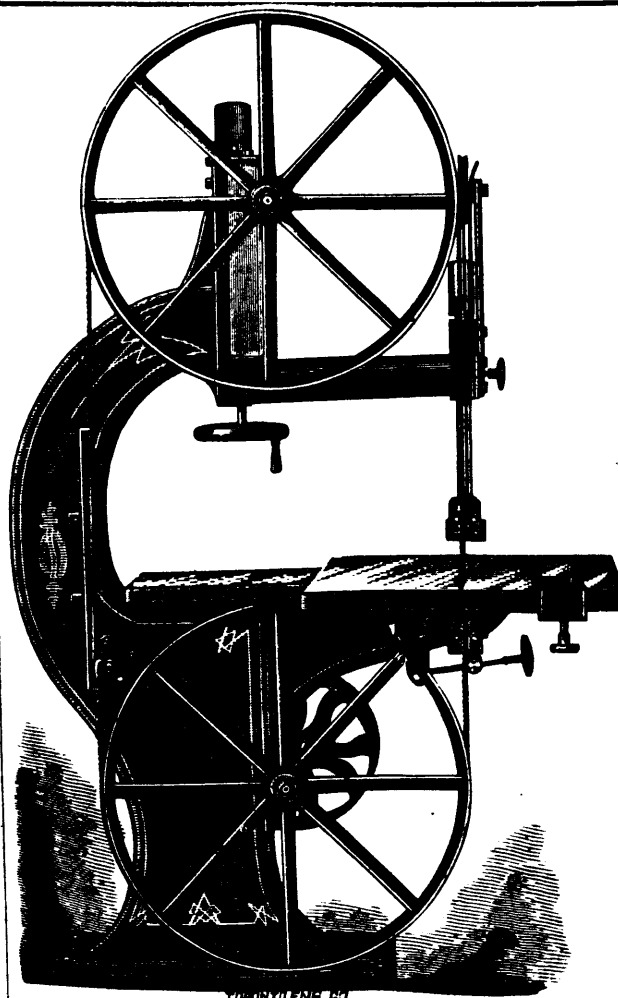
**Saw Mill Machinery,**

**Mill Work, &**

**Architectural Iron Work.**

SEND FOR LISTS.

Mention this Advertisement when writing.



## Machinery in Stock.

16 Iron Lathes, various sizes.  
new and second hand.

5 Iron Planers, do.

10 Iron Drills, do.

1 Iron Shears.

1 Hydraulic Shears.

2 Milling Machines.

1 Gear Cutter.

2 Band Saws.

8 Scroll Saws.

5 Shapers.

4 Planers and Matchers.

4 Surface Planers.

1 Dimension Planer.

2 Daniel's Planers.

2 Buzz Planers.

7 Moulding Machines.

3 Tenoning Machines.

8 Mortising Machines.

10 Saw Tables.

4 Wood Lathes.

4 Dowel Machines.

2 Sand Papering Machines.

Etc., Etc., Etc.

**SEND FOR LIST.**

Give particulars and price of any Machinery you have for sale.

## PROSPECTUS.

**Canada Rolling Stock Comp'y.**

**Head Office:—Western Union Telegraph Building, corner Market Square and King Street, Saint John, New Brunswick, Canada.**

The CANADA ROLLING STOCK COMPANY, capital \$80,000, in shares of one hundred dollars each, with power from time to time to increase to any amount not exceeding six hundred thousand dollars. The works of the Company to be located in Sydney Ward, in the City of Saint John, adjoining the deep water terminus of the Intercolonial Railway.

The object of the CANADA ROLLING STOCK COMPANY is to carry on the manufacture of all kinds of passenger and freight cars, locomotives, manufactured articles of wood, iron and brass, and such other general business as may be incident to such a manufacturing company.

The field for the operations of such a company is a very wide one. There are now nearly ten thousand miles of Railways in Canada, and the mileage is increasing at the rate of more than one thousand miles a year. The works now established in Canada for the manufacture of Rolling Stock have never been able to supply the demands of the railways, and the result has been that both the Government roads and private companies have been obliged to import rolling stock. It is for the purpose of endeavouring to supply this large and increasing demand for rolling stock that the present Company has been organized.

There is no city in Canada better situated for such a manufacturing company than Saint John, and there is no locality in Saint John with greater advantages than the site which has been secured for the *Works* of the CANADA ROLLING STOCK COMPANY. The site has a frontage of 440 feet, on Sydney and Charlotte Streets and a depth of 380 feet adjoining the Intercolonial Railway, and 400 feet adjoining the property of the Estate of the late John Fisher, Esq. The grounds have an area of about four acres.

It adjoins the deep water terminus of the Intercolonial Railway and is connected with the wharf and railway by a convenient siding. In addition to this it possesses independent wharfage facilities, vessels being able to load and unload along the whole of the Charlotte street front of say 440 feet, in front of the *Works* and only the width of the street from the Company's Warehouse. Thus, the most admirable facilities are afforded for the reception and discharge of heavy goods, such as the Company requires to handle.

No item is of more importance in such an establishment than cheap fuel, and this the Company will have. Coal can be brought from the Spring Hill and Joggins Mines, either by rail or water at a very cheap rate. Slack coal, such as the Company will use, can be purchased at the Spring Hill Mines for from 60 cents to 75 cents a ton of 2000 lbs., and brought by rail for about \$1.03 a ton, making the total cost landed at the Works from \$1.63 to \$1.78 per ton.

Slack coal can be obtained at the Joggins Mines at 80 cents a ton, and the freight by water to Saint John is from 75 cents to 85 cents, making the total cost from \$1.55 to \$1.65 for a ton of 2000 lbs. at the Company's Works. It is unnecessary to enlarge on the advantages which these rates will give the Company over all other works of the kind in Canada.

The same statement is true with regard to the freight, either by water or by railway on all kinds of material, wood, iron and brass entering into the construction of Rolling Stock. Pitch Pine and Southern Oak can be landed, in specification sizes, at as low a price as Canada Oak, and all the advantages of the economical use of these superior materials obtained.

The machinery will be of the most modern character so as to facilitate and cheapen the work of construction, and the location, now under consideration, of the several buildings, viz: Foundry, Machine Shop, Planing Mill, Building, Shops and Offices will be so arranged as to aid the operations and reduce the expenses to a minimum; these advantages together with the abundant supply of skilled labor ever to be had in the City of Saint John, for reasonably moderate remuneration, warrant the assurance that the profits realized are certain to be large.

The organization expenses are fixed at eight and one half per cent. Stock will be sold in blocks of not less than ten shares.

The Company will be managed by a board of either five or seven Directors, viz:—President, Vice-President, Managing Director and Treasurer, and either two or four other Directors, as shall be decided by the Stockholders. Three of these Directors shall form a quorum.

There will be a General Superintendent and Manager of Works appointed by the Directors, who shall not be a member of the Board. E. T. C. Knowles, Esq., Barrister-at-Law, Solicitor, and G. Earnest Fairweather, Esq., Architect, both of the City of Saint John.

The first call of twenty-five per cent. is made payable on or before the first day of June, A.D. 1883, and subsequent calls of twenty-five per cent. will be made at periods of not less than three months each. Subscribers outside of the city may deposit to the credit of the CANADA ROLLING STOCK COMPANY in an incorporated Bank of the Dominion, which will be sufficient evidence of payment, and upon advice of such deposits, respectively, stock certificates will be in due course recorded, issued and delivered; provided always that stockholders, respectively making payment on account for subscribed stock, either in whole or in part, in anticipation of the time of call, shall be allowed interest at the rate of six per cent. per annum for such anticipated time.

In order to secure the location of the "Works" in the City of Saint John, a lease to the CANADA ROLLING STOCK COMPANY has been secured for 21 years from the 1st May, 1883, with the usual conditions, at the moderate rental of \$100 a year for the first three years and \$400 a year for subsequent years.

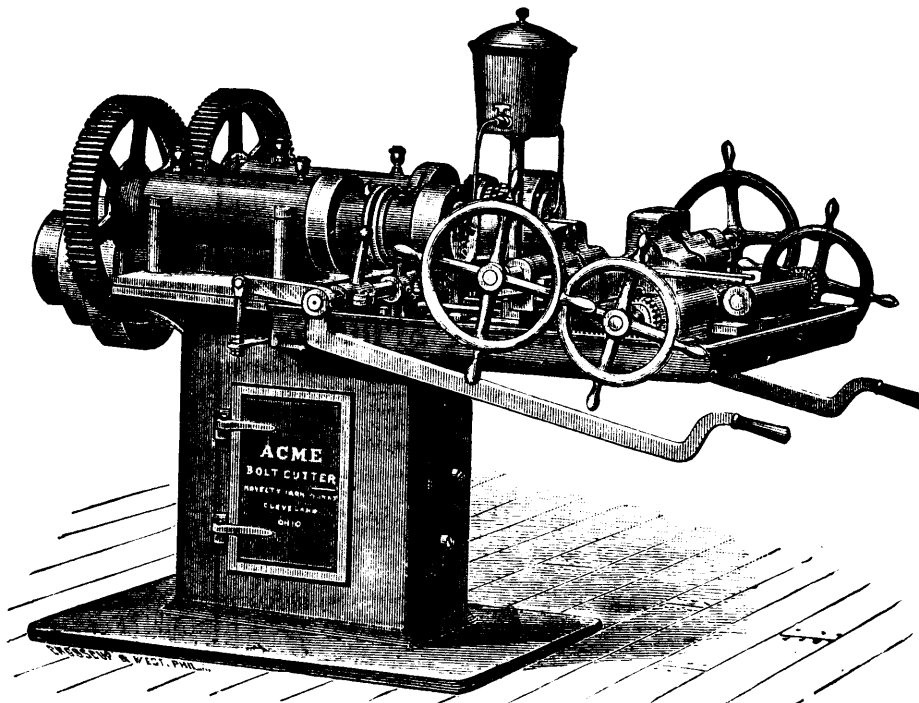
On behalf of the Company,

**ROBERT MARSHALL.**

Address, ROBERT MARSHALL, St. John, N.B., Canada.

# BOLT CUTTERS.

ACME NUT TAPPERS.



ACME BOLT CUTTER HEADS.

## "THE ACME" SINGLE & DOUBLE BOLT CUTTERS,

From  $\frac{3}{8}$  inch to  $1\frac{1}{2}$  inch.

Agents in Canada, The Machinery Supply Association, Machinery Dealers,  
CORNER OF CRAIG AND BLEURY STREETS, MONTREAL.

NEW BRUNSWICK  
**COTTON MILLS,**  
SAINT JOHN, N.B.

**WM. PARKS & SON,**  
*Cotton Spinners, Bleachers and Dyers,*

Have been awarded "PRIZE MEDALS" for 1882—

At the **TORONTO INDUSTRIAL EXHIBITION**—  
Four Silver Medals and Three Bronze.

At the **MONTREAL EXHIBITION**—  
Silver Medal for "Best Exhibit."

At the **KINGSTON PROVINCIAL EXHIBITION**—  
Silver Medal for Best Exhibit, and First Prize,

For their celebrated **Beam Warps, Cotton Yarns, Carpet Warps, Ball Knitting Cotton, Manufacturers' Knitting Cottons and Apron Checks.**

The smoothness and even finish of the goods, and brilliancy of colour, resulting from the use of the "St. John" Waters cannot be excelled.

AGENTS:

**Wm. Hewett,**  
11 Colborne Street,  
TORONTO.

**Alex. Spence,**  
Lemoine Street,  
MONTREAL.

**HAMILTON  
COTTON COMPANY**

MANUFACTURERS OF

COTTONADES, DENIMS,  
TICKINGS,

BEAM WARPS of every variety.

HOSIERY YARNS of every description.

BALL KNITTING YARNS,  
BUNDLE YARNS,

and  
CARPET WARP

First Prize, Silver Medals, for Beam Warps and Denims  
Toronto, 1881.

Agents in Montreal,—

**F. McELDERY & CO.,**

Agents for Beam Warps,—

**WINANS & CO., TORONTO.**

—): TO (—  
**USERS OF GLUE.**

We are manufacturing a reliable GLUE, and can supply a limited number of consumers only. We guarantee our Glues to be made from selected stock, and to be of the same uniform quality. Glues not as represented, or not proving satisfactory, returnable at our expense.

**JAMES HAY & CO.**  
WOODSTOCK, ONT.

ONTARIO  
**Electrotype Foundry**

The Only Complete Foundry in Canada.  
ESTABLISHED 1870.  
Merchants and Manufacturers wishing Business Cuts will find it to their advantage to give us a trial.  
**SMITH & VAUGHAN,**  
26 & 28 COLBORNE STREET, TORONTO

**BOBBINS & SPOOLS.**

We Manufacture  
**Ridged Filling, Warp & Cone Bobbins, Jack Spools, Warp Spools, Rabbit and Sawyer Quills, Ring Frame Bobbins, Slubbing & Roving Tubes, Skewers, Twister & Shuttle Bobbins.**  
All kinds used in Cotton, Woollen, Knitting, Carpet, and Worsted Mills.  
Low Prices. Send for Samples. Satisfaction Guaranteed.  
**HARCOURT & CO., Walkerton, Ont.**

**D. MORRICE & Co.,**  
CANADIAN MANUFACTURERS,  
**MONTREAL & TORONTO.**

**HOCHELAGA**  
Brown Cottons,  
Canton Flannels,  
Yarns and Bags.  
**VALLEYFIELD**  
Bleached Shirtings,  
Wigans and Shoe Drills.  
**STORMONT**  
Colored Cotton Yarns,  
Ducks, Tickings, Checks, &c.  
Knitted Goods, Tweeds Flannels, &c., &c.  
*The Wholesale Trade only Supplied.*

**WINDSOR**  
**Boiler Works and Dock.**

**JOHN MCGREGOR & SONS, Prop'ors.**  
Manufacturers of all kinds of **Stationary, Marine, and Locomotive BOILERS.**  
*Sheet Iron Work and all kinds of Repairs promptly attended to.*  
**WINDSOR - - - - ONT.**

**C. W. BROWN,**

Manufacturer of all kinds of  
**Machine Screws!**  
Metal Punching done to Order.  
**530 CRAIG STREET,**  
**MONTREAL.**

**The Canadian Bank of Commerce.**

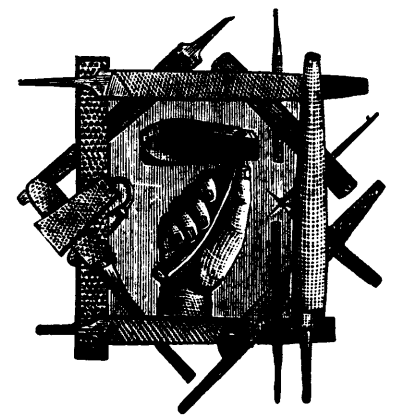
HEAD OFFICE, - - TORONTO  
Paid up Capital, - - - - \$6,000,000.  
Rest, - - - - 1,650,000.  
**DIRECTORS.**  
HON. WM. McMASTER, *President.*  
WM. ELLIOTT, Esq., *Vice-President.*  
Noah Barnhart, Esq., James Michie, Esq.  
Hon. Adam Hope, T. Sutherland Taylor, Esq.  
George Taylor, Esq., Jno. J. Arnton, Esq.  
W. N. ANDERSON, General Manager.  
J. C. KEMP, Ass't General Manager.  
ROBT. GILL, Inspector.  
H. A. NICHOLSON, Assist. Inspector.  
*New York—J. H. Goadby and B. E. Walker, Ag'ts*  
*Chicago—A. L. DEWAR, Agent.*  
**BRANCHES.**  
Ayr, Guelph, St. Catharines,  
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Belleville, London, Seaforth,  
Berlin, Lucan, Simcoe,  
Brantford, Montreal, Stratford,  
Chatham, Norwich, Strathroy,  
Collingwood, Orangeville, Thorold,  
Dundas, Ottawa, Toronto,  
Dunville, Paris, Walkerton,  
Durham, Peterboro, Windsor,  
Galt, Port Hope, Woodstock,  
Goderich.  
Commercial credits issued for use in Europe, the East and West Indies, China, Japan, and South America.  
Sterling and American Exchange Bought and sold.  
Collections made on the most favorable terms.  
Interest allowed on deposits.  
**BANKERS.**  
New York—The American Exchange National Bank.  
London, England—The Bank of Scotland.

**BOOTH & SON,**  
**Coppersmiths and Metal Spinners.**

**TORONTO - - - - ONT.**  
Distillers', Brewers', Confectioners', House-furnishers' and Plumbers'  
**COPPER and BRASS WORK**  
In Stock or Made to Order.

**FILES!**  
**Sherbrooke File Works.**

Established 1875.  
**J. H. CHAPMAN & CO.**



All HAND-CUT FILES made from the Best Sheffield Cast Steel.  
Warranted equal to the Best Imported Brands.  
Send for Price Lists and Discounts.  
FILES RE-CUT.  
**SHERBROOKE, - QUE.**

**JOSEPH JOHNSTON,**  
Manufacturer of and dealer in

**Sawn & Planed Lumber,**  
SHINGLES, LATH,  
And all kinds of  
**DIMENSION TIMBER**  
*Bridge Timber & Deck Plank a Specialty.*  
**RICHMOND ROAD, NEFFAN,**  
Skead's Mills P.O. OTTAWA, Canada.

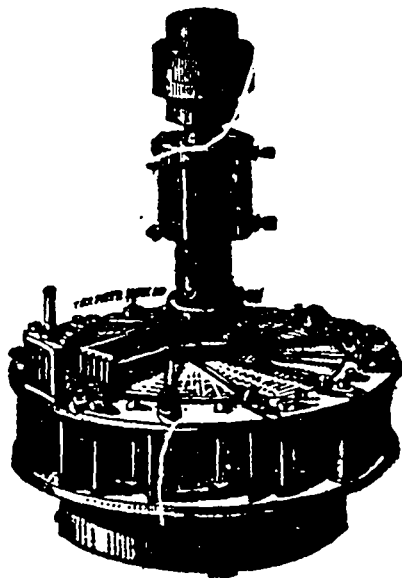
**Woollen & Cotton Picker**

**PROPER'S WOOLLEN AND COTTON MILLS:—**  
*Having put up a Woollen and Cotton Picker on the Corner of Mary and Cannon-sts., Hamilton, am prepared to do all Custom Work that may be entrusted to me in a first-class manner, (samples of work always shown,) or will buy your Cuttings and give the Highest Price in Canada.*  
Yours respectfully,  
**JOHN QUARRIER.**

**THOS. L. KAY,**

MACHINIST  
**PATTERN & \*MODEL MAKER.**  
—MANUFACTURER OF—  
**HAMILTON PRESSING MACHINE.**  
All kinds of General Jobbing and Repairing.  
**158 KING ST. WEST, - HAMILTON.**

15,000 IN USE.



**JOSEPH HALL  
MANUFACTURING CO.,**  
(ESTABLISHED 1851.)  
**OSHAWA, ONT.**

Manufacture the celebrated  
**James Leffel's Double Turbine  
Water Wheel,**

All sizes of Stationary and Portable En-  
gines and Boilers, Shafting, Pulleys,  
Hangers, Gearing, Latest Improved  
English and American Gangs.

The Stearns' Circular Saw Mills with Fractional  
Head Blocks and King of Dogs—this  
Mill is acknowledged in the United States and  
Canada to be superior to all others—also a very  
complete Circular Saw Mill with Iron Frame  
and cheaper Head Blocks for Small Mill. Saw  
Mill, Flour Mill, Paper Mill and Water Works  
Machinery a Specialty.

For further particulars address

**Joseph Hall Manufacturing Co.,**  
**OSHAWA, ONTARIO.**

ONTARIO

**File Works.**

**G. E. HEMING,**

(SUCCESSOR TO S. BEECH & CO.)

**Files Re-cut and Warranted  
Equal to New.**

**WORKS AND OFFICE:**

Corner Cannon and Mary Streets.  
**HAMILTON, ONT.**

**James Leslie**

Manufacturer of

**CARD CLOTHING,  
LOOM REEDS, &c.,**

Dealer in

**COTTON & WOOLLEN  
MILL SUPPLIES,**

OFFICE AND FACTORY:

Junction of Craig and St. Antoine Sts.,  
**WEST END MONTREAL.**

P. O. Box 996.

**JOHN WARDLAW,**  
Galt, Ont.

MANUFACTURER OF

**Scotch Fingering,  
Wheeling, Jacket and  
All Wool  
Knitting Yarns**

**Fine Worsted, Tweed, and  
Hosiery Yarns. Glove, Mitt,  
and Cloud Yarns. Seaming  
Yarns. Carpet Warps, &c.**

Any Description of Yarns in single,  
2, 3, or 4 ply made to order.

**SILVER & GAY,**

—MACHINISTS,—

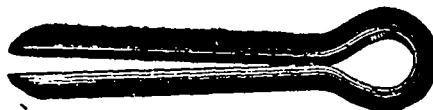
NORTH CHELMSFORD, MASS.

—MANUFACTURERS OF—

**BALL WINDERS,**

For Balling Twine, Thread, and Cotton, Woolen, and  
Silk Knitting Yarns, Binder Twine, Cotton Banding, and  
Cords of every description.

Also, **QUILLERS** for Bagging, Duck, Carpet and  
Webbing Looms.



SPRING PINS.



NO. 2 FLAT SPRING KEYS.



**ONTARIO NUT WORKS**  
**PARIS, Ont.**

**Brown & Co.,**

Manufacturers of all sizes of  
**HOT PRESSED NUTS,**  
Square and Hexagon.

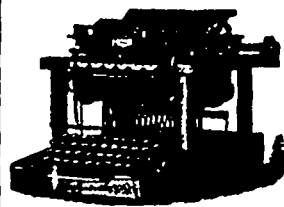
**CANADA LAND-PLASTER CO.**

**PARIS, - - Ont.**

**GILL, ALLAN & CO.**

**REMINGTON**

**TYPE-WRITER.**



**WYCKOFF,  
SBAMANS &  
BENEDICT.**  
**NEW YORK.**  
Sole Exporting Agents

The only Machine which will success-  
fully supersede Pen Writing. Used by Mer-  
chants and Professional men, and in Rail-  
way, Insurance and other offices, etc., etc.  
Send for Catalogue and Testimonials.

**J. O'FLAHERTY,**

**32 Lemoine Street, Montreal,**

P.O. Box 1324.

Canadian Agent

**LEATHER BELTING.**

Two first prizes and only Medal at Do-  
minion Exhibitions.

**LACE LEATHER.**

Three first prizes and only Medal at Do-  
minion Exhibitions.

Factory---**DANVILLE, QUE.**

Others have their specialty—we have none.  
With the best possible appliances, we are de-  
termined to make

**ALL OUR BELTING**

The Best in the market, including our Driving  
Belts—both Double and Ribbed—which are  
not, and cannot be, excelled.

Orders promptly filled.

Full satisfaction guaranteed.

**J. L. GOODHUE & SON**

# J. McLAUGHLIN'S SONS,

GROWERS,

Merchants and Exporters of Assorted and Sized

# American Teasels,

SKANEATELES, N. Y.

We respectfully call the attention of woollen manufacturers to an important addition we have made to our method of preparing Teasels for use. We have succeeded in perfecting a machine which automatically performs the work of grading Teasels into *perfect exact diameters*, making, instead of the *six* sizes of the old way of assorting, *thirty six* perfect grades, beginning with the smallest, which is 61-64 of an inch in diameter, and is numbered 61, and so on in consecutive order, each number or grade increasing 1-64 of an inch in diameter, to number 96, which is 96-64 or 1 1-2 inches in thickness and is the thickest grade.

We have had our attention repeatedly called to this subject, and it has been suggested by practical manufacturers, that having teasels agreeing as to thickness, while saving labor in placing upon the "gig," will require less experience in the "gigging" to avoid *streaked cloths*, and assure more uniform work generally.

The "gig" makers have, to some extent, obviated this difficulty, by making the "gig" cylinder "vibrate," which prevents teasels of uneven thickness striking the cloth every turn of the cylinder at the same point; but this has only been a makeshift, as zig-zag streaks are often traced upon the surface of faced goods finished upon a vibrating cylinder gig.

As teasels were assorted, viz: 1 to 1 1-2 inches, 1 1-4 to 1 3-4 inches, 1 1-2 to 2 inches, 1 3-4 to 2 1-4 inches, 2 to 2 1-2 inches, 2 1-2 to 3 inches, sized as to *length only*, streaks in goods more or less could not be prevented.

In the above classification teasels will be found of the *same diameter* in each of the six sizes, although differing in length. Such assorting is very faulty, as the *diameter* of the teasel should regulate its grade, and this is what our invention does. In some of the best regulated mills skilled labor is employed in selecting from such a diversity of sizes, those that will answer for the work to be performed, *accuracy* being out of the question, and more or less imperfections in the finishing are sure to follow even with the best of help and with the greatest care.

The saving made by using gauged teasels, both from rejected teasels on account of some being uncommonly thick or thin, and in the labor of selecting these suitable to set, is fully equal to their first cost, and an equal gain is made in the perfection of cloths, thus saving twice the cost of the teasels, besides having the satisfaction of making perfect goods, and no claims for damages or tender cloths.

Our teasels are neatly clipped, and the quality well graded, carefully hand packed with stems only 3 inches long. We shall sell them strictly gauged an exact diameter at the very lowest price in the market for the quality with 2 1-2 cents per pound additional to pay for extra labor in gauging them, and we trust you will appreciate our efforts in your behalf.

The great demand made upon us for our teasels sorted per an exact diameter, having rendered it necessary to meet a much larger demand than we could have reasonably anticipated, we have just completed an extension of our works, and secured an abundant water power to drive our sorting machinery, which doubles our capacity for business.

Parties desiring to order from us may therefore depend on having their orders executed with the same care as heretofore, and within reasonable time.

Reference to all the leading Canadian users.

## CORRESPONDENCE SOLICITED.

Post Office Address,.....Skaneateles Falls, N.Y.  
 Telegraph Address, .....Skaneateles, N.Y.

**TELEPHONE CONNECTIONS.**



## Industrial and Trade DIRECTORY.

### Asbestos.

FENWICK & SCLATER, Montreal.—Asbestos packing, paints, and roofing.—Send for lists. Files, &c.

### Agricultural Implements.

A. S. WHITING MANUFACTURING CO., Cedar Dale, Ont.—Manufacturers of scythes, forks, hoes, etc.

WELLAND VALE MANUFACTURING CO.—Lock No. 2, St. Catharines, Ont., Canada.—Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

### Bobbins and Spools

THOMPSON & CO., Sherbrooke, P. Q.—Manufacturers of all kinds of Bobbins and Spools for Cotton and Woollen Mills—Special patterns made to order from sample.

### Bridge Builders.

TORONTO BRIDGE CO., Toronto.—Builders of Steel and Iron, Railway and Highway Bridges.

### Chemicals.

JOHN McARTHUR & SON, Montreal.—Offer at closest figures chemicals required by soap-boilers, oil refiners, paper-makers, and by manufacturers of woollens, cotton, leather, &c.

### Coal and Wood.

P. BURNS Offices cor. Front and Bathurst Sts., Yonge St Wharf 51 King St. East, 532 Queen St. West Toronto.—Wholesale dealer in Coal and Wood. Telephone communication between all offices.

### Cotton Brokers.

M. WRIGHT, next Exchange Bank, Hamilton, Ont.—Sole agent in Canada for Ordway & McGuire, cotton factors, Nashville, Tenn.

### Cotton Mills.

HAMILTON COTTON MILLS CO., Hamilton.—Denims, tickings and yarns.

### Dye Stuffs.

WULFF & CO., sole agents for Canada for Wm. Piekhardt & Kuitroff (B. Anilin and Soda Fabrik Sp. P.), New York. Full supply of Anilin dyes, &c.

JOHN McARTHUR & SON, Montreal.—Supply of best quality at lowest prices. Every description of coloring materials required by manufacturers of woollens, cottons, silks, paper, leather, &c. Are sole agents in Canada for the celebrated aniline dyes of A. Porrier, Paris.

LYMAN BROTHERS & CO., Nos. 71 and 73 Front Street East, Toronto—Dye Stuffs of all kinds for Woollen and Cotton Manufacturers; Warps, Shuttles, Bobbins, Card Clothing, etc., etc.

### Edge Tools.

R. T. WILSON, Dundas, Ont.—Manufacturer of axes, picks, mattocks, grub hoes and railway contractors' supplies.

WELLAND VALE MANUFACTURING CO.—Lock No. 2, St. Catharines, Ontario, Canada.—Manufacturers of axes, scythes, forks, hoes, rakes and edge tools.

### Emery Wheels.

HART EMERY WHEEL CO., Hamilton.—Manufacturers of every description of Emery Wheels and Emery Wheel machinery.

### Engines and Boilers.

G. C. MORRISON, Hamilton.—Engines, boilers, steam hammers, etc.

J. H. KILLEY & CO., Hamilton, Ont.—Manufacturer of economical, variable, cut-off, high pressure, and condensing engines. Improved boilers, portable engines for thrashing, Saw-mills, hydraulic and hoisting machinery.

JOHN DOTY, Toronto.—Engines and boilers of every description and capacity, also shafting, pulleys, and hangers for factories.

### Files.

PHOENIX FILE CO.—Hand-made files and rasps. No machines in our factory.—Fenwick & Sclater, Agents, Montreal Anchor Brand.

G. OUTRAM & SON, Dominion File Works, Montreal.—Manufacturers of every description of files and rasps.

### Fire Hose.

FENWICK & SCLATER, Montreal.—Canvas hose, plain and rubber lined, for fire departments and factories.—Write us before purchasing elsewhere.

### Furniture.

JACOB ZINGSHEIM, Hamilton, Ont.—Manufacturer of ParLOUR and Bedroom Sets, Center Tables, &c.

### Gas Engines.

JOHN DOTY, Toronto.—Manufacturer in Canada of the new "Otto" silent gas engine, two, four, and seven horse power and larger.

### Glove Manufacturers.

W. H. STOREY & SON, Acton, Ont.—Manufacturers of fine gloves and mitts in every variety and style.

### Harness and Trunks.

S. & H. BORBRIDGE, Ottawa.—The largest saddle, harness, and trunk manufactory combined in Canada. Wholesale and retail. Offer the trade and the public generally the largest assortment of goods in their line in the Dominion at lowest prices.

### Hoist and Elevator Manufacturers.

LEITCH & TURNBULL, Central Iron Works, cor. Rebecca and Hughson Streets, Hamilton, Ont.—Patent safety hand and power elevators.

### Hubs, Spokes and Bent Goods.

F. W. HORE & SON, Hamilton, Ont.—Manufacturers of hubs, spokes, rims, shafts, poles, sleigh and cutter stuff, etc.

### Iron Works.

COWAN & CO., Galt.—Manufacturers of every description of wood working machinery.

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THE OSHAWA MALLEABLE IRON CO., Oshawa, Ont.—Manufacturers of malleable iron castings; also patent screw wrenches.

SMITH'S FALLS MALLEABLE IRON WORKS, Smith's Falls, Ont.—Manufacturers to order of agricultural, carriage, and other malleable iron castings.

ST. THOMAS RIVET WORKS (Brent & Sherman).—Manufacturers of boiler, tank, and cooper rivets, plate nails, wrought spikes, cotter pins, spring keys, &c.

B. W. RICHARDS, Brockville, Ont.—Manufacturer of selected Norway iron and Lake Superior copper rivets and burs, kettle ears, &c.

COLBORNE FOUNDRY AND STEAM MILLS (J. C. Scripture & Bro.), Colborne, Ont.—Manufacturers of mill gearing and agricultural implements, and stoves of all kinds.

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THE HANCOCK INSPIRATOR CO., Montreal.—Manufacturers of inspirators, ejectors, and general jet apparatus.

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OSHAWA KNITTING WORKS, Oshawa.—Manufacturers of cotton and woollen hosiery, Cardigan and ladies' jackets, scarfs, gaiters, carriage rugs, mens' and childrens' jersey shirts, &c.

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D. POTTINGER, Chief Superintendent, Moncton, N.B. Railway Office, Moncton, N.B., Nov. 28, 1882.

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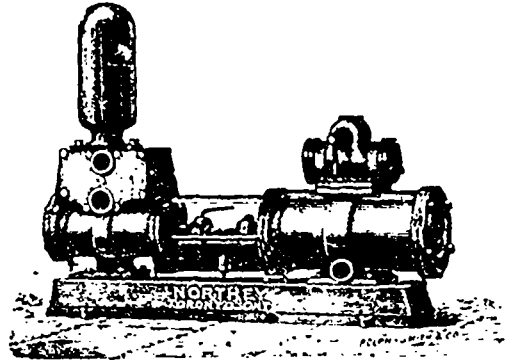
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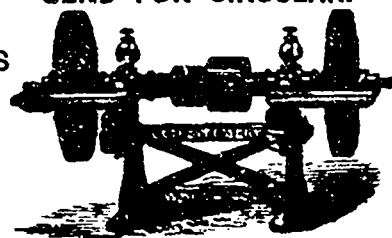
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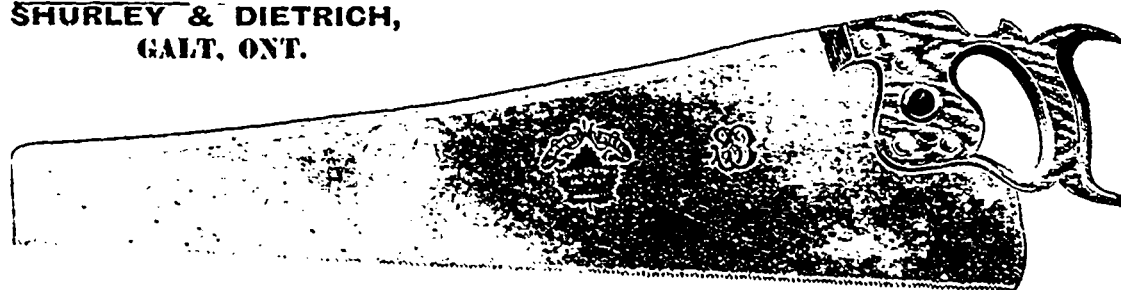
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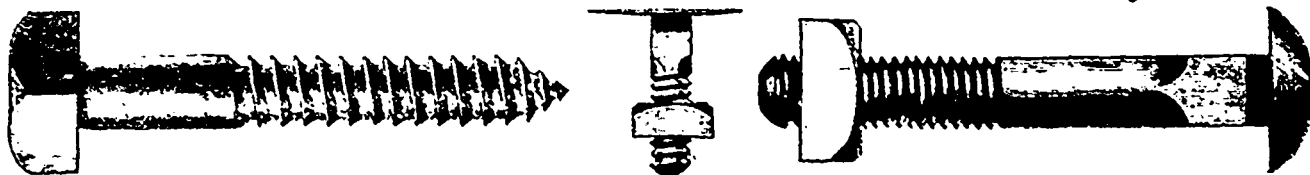
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