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THE CANADIAN MANUFACTURER

And Industrial World.

Vol. I.

TORONTO, ONT. FEB. 17, 1882.

No. 4.

IMPROVEMENT IN STEAM BOILER FURNACES.

The engraving shows what the inventor calls a rational construction for generating steam. And the reason why it is called a rational construction is because it utilizes heat that is wasted and lost in all other forms of steam boilers set in brick.

On the side walls of an ordinary boiler set in brick, and on the side of the grate bars, there are some sixty square feet of surface, that absorb fifty per cent. of the fuel.

If the users of steam boilers, as usually set, realized the full value of their fuel, they would, in most cases, be able to evaporate at least fourteen pounds of water to each pound of coal consumed, whereas, with imperfect construction and setting, it is a rare thing to find them that evaporate (allowing for dry steam) over seven pounds of water for each pound of fuel. To overcome this deficiency in the imperfect setting of steam boilers, Mr. Chas. D. Smith—who is connected with the house of Edward Barr, 78 John-street, New York City—has invented and constructed a furnace that has been applied to a large number of boilers, both new and old, and with great success.

Three years ago, two boilers, with furnaces attached, were placed at Lord & Taylor's, corner of Twentieth-street and Broadway. The chief engineer, Mr Scott, who has been in charge for eleven years, states that the furnace effects a saving of 28 per cent. in fuel alone.

The improvement has also been applied in the brewery of Donald Smith, on Eighteenth-street and Eighth Avenue, with the same results.

The improvement has also been adopted by the following large corporations:—Cambria Iron and Steel Works, Johnstown, Pa.; Merchants' Mills, of Fall River, Mass.; Manhattan Silver Mining Company, of Austin, Nev.; George Elvret, brewer, New York, who, after using it for three years, applied it to all his boilers. Many others have adopted it.

The judges' report of the test of steam boilers at the Centennial Exhibition in Philadelphia, 1876, shows that the application of these water walls to a horizontal tubular boiler gave

a higher evaporation by over 12 per cent., with an increased capacity of 74 per cent. over any other boiler competing in the test, showing that the fuel generally wasted amounts to 65 per cent. of the amount used.

Further information as to construction, operation, etc., may be obtained by addressing Mr. E. C. Hopkins, sole agent for the Dominion, 145 St. James-street, Montreal.

BLAKE'S CHALLENGE ROCK BREAKERS.

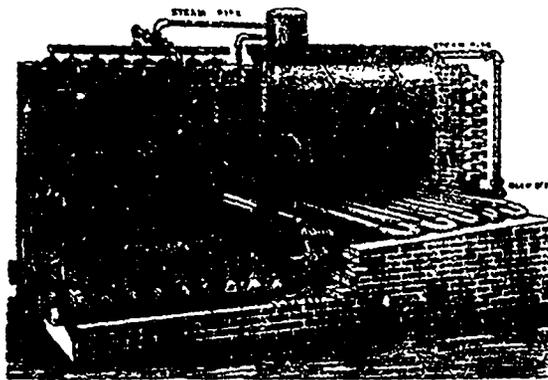
The construction of the machine is shown in the engravings, and its operation will be readily understood. A three-sided framework of cast iron, with broad flanged base, holding the movable jaw in suspension, forms the front part of the machine, between the upright convergent jaws of which the stone is crushed.

The jaw shaft is held in place by wrought iron or steel clamps, C, which serve to take part of the strain due to crushing in the upper part of the jaw space, and also serve as walls thereof. In the lower part of the three-sided frame or front part of the crusher, and on each side of it, are holes in the casting to receive the main tension rods which connect the front and rear part of the machine. The rear part, B, is called the main toggle block, and is also provided with holes

for the tension rods, R R, corresponding to those in the front casting.

These two parts of the machine are connected by the main steel tension rods, R R, each provided with screw thread and nuts, by which their lengths and the jaw opening are readily adjusted to crush coarse or fine, as may be desired.

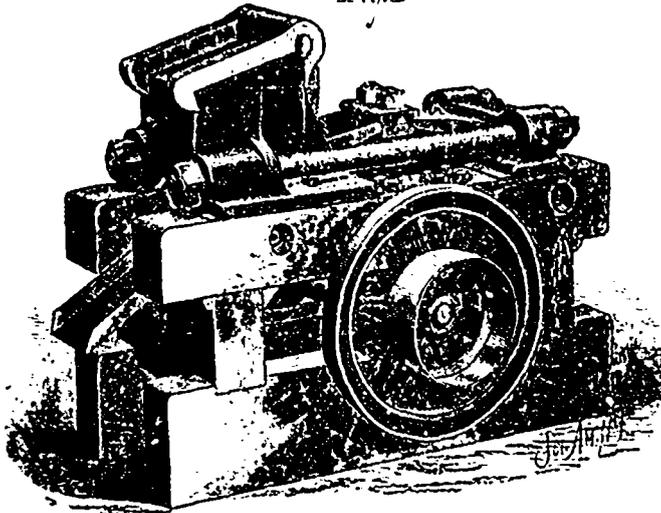
The front and rear castings are supported on parallel timbers to the under side of which are bolted the boxes carrying the main eccentric shaft, provided with fly wheels and pulley. The timbers are thus made component parts of the machine, and take the transverse strain which comes upon the pitman connecting the main shaft and the toggle joint placed in the rear of the movable jaw, and between it and the main toggle block.



IMPROVED STEAM BOILER FURNACES.

Between the broad flanged bases of the front and rear castings and the timbers on which they rest, are placed flat rubber cushions one quarter to three-eighths of an inch thick. Every revolution of the shaft brings the toggles more nearly into line, and throws the swing jaw forward; it is withdrawn by the rod provided with rubber spring. L. In this way a short

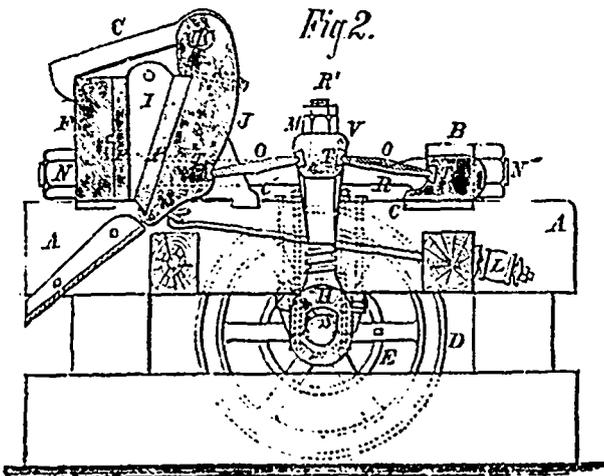
Fig. 1



BLAKE'S CHALLENGE ROCK BREAKER.

reciprocating or vibratory movement is communicated to the moveable jaw.

It is evident that this new construction of the Blake stone crusher—while the principle of crushing between upright convergent jaws is the same as in their old machine—possesses many and great advantages over the old forms. It is sectional. The weight of the heaviest piece in crusher, size 15x9



SECTIONAL VIEW.

inches, is about 2,400 pounds instead of nearly 8,000. The rigidity inseparable from machines with cast iron frames, and which is the cause of frequent breakages, is completely overcome, and the longitudinal as well as transverse strains are brought upon materials which are strong and elastic as compared with cast iron. The rubber cushions, while offering

sufficiently great resistance to compression in case of the breakage of stone or in doing the normal work of the machine, will, in case of the accidental intrusion of steel hammers or anything of that kind, be compressed and so permit the partial revolution of the fly-wheels before coming to a full stop, thus relieving the machine of those nearly infinite strains to which those of the old form were subjected, and which resulted in breakage of important parts. The toggles are long, and of equal length, and may be worn indefinitely as compared with those in the old machine.

The construction of the pitman is such as to admit of change of inclination of the toggles, and consequently of adjustment of the length of stroke of the moveable jaw. The jaw opening can be varied between any working limits by means of the nuts on the tension rods, and the machine be set to crush coarse or fine as may be desired. This Breaker can be run at a higher rate of speed with safety than either of the old forms of crusher with cast iron frames, and will consequently do a greater amount of work. It is very much lighter than the old forms, and has at least double their strength.

The new Challenge Rock Breaker has been repeatedly subjected to the test of a steel hammer being thrown between its jaws, when going at as high a rate of speed as 300 revolutions per minute, without injury to or breakage of the machine.

Full particulars will be furnished on application by the manufacturer. Mr. George Brush, Eagle Foundry, Montreal, Q.

BOILER LEGISLATION.

The Ontario Government has promised a bill for the regulation of the manufacture and use of steam boilers in this Province. In legislating on such an important and intricate matter as the manufacture of steam boilers, great care should be taken not to interfere unduly, or unnecessarily to impede the manufacturer in his business.

To lay down certain hard and fast rules for the guidance of makers, giving details as to construction, would be to assume that the framers of the bill were the most skilled engineers and boiler-makers of the day, and that no further improvements in boiler-making, or the use of steam, need be expected.

All that should be attempted in this direction should be to insist upon the application of such well-established principles as are absolutely essential for public safety. The public and the honest manufacturer require some protection against the cupidity of unscrupulous persons, who, for the sake of a little extra profit, will pass off inferior plate as being iron of the highest quality. When it is rivetted and painted, who can tell the difference? The steam pressure can, though perhaps an inspector could not.

It would be of great service in this direction if it were made compulsory that all plates used in boiler-making should bear a brand signifying their strength or quality, and that with every boiler sold a certificate should be given setting forth the quality of plate used and the safe working pressure. There is, however, as much need for legislation regarding the use of boilers as for their manufacture. It has been said by one who had good opportunities of judging that it was too much the custom to place boilers in this country under the care of men or boys whose chief qualifications were self-assurance and

recklessness of danger. Government could help greatly in this matter by making it compulsory that all persons who take charge of steam boilers should at least know the practical details of their management, and be able to recognize the fact when any part has gone wrong or needs repair. Were this done there would be fewer accidents and fewer complaints that manufacturers did not make their boilers safe enough. Legislation on this point should aim at increased safety for the public, and as whatever tends, by better care and better usage, to increase safety, also produces greater efficiency and greater durability. All boiler owners ought to support such provisions in the proposed bill as will produce these much-to-be desired results.

The safety of any given boiler depends not upon its *supposed*, but upon its *actual* condition, and as the actual condition is liable to constant change, either from the development of hitherto undiscovered defects in the material, or from ignorant or careless usage, it would appear necessary to provide for at least occasional inspection by a competent and trained inspector. It would be too much to expect that all boiler attendants should be sufficiently skilled, and have such knowledge of the strength of materials, and the laws governing the action of steam, and the strains produced in the various parts of a boiler, as to enable them to determine what was the safe limit of pressure at which it should be worked.

To secure safety it would seem necessary to inspect both the boilers and the persons who use them.

FACTORY LEGISLATION.

We are sure to have a good deal of factory legislation on our statute books before long, and manufacturers may as well take notice and govern themselves accordingly. When our manufactures were more limited, or in a depressed condition, they did not draw public attention enough to bring up the subject of factory legislation. But all that is changed now, manufactures are prosperous and expanding, they fill the public eye far more than ever before, and the consequence is inevitable. Everything relating to factories, that appears in the papers, catches public attention, and people talk about it. Instance the following, which appeared recently in the Toronto daily papers:

At a late meeting of the Woman's Literary Club the following resolution was passed:—"Resolved, that a circular be addressed by the Secretary to all manufacturers and merchants in Toronto who employ both men and women, respectfully drawing their attention to the necessity of supplying separate conveniences (w. c.'s.) for each sex. In factories and places of business where such separate conveniences are not supplied, serious and permanent injury to health is frequently entailed upon worthy young women, who are thus forced to choose between injury to health and injury to modesty. In a civilized country such as this, in which honest labour is recognized as not inconsistent with genuine refinement, such practical requirements as this, it is believed, need only to be suggested in order to meet with a ready compliance; for comfort, health, wealth and morality are the aim of civilization. Such aim is shared by every sect and creed. It is notorious, discreditable though it be to employers, that in many establishments in the city employing male and female labour there is but one common convenience for both."

Another matter coming up in the daily press is, the necessity of having sufficient and reliable exits, fire-escapes, and other means of safety in factories where large numbers of people are employed. A recent terrible event is working a revolution in theatre arrangements both in Europe and America; and a factory fire in Canada, attended with any loss of life, would at once send public excitement up to fever heat. Now, when many new factories are going up, and when many old ones are being enlarged, what better time for taking those precautions demanded by a regard for human life, for health, and for morality? When building enlargements are going on, necessary alterations and improvements are easily made, and we would suggest to manufacturers generally that they cannot be made too soon.

A question of another kind is that relating to the employment of women and children in factories. Such pressure did the Dominion Government feel on this subject, that a Commission of Inquiry was set to work, the report of which will be presented at the present session of Parliament. We have no Ten Hours' Bill in Canada yet, our factory hours are the same as those which obtain in the States, where there is no legal limit. But sooner or later the thing will come on this side of the Atlantic, as it already has on the other; of that we may rest assured. In England not only is there a limit to factory hours, but children under a certain age are not allowed to work over half time. Further, quite recently a new agitation has begun there, aiming at the total prohibition of factory labour by women having children under three years of age. The sacrifice of infant life through the prevailing mode of baby-farming, with "Godfrey's Cordial" and such like dangerous stuff in unlimited use by ignorant and reckless nurses, is spoken of as something actually startling when stated in figures. We read of lazy, hulking fellows, who seek in marriage healthy, likely young women, upon whose earnings in the factory they expect to live in idleness, or at least with half-holiday time every week. A fresh outburst of public opinion on this subject is brewing in England, and we shall shortly hear more of it.

Another circumstance there is which Canadian manufacturers would do well to consider. The papers opposed to the N.P. take every opportunity of exaggerating the profits made in some important lines, the cotton and the woollen manufactures especially. We have already shown how profits per annum on capital turned over a number of times in the course of the year have been confounded with profits per cent. on the manufacture of the goods, these being two very different things, as we have explained. But partizan papers opposed to the protection of manufactures will not print any such explanation; they would rather print something to confuse the public mind, and keep the truth out of sight. An outcry is raised against "cotton lords" in Canada, and the "poor man" is constantly reminded how much cheaper his suit of woollen clothing would be, but for the tax which is levied to support the woollen manufacture amongst us. These things are every day dinned into the ear of the general public, and it would be a great mistake to think that they fall unheeded. Bold assertion and confident reiteration, even though proof of the thing asserted be lacking, have their effect. All this tends to work up public feeling to that point of warmth at which a spark may fire it. The case for protection to home manufactures in Canada is strong—very strong—and on its own merits alone can withstand all attacks.

The N. P. can carry itself in public opinion; as a matter of fact it is now carrying itself and a great deal more besides, just because it is the strongest plank of all in the Government platform. But manufacturers would do well to see to it that the N. P., strong as it is, is not weighted down with extraneous burdens not properly belonging to it at all. The tariff which makes manufactures to prosper in Canada can be defended openly and above-board, and strictly on its own merits. But people must not be suffered to get it into their heads that to neglect precautions against fire, and the providing of proper conveniences for workers in factories, are part and parcel of the N. P. The N. P., we say, can carry itself triumphantly through, but it must not be burdened with unpopuliarities which have really nothing to do with it. And we think that in calling the attention of manufacturers to these things we are doing them better service than if we were shamming "blind," and pretending not to see these things at all. Our remarks are offered in all honest solicitude that the sound public policy which makes extensive manufacturing possible in Canada should not be endangered by the neglect of individuals—by abuses which are certainly no part of the policy.

DECLINE OF MANUFACTURED EXPORTS

The Toronto *Globe* draws attention to a falling off in Canada's export of manufactured articles, as shown by the Trade and Navigation Returns for the fiscal year 1880-81, just presented to Parliament. The following are the exports of such articles for the years named:

1878	\$4,715,776
1879	3,228,761
1880	4,484,211
1881	4,043,123

The exports of 1880-81 are less than those of 1878 by \$795,078, therefore, says the *Globe*, this represents a loss of 796 artisans and their families, supposing \$1,000 production to be the average for each man employed. In making up this neat little calculation the *Globe* leaves out the important fact, that as we have now better times and a better demand for commodities, we are actually consuming far more goods of home production than we consumed four years ago. The very same thing happened in the United States, and we are not to be surprised that it happens in Canada too. The adoption of the protective policy in the States had the double effect of increasing both the consumption and the production of home manufactured goods. More goods were made, while at the same time more were bought by the people, for the reason that they were better employed and better able to buy. The general prosperity due to full employment actually sent the home demand up beyond the increased production; an important fact, which Free Traders take no note of, but which when rightly looked at explains that puzzle to their school—the large import of foreign goods by the United States under high protection.

The same explanation applies to another startling discovery recently made by the *Globe*—the fact that our export of flour has been falling off since the N. P. came in. The fact is simply this, that Ontario flour that used to go out of the country, afterwards appearing in the figures of exports, now goes to the Maritime Provinces, and does not appear in any return at all.

Horace Greeley used to give this illustration, as the *reductio ad absurdum* of the theory which sees national wealth in imports and exports merely. Suppose that the baking of bread had been an industry totally unsuitable to America, and that it had to be carried on, and could be carried on only in large factories in England: all the flour used in America would have to be exported to England, there made into bread, and in the latter form shipped back to America again. The increase of exports and imports, on the books, would be something tremendous, scarcely could ships enough be found for the business, and sailors would be employed by thousands where now there are only hundreds. Yet there would be no gain to the world in all this extra carrying to and fro, but on the contrary an immense loss instead. Free trade theories are apt to look ridiculous when pushed to their logical conclusions.

USE AND ABUSE OF STEAM BOILERS.

Those who use steam power should be specially careful in purchasing boilers, that they get them of such size and capacity as will meet their requirements without being over-worked.

They should be willing to pay a fair price, and should insist upon getting an honest return for that price, in the shape of boilers of sufficient strength safely to resist, for many years, the pressure of steam at which they are to be worked.

Second hand boilers should never be bought, without an accurate knowledge of their present condition and previous history.

Having secured good boilers, strong and safe, the next point to consider is how they are to be kept so. From the first hour in which a boiler is started to work, destroying influences are brought to bear upon it. Every change of pressure in it, and every change of temperature in the furnace, lead to expansion or contraction of the plates, and cases have occurred where from some peculiarity in the design of the boiler, or arrangement of the plates, this alone in a few years destroyed the boiler.

The accumulation of mud or scale or grease inside of boilers is a fruitful source of waste of fuel, as well as being the direct cause of the ruin of many boilers.

The destroying action of fire on one side of a boiler plate is very slow, provided clean water be kept in actual contact with the other side of the plate. But let a deposit of mud or grease or some other bad conductor of heat come on the plate, and immediate injury from over-heating is the result.

A new boiler only in use for a few days was found to have a bad bulge in one of the plates over the furnace. An examination as to the cause was made, when it was found that a careless workman had let a piece of the rubber packing with which he had been making a steam joint at the shut off valve, fall into the boiler; it had made its way to the bottom and stuck fast on the plate.

Nearly all the water used in boilers contains more or less of some impurity or holds some salt or lime in solution; and as the water evaporates into steam these are left behind and gradually increase in quantity inside the boiler.

Hence the necessity for frequent cleaning out. These deposits are generally bad conductors of heat, and so while there lead to waste of fuel, as the heat passes up the chimney instead

of into the water. As the deposit increases in thickness its resistance to the passage of the heat through it is largely increased, until at length the iron becomes so hot as to be softened and is bulged out of shape or fractured by the steam pressure within.

It has been proved that with some kinds of deposit a scale of 1-16 of an inch thick led to an increase of 15 per cent. in the fuel; but scale, with grease mixed with it, scarcely more than 1-16 inch thick, has led to the destruction of the plate.

A recent case of great interest has recently been reported by the chief engineer surveyor of Lloyd's Register of British and Foreign Shipping.

The boiler of the steamer *Roumania*, during a voyage from Cardiff to Odessa, had all of the furnace crown sheets collapse in succession. The boiler was new, it was well made and of good material, and there was no accumulation of scale or salt.

It was noticed, however, that all the inside was coated with what seemed to be refuse of oil used in the cylinder of the engine.

An experiment was tried by making two dishes of boiler plate of the same thickness as the injured plates. The one of these was left clean, while the other was coated with some of the deposit from the boilers. Half a pint of clean water was placed in each, and they were placed together on the same fire.

The water in the clean dish began to boil in 25 seconds, but the water in the coated dish did not begin to boil till one minute later, by which time all the water was evaporated from the clean one.

This clearly showed that the greasy deposit was a great non-conductor of heat, and was the direct cause of the collapse of the furnaces.

Boiler owners should place their boilers under the care of competent men, and should not grudge the time necessary for frequent and thorough cleaning out. Boilers should not be blown out and emptied while steam pressure is in them and the surrounding brickwork hot. This is commonly done, but is an injurious practice, and the cause of much of the hard scale in boilers. If they were allowed to stand till quite cold, much of the deposit could be washed out, but when the boiler is emptied while all is still hot, the mud becomes baked into a hard crust not easily removed.

In large factories requiring several boilers, it will generally pay to have at least one spare boiler in each set, so that one may always be at rest for cleaning or repair. The more common practice in this country is to have no spare boilers and to run on as long as they will hold in the water and supply enough steam; when from one cause or another they fail to do this, then a stoppage is made for repairs, or to gather up the fragments.

PUBLISHERS' NOTICE.

Owing to the increase of advertisements and the pressure of important matter upon our columns, we have had to add four pages to this issue. Our correspondence from leading commercial centres will be found very full and reliable, and of much interest to business men generally

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FREDERIC NICHOLLS,

Managing Editor

All communications to be addressed CANADIAN MANUFACTURER,

Toronto, Ont

Editorial Notes.

The first number of a new sixteen-page paper, the *Journal des Campagnes*, Quebec, is now before us. It is published weekly by the editor and proprietor, M. Leger Brousseau, and is not only the largest, but has the best appearance of any French newspaper in Canada. Its columns are replete with interesting matter, and we wish our new contemporary the success it deserves. The subscription price is one dollar per annum.

There is great complaint in England of sand put into cotton bales by American packers. The trick is an old one, but it appears to be revived again, and to have been rather extensively practised of late. English cotton manufacturers load their cloth with China clay, and perhaps that is what suggested to the American packers the trick of loading the raw material with sand. As we are now using a good deal of American raw cotton, Canadian manufacturers may have an interest in seeing to it that they are not imposed on in the way mentioned.

In the matter of a bonus of \$5,000, to be given by Brantford to the proposed new wincey factory, a difficulty arose, from the fact that Mr. Slater could not find a proper site within the city limits. The City Council has very wisely met the difficulty by voting the bonus without restriction as to keeping within the limits, and the factory will now be built. Mr. Slater's enterprise in beginning the wincey manufacture marks an important step in the diversification of Canadian industries.

That a new enterprise like that of the Halifax Sugar Refinery should have its troubles at the start is nothing to wonder at. There have been "mismanagement" and "unwarrantable expenditure," we hear—things that happen in importing, shipping, railway, insurance, telegraph, and other lines of business, altogether aside from the operations of protection. But the errors now so clearly perceived will be promptly remedied, of that we may be sure, and the next time of trying there will be another tale to tell. The natural advantages of Halifax for sugar refining are so remarkable that the business must soon be established there to stay.

A preliminary meeting of the manufacturers of agricultural steam boilers was held last week at the Rossin House in this city, the following gentlemen being present: Mr. Barr, of Messrs. Reid & Barr, Hamilton; Mr. K. Whitelaw, of Woodstock; Mr. Abell, of Woodbridge; Mr. Haggart, of Brampton; and Mr. Burns, of Messrs. Stevens, Turner & Burns, London. After some time spent in discussing what effect the proposed legislation providing for the compulsory inspection of steam boilers would have upon their interests, Messrs. Haggart and Burns were deputed to wait upon the Ontario Government, in the interest of the manufacturers.

Last week a private meeting of lead and paint manufacturers in Toronto and Montreal was held in Toronto, for the purpose of making a standard price for ground leads. Toronto was represented by Messrs. James Robertson & Co., Elliot & Co., A. J. Somerville, and Lyman Bros. & Co.; and Montreal by Messrs. A. Ramsay & Co., William Johnson, James Robertson, and the Montreal Rolling Mills Co. The meeting was continued during three days, showing that business of importance was in hand. An understanding was arrived at, but at the last moment the Montreal Rolling Mills Co. refused to sign the agreement, and the meeting had to close without anything settled. It is considered probable, however, that an agreement will yet be reached.

In the cotton trade, as in the grain trade, there is an increasing tendency to *make* prices in America instead of leaving them to be made in England, as in time past. At New York, Savannah, Mobile and New Orleans, American operators put cotton up to figures above the export basis to Liverpool, consequently buyers cannot take it. For now six or eight months back, Chicago wheat prices have been most of the time so much above the New York and Liverpool basis that one almost wonders how wheat could be sent eastward at all, except at a loss. As the operation of exporting at a loss cannot very long be continued, either with cotton from New Orleans or wheat from Chicago, we are driven to the conclusion that there is a large element of fiction in American market quotations of these staples.

Messrs. John Lovell & Son, Montreal, have lately issued their Business and Professional Directory of the Province of Ontario, for the year 1882.

To manufacturers it will be an especial boon, as we have often heard the wish expressed for such a work, which is now within their reach. In addition to the alphabetical directory of the Province, it gives a valuable classification of businesses for both Ontario and the city of Montreal; the customs and excise tariffs, with latest corrections; postal guide for the Dominion; list of banks and their agencies; railway and steamboat routes with key; historical sketches of the several Provinces and of Newfoundland, and many other special features which commend it at once as a hand-book of reference that should be in the office of every manufacturer and man of business. Messrs. Lovell and Son are noted for the excellence and reliability of their Directories, and have certainly added much to their reputation by the work just published.

Elsewhere will be found a letter on the openings for manufacturing enterprise which may be found in the Maritime Provinces, which is worthy the attention of our readers generally. That these Provinces, with vast supplies of coal either on the spot or within convenient distance, should, in manufacturing, have been so far behind the inland Province of Ontario, which has no coal at all, seems rather surprising at first view, but the fact is susceptible of a very simple explanation, after all. In Nova Scotia and New Brunswick *trade by sea* dwarfed everything else in present importance; nobody thought of manufacturing at home anything that could so conveniently be brought from abroad. The proximity of the New England States, with their large factories and surplus of many and various manufactures offered by innumerable "Sam Slicks,"—all native and to the manner born—actually had great influence in repressing manufacturing enterprise in the Provinces. Then again, the wave of Protectionist agitation which swept over Quebec and Ontario in 1858, resulting in the National Policy of that year, did not touch the Maritime Provinces. Had the same thing then happened there which did here, Nova Scotia and New Brunswick would years ago have been ahead of Old Canada instead of behind it in manufacturing. But, letting all that pass, it is evident that a revival has struck in along the sea-shore at last, and we shall be happy from time to time to chronicle its progress.

SPECIAL NOTICE.

CORDOVAN LEATHER INDUSTRY.

Among the new industries which the protective tariff has brought to Canada is the manufacture of cordovan leathers. Messrs. Jacobi & Knees, of Acton, are the pioneers of this industry in the Dominion. Cordovan leathers are made from the hides of wild horses, the skins of tame animals not being of the requisite quality. Messrs. Jacobi & Knees import their green hides from South America. The hide is divided at a line drawn across it twenty inches from the tail, and the front part is made into satin calf finish, straight grained, pebble, English grain, seal skin grain, and any other finish required by the shoe trade. In the hinder part of the hide, or as it is technically called, the "butt," are found two oval spots, which alone of all the hide are suitable for shell Cordovans, and are cut into galoshes, vamps, tongue boots, boot fronts, etc. Mr. Knees, who is the practical man in the firm, was, prior to the passing of the present tariff, engaged in a similar business at Newark, New Jersey, and from there had been supplying the Canadian trade; but the N.P. showed him that it would pay to manufacture on this side of the line, and accordingly the little village of Acton has the benefit of an establishment which gives constant employment to twenty-six men at good wages, with good prospects of having their number doubled shortly. The neighbouring farmers have a market for about 150 cords of soft wood annually, which would otherwise be worthless, and for about 500 cords of bark, at about \$4.50 per cord, while the country at large retains at home the money which formerly went to build up American cities. Mr. Knees holds the Centennial medal and the Vienna medal of '73, both of course won when he was manufacturing in the United States. We should have stated that this establishment is the third on the Continent, there being but two in the U.S.

CANADIAN LEATHER BELTING.

ENCOURAGE HOME INDUSTRY.

A FALSE IMPRESSION IS ABROAD in relation to the comparative merits of *Canadian* and *American Belting* and there are certain American Makers who send in Belting to Canada *vastly inferior to OUR Standard Belting*, as *THEIR Belting is made Long Lap, whilst OURS IS SHORT LAP*, and

THEIR LEATHER IS, TO A LARGE EXTENT, CHEMICALLY TANNED,
WHILST OURS IS PURE BARK TANNED.

There are two or three Belt Makers in the United States who make First-Class Belting, but **OUR Standard Belting is Warranted equal to the Best American Belting**, and superior to any other Canadian Belting in the Market.

We fear not Competition from any quarter, as to quality, and we guarantee every foot of Standard Belting that we sell.

ORDERS SOLICITED.

ROBIN & SADDLER

MANUFACTURERS,

594, 596 & 598 St. Joseph St., MONTREAL.

AMERICAN
LEATHER & RUBBER BELTING

WE do not attempt to compete in price with some makers, who, in order to effect sales, offer such large and extra discounts that the quality has to be reduced, but we furnish Belting at a fair price that will run straight and even, and such a quality that cannot fail to do good service. We keep on hand a larger stock than any other makers or dealers in Canada. We fully warrant every belt we sell.

ORDERS SOLICITED.

H. L. FAIRBROTHER & CO.,
Manufacturers.

Canadian Warehouse, 65 Yonge St.,
TORONTO.
Geo. F. Haworth, Manager.

Manufacturing Notes.

The CANADIAN MANUFACTURER will be pleased to receive items of industrial news from its readers in all parts of the country, for publication in these columns.

Notes of new machinery, improvements, increase in capacity, &c., will be of special interest. All communications must be accompanied by the writer's name as a guarantee of good faith.

A woollen factory in West London is to be exempted ten years from taxation.

Application has been made to Parliament to incorporate the Stevens, Turner & Burns Foundry and Manufacturing Company, of London.

Messrs. Whitelaw, of Woodstock, have completed arrangements for lighting their foundry by the electric light.

A new locomotive factory has been commenced in the east end of Montreal by a company that has got already \$80,000 capital subscribed.

One result of the N.P. is the purchase of a number of large steamships to carry coal from Cape Breton to Montreal. This will have the effect of lowering the price of bituminous coal.

The Strathroy Finance Committee of the Town Council have decided not to recommend the adoption of Mr. F. Westlake's proposition to build a match factory in that town.

The shareholders of the Asbestos Mining and Manufacturing Company of Canada met at Quebec on the 8th inst., and proceeded to organize. The factory will be built either at Quebec or at Levis.

The Merriton Village Council has passed a by-law exempting from taxation for ten years the new cotton mill, which is to be built on the site of the King and Dolan's mill, burnt last fall.

A paper mill is talked of at Kingston. Those interested in the erection of another mill on the Napanee river at Colebrook are actively at work, and very nearly the requisite amount of stock has been subscribed.

It has been decided to re-build the Kingston Knitting Mill on the site of the one burned recently. The city council has passed a by-law exempting the knitting mill and car works from taxation for a period of 18 years.

Mr. Pegan, of the Desert, who not long since came to Canada from France, contemplates the establishment of a beet sugar factory at that place. His experiments in raising the roots have been so successful that he feels confident that the enterprise can be made a financial success.

A deputation from the Napanee Glass Works waited upon the Minister of Customs recently, asking that the import duty on win low glass be increased from 20 to 30 per cent. Several other members of the Cabinet were present at the interview, and inspected samples of work made in the Napanee factory.

Mr. Ashley, Belleville, submitted one of the iron farm waggons to a practical test which could not have been more satisfactory. The waggon was loaded with 10,080 lbs. of pig iron and driven down Front-street to the market. He proposes to establish a manufactory of iron waggons in Belleville.—*Intelligencer*.

The knitted goods factory of Ellis & Stokes, at Port Dover, employs 100 hands, and turns out 60 dozen shirts or pairs of woollen drawers per day. There are other industries at the Port which merit mention. Col. Collier has put up a building 50x250 feet for a car factory and repair shop, another for an export ice-house, and is opening a summer hotel.

Messrs. J. L. Goodhue & Son, of Danville, Que., have lately completed a driving-belt, 28 inches in width and 70 feet long, for the mills of Messrs. Robinson, Howell & Co, Preston, Ont. About a year since this firm made extensive improvements in their factory, by which their capacity has been nearly doubled.

The National Policy has been the making of the Limestone City. Within the last four months a cotton mill has been erected, companies have been formed for the establishment of a knitting mill and car works, and a second knitting mill and a machine shop for the manufacture and repair of mill machinery are now on the tapis.

The Electric Light has been tested for several nights in the shops of the Toronto Bridge Co., and answered admirably, but the power supplied proving irregular, it has been removed to the Mail office for the present. The Bridge Co. express themselves as perfectly satisfied with the experiment, and hope to have arrangements made shortly so as to have a machine fixed permanently in their works.

The directors of the Kingston cotton mill had a meeting recently. The subscription list has been closed, \$197,000 out of the \$200,000 having been subscribed. The stock is now at 5 per cent. premium. Applications for over \$40,000 worth of stock have been refused from capitalists in Montreal and Toronto. By the end of this month the mill will be running, and samples of Kingston cotton will be on the market. Twelve thousand dollars' worth of raw cotton has arrived.

The Montreal Cotton Company resolved at its meeting on the 6th inst., to increase the manufacturing power of its mill, and to double its present capacity. The extension will cost \$350,000, and the work will be done next summer. When the addition is completed there will be 70,000 spindles at work in place of 35,000 as at present. The number of operatives will be increased 500 or 600. It is stated that the mill has not been able during the past year to execute half the orders received.

The public meeting at Belleville on the 6th inst., for the discussion of the Steel Association project, was largely attended. Mr. Hall, President of the Association, stated that he could not lay the necessary details before a public meeting, but he could give the necessary explanations to a committee of citizens and the Finance Committee of the City Council, who should report to a subsequent meeting. A committee was accordingly appointed.

The deputation appointed by the Town Council of Peterboro' to proceed to Toronto to request the Ontario Government to pass such legislation as would enable the town to take \$20,000 stock in the proposed Car works' Company, have returned home. They had an interview with Mr. Mowat and were cordially received. As the question was a new one, and one that he had never considered, he promised to consult with his Deputy and see what could be done to further the town's request. The deputation also saw the Deputy and fully explained the matter to him. The question will have the best consideration of the Government.

At the Brantford City Council meeting on the 6th inst., Mr. Slater's winery factory bonus was brought forward, and all present spoke highly in favour of it. The proposition Mr. Slater makes, is to build a factory to cost, with machinery, \$50,000, on condition of receiving, if it be built inside the city limits, a grant of \$5,000 and freedom from taxation for ten years; if outside the city limits a bonus of \$5,000. The building of the factory inside the city limits appears at present to meet the favourable views of the citizens. A by-law will be prepared, and submitted at the next meeting of the Council.

I had an interview with a gentleman at Ottawa this afternoon who proposes introducing into Canada a branch of manufacture we have not had here yet. I am not at liberty at present to say what the article is, but hitherto it has come in entirely from the United States. According to his statements—and he is a man of practical experience—he can make the article in this country fully 20 per cent. cheaper than it is at present. He intends bringing over from the States some twenty-five to thirty hands to commence with. How much better, he said, will it be to have this article made here, and thus have our capital kept at home, than to continue to support and maintain the manufactures of it on the other side of the lines.—*Toronto Mail*.

Messrs. J. H. Killey & Co., of Hamilton, delivered last week a compound condensing engine for the city of London. It has all modern improvements, is calculated to pump 3,000,000 gallons 260 ft. high per day, and its makers claim will run with about one-half the fuel *per rata* as compared with those now in use in the Toronto Water Works. The engine is 200 h.p., the pumps, which are constructed after the model of those made by Geo. H. Corliss, for Pawtucket, Rhode Island, will make 50 double strokes per minute without jar or concussion; there are no less than 216 valves in each pump, all made of Phosphor Bronze, and have a lift of only a quarter of an inch. The machinery is expected to be in operation in about six weeks.

Messrs. Leitch & Turnbull, of Hamilton, are the manufacturers of a power elevator, which is being placed in many new as well as old warehouses and manufactories. It differs materially from the American hoist. The frame is of wrought iron. The belt shifters are automatic and work independently by cam motion, and are self-oiling. One of the main features of the hoist is the safety attachments, which are similar to those used in large coal-mine hoists. Should the cable break, the safety attachments grip and stop the platform from descending. Another important improvement is the safety governor, which, in case a belt breaks, will only allow the platform to descend at a safe rate, no matter how heavily it may be laden.

Under the fostering and benign influence of the present tariff, the kid glove industry is growing to magnificent proportions. Messrs. W. H. Storey & Son, of Acton, who formerly found it difficult to keep forty hands employed, now can hardly keep up to their orders with one hundred and forty hands, and largely increased facilities. Their output last year was upwards of fifteen thousand dozen pairs of gloves, as against about four thousand five hundred dozen in 1877. They have advanced the wages of their employees all round fifteen per cent., while the prices of their gloves have not increased. This is, of course, contrary to "correct principles of political economy" as free-traders understand it, but it is true.

Alderman Irving, who will be the manager of the Kingston car works, and who is a pronounced free-trader, has been visiting many factories in the West with a view of getting a supply of machinery and tools. He found the majority of the establishments unable to negotiate with him for the reason that they were so busy—many of them having to work night and day to fill from three to seven months' orders. Being an opponent of the N. P. he made enquiries as to the real cause of the boom, and was told in every instance that the tariff had provided more work and given the manufacturers an opportunity to employ more labour. The same statement was made in five different towns. The alderman says there is something in the N. P. after all.

Everything is now working satisfactorily at the glass factory at Napanee, and an excellent quality of window-glass is being turned out in paying quantities. Mr. Herring is now satisfied that the enterprise can be made a good paying investment if the full capacity of the building is utilized, and we are informed that he has concluded to add an eight-pot furnace to the blowing room. The buildings are quite large enough to accommodate the extra furnace, and the flattening oven is of a capacity to handle the produce of eighteen pots, so that by the addition the full facilities of the establishment will be utilized. We understand that the prospects are good for an increase of ten per cent. in the tariff, which is an inducement to the proprietors to increase the works so as to be in a position to supply the demand.

The Londonderry Steel Works are a striking illustration of the effect of the N. P. on the country. Before the policy was put in practical operation these works dragged out a shaky existence. They are galvanized into new life under the N. P., and now they employ 600 hands and pay out \$1,000,000 for wages and materials, and are the largest customers the Intercolonial Railway has, their payments on account of freight being over \$100,000 a year. Their coal bill amounts to \$70,000. They have increased their output 30 per cent. since the tariff was re-adjusted. A town is growing up around the works, and it already numbers about two thousand persons. The farmers around it all believe in the National Policy, finding as they do a home market near at hand with cash payments.

A large and important meeting of the leading citizens of Stratford was held in the town hall on the evening of the 7th inst., Mr. S. S. Fuller in the chair, Mr. W. Mowat, secretary. Mr. Fuller explained that the Town Council had appointed a committee of the Council to take steps to induce manufacturers to commence business in the town, and with that view a large number of the leading business men were asked to give their assistance. The chairman said that he felt assured that many manufacturers would be quite satisfied with free sites and exemption from taxation for long periods. Messrs. Woods, Horne, McGuigan, Scrimgeour, Mowat, Matheson, Carey, Vanstone, Miller, Fraser and others expressed their approval of the chairman's proposal, and the secretary was instructed to correspond with certain manufacturers who it is understood are likely to accept the offer.

The meeting of the shareholders of the Nova Scotia Sugar Refinery held at Halifax on the evening of the 14th instant was largely attended. A stormy discussion occurred on the report of a committee appointed at a previous meeting to investigate the past year's management. The report severely condemned the manner in which the work was conducted by the manager and engineer at the works, and blamed the directors for not exercising more strict supervision. In some cases the expenditures were larger and refining more expensive than they should have been, etc. The report was adopted, and the new board of directors were empowered to take such steps as they might consider best for the future operations of the company, and the raising of additional capital, either by the issue of preferential stock or otherwise. The number of directors has been increased from five to seven, and the following were elected to-day:—Mr. Thos. Ritchie, Hon. Robert Beak, Messrs. M. Dwyer, J. J. Brenner, Albin Smith, Jas. Thomson, and W. J. Stairs. The three first-named were on the last board.

The Coniveau Silk Mills are an example of what pluck, energy and enterprise can accomplish in the face of what were generally looked upon as insurmountable difficulties. Two years ago this industry started with one loom, and have since gradually increased their facilities till at the pre-

sent time sixty looms are busily at work. Amongst some of the more important difficulties successfully combated by the company since its inception, has been the necessity of training its employees, and also the prejudice at first experienced, against silks of Canadian manufacture; the latter of which is now entirely eradicated, the quality of the goods having proved equal to the best imported. The company are now building a large new factory at the corner of Papineau Road and Ontario-street, the architectural design being entirely dissimilar to that of any other building for industrial purposes in the country, from plans drawn by Mr. J. Howley, Junr., a son of the contractor. Although only commenced about six weeks since, it is intended to be entirely finished, painted and ready for occupation by the middle of March, the work being carried on at night with the aid of the electric light.

A new engine is being built by Thos. Worswick, the well-known engine builder, of Guelph, and is to be one of, if not the best and most finely finished engine ever made in Canada. The boilers are being put in by the Babcock & Wilcox Co., of the U. S., and will be the second ones of that patent in Ontario and Quebec, the Rosamond Woollen Co. having one in their large mills at Almonte.

The new factory will be fitted with the most improved machinery and modern appliances, and will afford employment to a large number of hands.

The Iron Trade.

PITTSBURG.

NAIL ASSOCIATION MEETING—NO PROBABLE ADVANCE ON CARD RATES—STRIKE MOVEMENTS—GOOD DEMAND IN THE WHITE LEAD AND PAINT TRADE—EXTRAORDINARY PRODUCTION OF AMERICAN STEEL WORKS—EXPECTED THAT CANADA WILL SOON TAKE A HAND IN STEEL PRODUCTION—QUOTATIONS.

(From Our Own Correspondent.)

PITTSBURG, FEB. 13, 1882.

A regular monthly meeting of the Western Nail Association was held at its rooms in this city on Wednesday, 8th inst. Although the attendance was not large, the meeting not being considered an important one, yet the various nail-making districts were about all represented. The reports made by the members were of an encouraging character, they being to the effect that trade is good for the season and that stocks are small. The prospect for a large and remunerative business in the spring is considered very good indeed. The Association made no changes in prices, nor was it expected that it would.

There will be an adjourned meeting of the Western Iron Association on Wednesday of the present week (15th inst.), making three within six weeks, or one every third week. There is a good deal of speculation in iron circles as to whether or not the card of prices will be advanced. Some believe or affect to believe that an advance is almost a foregone conclusion; but with these the wish appears to be father to the thought. Your correspondent is disinclined to assume the role of a prophet, but if he were not he would rather risk his reputation in predicting that no advance will be made. At the last meeting there were only four (4) votes in favour of such action, and from all I can learn from conversing with ironmakers and from reading papers published in other iron districts in the West, there has been little or no change in the prevailing view since.

There have been but few strikes among the ironworkers of this city for a year past, which is doubtless owing to the steadiness of prices. There is, however, occasional uneasiness among some of them, who appear to think that as their employers have had plenty of business for a long time they should advance wages, even though prices have not advanced. The plate moulders at the seven or eight stove foundries in the city appear to be possessed with this idea, and have been on a strike for a week, their demand being for an increase in wages of ten per cent. The employers say they cannot afford to grant the advance, as they are already paying more than is paid elsewhere. Hence, the prospect is that the strike will continue for a time longer. There has been a disagreement between the proprietors and employees of the Pittsburg Bessemer Steel Works, for two or three weeks; not, as appears, on account of wages, but in relation to an agreement of some kind which the former wish the latter to sign, but which they refuse to do.

There are eight white lead factories in this industrial centre, and the

proprietors report that they have had a better trade during the past winter and summer than ever before in a similar period of time. The mildness of the weather during the present winter has no doubt made trade better than otherwise it would have been.

The Edgar Thomson Steel Works, with two 7½-ton converters and a single roll train (three high), last year produced 157,513 tons—810 pounds of ingots and rolled 136,605 tons 670 pounds of rails. This is an increase over the previous year's production of ingots of more than 30,000 tons. American Bessemer works turn out about three times as much steel in a given time as English Bessemer works having the same sized converters. This is not only true, but our English friends acknowledge it. Of course this is galling to the spirited islanders, and they are making strenuous efforts to catch up with their New World competitors. When our neighbours north of the lakes commence making Bessemer steel—as of course they will before long, if the National Policy continues to be adhered to,—they may give us a "lively shaking," as they have done in aquatic matters.

During the past fortnight the pig iron market has been exceptionally quiet, there being no pressure to sell, and but little to buy. Prices of foundry varieties are slightly higher, but with this exception there have been no changes. Neutral mill from native ore may be quoted at \$25 to \$26, 4 months' time; cinder-mixed red-short, \$26 to \$27; Bessemer, \$28 to \$30; No. 1 foundry, \$27 to \$28.50; No. 2 foundry, \$26.50 to \$27.50—all 4 months. There is still a great demand for manufactured iron, prices of which are unchanged. Bar 2.50c.; No. 24 sheet, 4.30c.; tank, 3.30c.; C. H. No. 1 boiler plate, 5½c.; homogeneous steel do. 6½c.; hoop iron for common barrel hoop 3.10c. to 3.30c.; lighter sizes, 3.20c. to 5.10c., all 60 days, or 2 per cent. off for cash. Nails in fair demand and unchanged in price. 10d. to 6d., \$3.40, 60 days, or 2 per cent. off for cash, with an abatement of 10 cents per keg on lots of 250 kegs. Pipe and tubes unchanged. Gas and steam-pipe, 55 to 57½ per cent. discount; boiler tubes, 37½ per cent. discount; oil-well casing, 85c. net; do. tubing, 25c. net. Steel is in excellent requirement, and prices without change. Best refined cast, 12c. per lb.; crucible machinery, 8c.; hammercast, 8½c.; hoe, 9c. to 11c. to 12½c., as to quality; spring-cast, 7½c.; tire-cast, 8½c.; fork and rake, 8½c.; hoe, 7½c. Railway trade supplies have been in heavy demand all summer and winter. Prices same as at date of last report, as follows: Spike, 3.15c. per lb.—30 days; splice bars, 2.60c. and track bolts, 3½c. to 4c. for square nut, and 4½c. for hexagon, cash f.o.b., Pittsburgh.

Our Pittsburgh correspondent, writing on the 13th inst., expressed as above the opinion that there would be no change in prices made at Wednesday's meeting of the Western Iron Association. That forecast is confirmed, as will be seen by the following telegraphic despatch:—

PITTSBURGH, Pa., Feb. 15, 1882.

TO CANADIAN MANUFACTURER, Toronto, Canada:—

At the Western Iron Association meeting to-day no change was made in prices. Meeting adjourned to first Wednesday in April.

PHILADELPHIA.

THE EASTERN MARKETS—IRON STEADY AND QUIET—CONSUMPTION AND PRODUCTION BALANCED—STEEL RAILS DECLINING—LOCAL INDUSTRIES EXPANDED—ELECTRIC LIGHTS—GENERAL BUSINESS—MR. WELL'S OPINION—CANADA'S NATIONAL POLICY.

(From Our Own Correspondent.)

PHILADELPHIA, FEB 15, 1882.

Marked changes have occurred in the Eastern Iron market since date of last letter. The general tendency of prices has been in favour of buyers. The market quotations show but little variation. A month ago buyers were everywhere very anxious and rushed in orders to anticipate at once, fearing an advance of prices every hour. Circumstances seemed to justify this apprehension. Demand was very active, production seemed to lag behind, orders seemed to pile up, and everybody wanted more iron and steel than they could get.

The situation is changed. Business is active, mills are busy, buyers are around looking after their supplies, but anxiety has disappeared. The producing interests have demonstrated that there is no occasion for anxiety. It is evident that there will be no surplus for months to come and that prices will lean in favour of sellers more than in favour of buyers. While this is true it must not be forgotten that buyers have chances to run which may turn things in their favour. The greatest chance is—whether a desirable one or not, your correspondent does not assert—it is the possible heavy importation of English and Scotch Iron. Ever since last fall American prices have been creeping up to the dangerous limit.

Last fall it will be remembered the Cleveland and Co. a pig iron makers restricted their output 12½ per cent., and that agreement ends the last of March. It is to be supposed production will increase 12½ per cent. after that.

There are 2,000,000 tons surplus stocks in Great Britain. There is much less than one-tenth of that amount here. It is to be supposed that a favourable opportunity will be sought by foreign holders to sell some of their stocks. Last year's total exports of British pig, including Bessemer, was under 300,000 tons, but we started with over 600,000 tons, scarcely any of which we had in January. The American furnaces are expanding their production to meet the domestic demand. Whether they can or not remains to be seen, and whether English and Scotch makers will get 200,000 tons pig into our Atlantic ports this year. It also remains to be seen whether if heavy exportation begins, foreign prices will advance under the demand and thus restrict the shipments. Every consumer of pig iron can draw his own inferences from these facts and probabilities. The strong upward tendency which has controlled the market for several months has disappeared, and prices are stationary in crude iron. No. 1 Foundry can be bought at \$26 for ordinary—and \$27 for best, delivered; No. 2 can be bought from \$24 to \$24.50. Mill irons were contracted for \$22 at furnace, and some lots of the best grades were booked at \$23. Makers will not haul down their flag until the enemy gets closer. Large consumers have in numerous cases within two weeks entered into contracts extending up into summer and even to the fall months. This was done in accordance with the custom prevailing with certain firms, which is to "cover" all contracts at the time they are made, regardless of the price of iron at the time. The great Baldwin Locomotive Establishment pursues this policy, among many others.

The trade desires to avoid all unsettling agitations or fluctuations. There are in blast about 475 furnaces, which is nearly the limit that can be reached.

Very little Bessemer pig has been bought abroad; three weeks ago \$28 was asked. To-day \$26 was accepted and \$25.50; the tendency is downward. Two weeks ago Muck Bar sold at \$48 in some few cases, to-day sales were made at \$46, and \$47 is asked, demand is quite active. The bloomeries are sold up for over two months. Anthracite blooms sold within a week for \$63, delivered. Charcoal blooms are rather scarce even at \$75.

The merchant iron mills are running to their very fullest capacity, and are catching up with demand, which has been out of sight since last July. The store price of bars was increased to 3 cents. Mill price is nominally 2.8 to 2.9. A customer for 500 tons, if told the market was easier, would not know what it meant, if he attempted to place that order. Mills have from 60 to 90 days' work in hand; and work is being presented, but not as freely as a few weeks ago. The Pittsburgh manufacturers, by the time this letter reaches you, will have decided for or against an advance. Construction iron is in active demand at firm prices. The offer of foreign makers of shaped iron to furnish stocks on 30 days delivery is a warning to American makers that they have reached the limits of the market. Railway material is active in large and small lots. Over 100,000 tons have been sold within a period of two (2) weeks at prices varying from \$51.50 to \$58. English makers have relinquished the idea of business until after ocean freights have declined and the risk in foreign orders is over. Iron rails are dull. Old rails are held at \$30.50. Buyers are out of the market. Spikes are \$3.15 per keg. Mills on small material have all the orders they can fill until the first of April. The sheet iron mills are doing their best to keep customers in stocks—quotations 4½ to 5½ for common. Galvanized in active request. The demand for selected scrap enables sellers to command from \$32 to \$35.

Local industries are expanding, and Philadelphia is marching steadily

in the direction of her former commercial supremacy. More commercial enterprise is needed. New York city is simply our shop window. We produce here and sell there. Last year we built 463 factories. We sell to jobbers through New York houses in the smaller industries, and thus contribute to the prosperity of a rival. We should sell our fabrics and products direct to customers. It requires one sort of ability to make an article and another to sell it.

The month of February, the dullest in the year, has been selected as the best time to inaugurate the policy of restriction, the result is, already, the cutting of circular rates has been discontinued. The production of coal is increasing, the figures being 2,320,958 tons from reporting sources, as against 2,261,120 tons same time last year. Vessels are scarce. The interior trade is in a condition of activity. The famous Lackawanna region is to be tapped by a new road in the interests of the New York, Susquehanna and Western R. R. Seven thousand acres of coal land have been purchased in that valley, and mines will be opened in spring under the management of a company with a paid-up capital of \$1,500,000. This is but one of many similar enterprises in Pennsylvania.

We are promised Edison's electric light at last. It will be introduced in this city, it is said, for household purposes and the illuminating of theatres, churches and parks. Mr. Edison was in the city the other day to organize a company under which the new light will be operated. The lamp is a small glass globe, from which the air is exhausted, and into which are inserted two fine wires attached to a carbonized paper burner, shaped like a horse-shoe. This gives a mellow light, which burns with a steady motion equal to gas. A similar movement is in progress across the river in Camden, N. J., under the Brush patent. A battle of the electrical giants is threatened, but it is possible that the giants will agree to divide the immense patronage to be secured. Still, feeling runs high, and possibly the contest between the companies will be of a "dog-eat-dog" character. The public are standing ready for the electric light, whether it be Edison's, Brush's, Maximo's or any other light.

General business is improving, and there was a sharp increase in exports at New York lately. The farmers held back $\frac{1}{3}$ of their crop and some of it is now coming forward, but unless sold at a material reduction, grain will be stored in Atlantic ports.

David A. Wells has been enlightening the benighted people of Boston over the National mistake of protection. He commiserates the 4,000,000 of people in Canada over their mistake, and predicts individual and general disaster. He is doing his work nobly and ought to have his salary increased by the Cobden Club. He regrets that American labour will not be contented with 50 cents per day, black bread and meat six times a week, or a month. For the tariff question is the labour question.

There is a growing disposition towards more intimate commercial relations with the Dominion. The commercial enterprise displayed there is of no mean calibre. Though Mr. Wells may condemn the leaning towards protection, he would find a refutation of all his theories, if he would ascertain the number of new industrial enterprises which have sprung into life, and the amount of railway capital invested since the new departure. Busy people, with no time to read and theorize, judge of systems and principles by facts and results. Judged by this standard the Dominion is on the right track.

MONTREAL.

IMPROVED DEMAND FOR PIG IRON—PRICES FIRM—STOCKS IN STORE LIGHT—BAR IRON, PRICES ON THE FORMER BASIS, BUT WITH MORE ACTIVE DEMAND—NO BREAK IN VALUES ANTICIPATED—METAL MARKET QUOTATIONS.

(From Our Own Correspondent.)

MONTREAL, FEB. 14, 1882.

Since our last report there has been an improved demand for pig iron, and several large orders have been given by Western men for immediate shipment. Among the sales made within the past few days are those of 500 tons of No. 1 Galtsherrrie delivered at a point West at \$26, net cash, a lot of 1,000 tons of No. 1 Summerlee, delivered in the West at \$26, and a lot of 350 tons No. 1 Eglinton at \$24. We also learn there are many enquiries for Siemens' pig iron, but orders for it are booked

considerably ahead, and all orders given now will be conditional that the price ruling at time of delivery will be charged. It is understood that besides the sales already referred to, there have been some good-sized lots of pig iron selling during the past few days for prompt shipment. The position of the market here is greatly strengthened by the light stocks in store, and there can be no doubt but that dealers requiring immediate supplies will have to pay full, if not higher prices. We quote as follows:—Coltness \$25.00 @ 25.50; Siemens' \$24.50 @ \$25.00; Summerlee \$25.00; Langloan \$25.00; Eglinton \$23.00 @ \$24.00; Calder \$24.50; Carnbroo, \$24.00; Hematite \$28.00 @ 28.50.

A moderate volume of business has been done in bar iron, chiefly on the basis of former quotations, Staffordshire Crown having been placed at \$2.25, and a lot of Siemens' bars at \$2.35. We also know of a large lot of Staffordshire bars which has been sold for spring delivery, notwithstanding the fact that freights have as yet shown no material decline. The simple fact of the matter is, some dealers are bare of stock, and as the consumptive requirements are large, and bid fair to be larger still, they must have the goods, and we do not apprehend any break in values for some time. In Canada plates we have to report the sale of 1,000 boxes of a brand said to be equal to Penn at \$3.40, and several smaller lots at \$3.50. There is a fair inquiry for tin plates, a lot of 450 I. C. Charcoal having been taken at \$6.25, while several lots of Cokes have changed hands at \$5.25 @ \$5.30. There has also been some business in tinned sheets, Lion & Crown best Cokes having been in request at 10c. @ 10 $\frac{1}{2}$ c., and best Charcoal at 11c. @ 11 $\frac{1}{2}$ c., as to quantity. L. N. Crowther's galvanized iron, No. 28, has also met with some inquiry at 7 $\frac{1}{2}$ c. @ 7c. per lb. Sorting-up orders for general hardware are being received from travellers, but some houses have not sent out their representatives yet, although next week will no doubt see them mostly on the road. We quote prices as follows:—Bar, per 100lbs—Siemens, \$2.25 to \$2.35; Scotch and Staffordshire, \$2.25; Best Staffordshire, \$2.50; Swedes, \$4.00 to \$4.50; Norway, \$5.00; Lowmoor and Bowling, \$6.25 to \$6.50. Iron Pipe, discount 60 per cent. Canada Plates, per box—Glamorgan & Budd, \$3.25 to \$3.50; Penn, \$3.25 to \$3.50; Nentgrynt \$3.25 to \$3.50; Hatton, \$3.25; Thistle & Clifton, \$3.50. Tin Plates, per box—Charcoal, I. C., \$6.25 to \$6.50; Charcoal, I. N., \$8.00; Charcoal D. C., \$5.75; Charcoal, D. X., \$7.50; Coko, I. C., \$5.25 to \$5.50; Tinned Sheets, No. 26, Charcoal, 10 $\frac{1}{2}$ c. to 11c. Cookley K, or Bradley, 10 $\frac{1}{2}$ c. to 11c.; do, Coke, 10c. to 10 $\frac{1}{2}$ c.; Galvanized Sheets, 28 best, 7 to 7 $\frac{1}{2}$ c.; Hoops and Bands, per 100 lbs., \$2.75 to \$3.00; Sheets, best brands, \$3.00; Boiler Plate, per 100 lbs., Staffordshire, \$3.00 to \$3.25; Bradley, \$4.50 to \$4.62 $\frac{1}{2}$; do, Lowmoor and Bowling, \$7.00 to \$12.00; Russia Sheet Iron, per lb., 12 $\frac{1}{2}$ c. to 13c. Lead—Pig, per 100 lbs., \$4.50 to \$4.75; Sheet, do, \$5.50; Bar, \$5.00 to \$5.50; Shot, do., \$6.00 to \$6.50. Steel—Cast, per lb., 11 $\frac{1}{2}$ c. to 12 $\frac{1}{2}$ c.; Spring, per 100 lbs., \$3.75 to \$4.00; Tire, do., \$3.50 to \$3.75; Sleigh Sheet, \$3.00 to \$3.25; Ingot, Tin, 30c. Bar Tin, 30c. to 32c.; Ingot Copper, 20 $\frac{1}{2}$ c. to 21c.; Zinc sheet, per 100 lbs., \$6.00 to \$6.50; Spelter, \$5.50 to \$6.00; Horse Shoes, per 100 lbs., \$4.25 to \$4.50; Proved Coil Chain, $\frac{3}{8}$ in., \$5.50; Anchor, \$5.00 to \$5.50; Iron Wire, No. 6, per bdl., \$1.75 to \$1.80.

Wool.

PHILADELPHIA.

A QUIET TIME IN THE WOOL MARKET—BUYING FOR PRESENT WANTS ONLY.

PHILADELPHIA, FEB. 13TH, 1882.

The general wool trade is fair, but in character and volume somewhat disappointing to sellers, the majority of whom were expectant of greater activity with the incoming of the second month of the year. Transportation difficulties, occasioned by recent storms and sudden changes of weather, have interfered with the movement to some extent, but do not fully account for the comparative indifference of buyers. Manufacturers are well employed and have every reasonable assurance of a good outlet for their products at fairly remunerative prices, but in spite of these facts buy cautiously, and rarely in excess of the earliest wants of the looms. The comparative cheapness of the staple is generally admit-

ted, but consumers are not sufficiently apprehensive of higher prices to tempt them to add the expense of carrying to present cost. Dealers, as a rule, are as firm and confident in their views as at any time since last June; but the unsatisfactory demand wears upon the patience of some of the weaker holders, and enables shrewd buyers to secure occasional small concessions. There is less talk of an early advance in prices, and growing concern lest the exhaustion of supplies should be so gradual as to keep the market stationary until late in the spring, when—as was the case last year and in 1880—the development of a temporary scarcity will be likely to impart an unhealthy stimulus to values that will act against the interests of dealers about negotiating with growers for the new clip. Foreign markets close steadier, but unchanged. Prices in New York, Boston and Philadelphia remain as last quoted.

MONTREAL.

MODERATE BUSINESS IN MONTREAL—NEWS OF GREAT ACTIVITY IN BOSTON.

MONTREAL, FEB. 14, 1882.

Manufacturers have been looking around during the past few days, but we do not hear that any great amount of business resulted therefrom. A few small parcels of foreign wool, however, have been taken, principally greasy Cape and Australian, to supply immediate wants, at 19½c. @ 20½c. The sales reported during the past two weeks aggregate 95 bales greasy Cape at from 20c. to 20½c., and 60 bales low grade Australian at 24c. @ 24½c. The Boston market has been unusually active during the past week, over 3,000,000 pounds having changed hands at steady prices. We quote prices as follows in the market:—Greasy Cape, 19½c. @ 20½c.; Australian greasy—low grade—24c. @ 25c.; and fine combing 30c. @ 31c. Canada pulled—A. super. 34c. @ 35c.; B. super. 31c. @ 33c.; unassorted pulled, 28c. @ 29c.

Cotton.

PHILADELPHIA.

GREAT FLUCTUATIONS IN "FUTURES"—AMERICAN PRICES KEEPING ABOVE THE LIVERPOOL EXPORT BASIS—LOW PRICES ON THE WHOLE, WITHOUT INCREASED DEMAND—QUOTATIONS.

(From Our Own Correspondent.)

PHILADELPHIA, February 13, 1882.

Cotton has fluctuated violently since last report, and the leading markets have been the scene of wild excitement, particularly during the earlier days of last week. The shrinkage in cost has been mainly in futures, in which trading has been unusually active. The financial flurry abroad and the demoralization of the Liverpool market, combined with the fear of tight money here and the failure of several operators, threw the New York and New Orleans markets into a condition of semi-panic. The decline varied from 8 to 22 points daily, and the market at the close, though steadier, is very feverish and sensitive. Spot stock has also declined, but has been less affected than futures. Lower prices have not stimulated demand for consumption, and Liverpool keeps steadily below an export basis. Large lines of "long" cotton have been thrown overboard, and the "shorts" have covered freely, but beyond the liquidation of paper contracts there has been no gain to the market by the heavy drop in prices. Neither exporters nor spinners show any more disposition to buy than when prices were 80 points higher still and the weight of stock on the market as great as before the break. The oldest operators are mixed in their opinions of the future, and the disposition at the close is to more cautious trading, to check the feeling of demoralization and uncertainty, and prevent further trouble among the trade, that would be likely to result from a repetition of the excitement and decline of the past ten days.

The following were the closing prices of spot cotton on the dates named.

	January 30th.		February 14th.	
	Middlings.	Low Middings.	Middlings.	Low Middings.
New York	12	11 9-16	11 1/2	11 7-16
New Orleans	11 1/2	11 1/2	11 1/2	11 1/2
Mobile	11 1/2	11 1/2	11 1/2	11 1/2
Charleston	11 1/2	11 1/2	11 1/2	11 1/2
Savannah	11 5-16	10 1/2	11 1/2	10 1/2
Galveston	11 1/2	11 1/2	11 1/2	11
Wilmington	11 1/2	11 1-16	11 1/2	10 13-16
Norfolk	11 1/2	—	11 1/2	—
Augusta	11 1/2	10 1/2	11 1/2 @ 11	10 1/2
Memphis	11 1/2	11 1/2	11 1/2	11
St. Louis	11 1/2	11	11 1/2	11
Cincinnati	11 1/2	11	11 1/2	10 1/2
Baltimore	11 1/2	11 1/2	11 1/2	11 1/2
Philadelphia	12 1/2	11 1/2	12	11 1/2
Boston	12	11 1/2	11 1/2	11 1/2

Dry Goods.

NEW YORK, FEB. 14, 1882.

The condition of our dry goods market has varied but little in the last fortnight, and whatever change developed itself, was practically for the better. Outside influences, such as speculative transactions, failures, &c., had comparatively little effect on this market, and the few unfavourable features, which do exist, but which at most are only temporary, may be entirely ascribed first—to the unusual mildness of the first half of the winter, and, second—to the extra caution exercised by buyers, whose heavy purchases last season have left comparatively large stocks with the majority of retailers. In cotton goods and woollens a rather enlarged business was accomplished at first hands, and the improvement in the latter may be expected to continue for some time to come. Our jobbing trade has not entirely equalled expectations, having been spasmodic, and, owing to the unfavourable character of the weather, comparatively light. The auction season is about opening and those engaged in it look for a more prosperous time. The last three years have not proved particularly encouraging to this important adjunct of the dry goods trade, and the leading houses engaged in it during that time have all experienced a very material decline in their business, so much, in fact, that one of the first at one time contemplated withdrawing. Therefore, a change for the better is strongly hoped for. Briefly stated, the causes that have been operating against the auction interests are as follows:—an improved condition of the market, rendering the forcing of large quantities upon the market unnecessary; the objection of many merchants to offering their goods at public sale, where they were subject to the obnoxious "Peter Funking" system; and their preference of disposing of surplus stocks privately, either by means of "drives" or closing out large lots to the leading retailing or jobbing establishments.

The cotton market continues in a feverish state and has steadily declined; but the position of wool is rather more favourable. Demand for the latter is light, but interior supplies are light also, and holders express confidence in values.

For staple cotton goods there has been a fair demand and more activity was developed in brown sheetings and shirtings, denims and ducks, the leading makes of which are sold ahead and moving in fair quantities in the execution of back orders. In this respect the market is in better shape than usual at this time of year, and values of such are steady at current quotations. For bleached cotton, however, the request is irregular, and low grades rule dull and weak, concessions being occasionally made to stimulate the demand. White goods seem fairly active with agents, and there is a moderate inquiry for quilts and cotton towels. The condition of print cloths has improved somewhat, the demand at present being more active at 3½c. for 64x64s. and 3¼c. for 56x60s. Stocks have ceased accumulating and this week exhibits a slight reduction, the quantity now held outside of printers being 1,121,000 pieces. Prints were less called for than anticipated, and the business of the past two weeks is disappointing. Shirtings, furniture prints, Turkey reds and mournings are the only descriptions for which

there is any demand. For gingham the inquiry has naturally shown some abatement, and the present movement is rather irregular, with most relative activity in the best dress styles and snruckerz. Dress goods have been rather more active, the chief attention being devoted to worsted and woollen fabrics, buntings, flannels and plaid and striped cottons. Hosiery and underwear remain quiet, excepting deliveries in the execution of back orders, which are fair in volume.

The openings of new fall samples of clothing woollens has imparted more activity in these, and clothiers have placed very fair orders for several of the most popular makes. Buyers, however, appear cautious, and, so far, operations on their part have to a considerable extent been confined to taking memoranda as a basis for future operations. Generally the new prices are about at last year's figures, notwithstanding a material advance in the cost of production, so that they are considered by agents as comparatively low; from which it may be inferred that the latter will, should the market warrant it, attempt some slight advance at no distant date. Some fair transactions are reported in the leading makes of all-wool and union cassimeres, cotton-warp cassimeres and worsted coatings. Fancy-backed overcoatings are also doing fairly; but other descriptions of woollens remain sluggish.

No special activity has yet been developed in foreign goods, although preparations for the spring trade are complete. Intending buyers, however, are numerous, and a quickened movement is expected. Dress goods, silks, and linens are severally in moderate request. The imports of dry goods at this port are excessive, amounting in the first six weeks of the year to \$18,196,759 against \$14,590,472 during the same period last year—a figure which has hardly been surpassed in the palmiest days of dry goods importing. The increase has this redeeming feature; it is well distributed among the various classes of goods; but it is well to state it is from this source that the auctioneers expect to derive the enlarged business alluded to above, and not from domestic goods.

Leather.

MONTREAL.

QUIETNESS IN THE LEATHER TRADE—FULL STOCKS—LOSSES OF MONTREAL LEATHER HOUSES THROUGH FAILURES OF WESTERN BOOT AND SHOE FIRMS—TORONTO INCLUDED—BAD BUSINESS WITH COUNTRY CUSTOMERS—QUOTATIONS.

From Our Own Correspondent.)

MONTREAL, Feb. 14, 1882.

The quiet feeling mentioned in last issue continues, the only exception being in choice, plump Spanish and Slaughter Sole, which is very scarce. Of this kind sides have been put through during the week of 100 sides of No. 1 B. A. Sole at 25½c., and 100 Slaughter Sole at 27½c. Other kinds of Sole are in large supply, and rule in favour of the buying interest. The supply of black leather is heavy and the general market remains in a stagnant condition, and prices partake of an easier tone. Waxed Upper is particularly dull, as well as Splits, although the market has been relieved of considerable of the latter stock recently on export account. A little better enquiry, however, has sprung up for buff and pebbled cow, the former having changed hands at 14½c. to 15c., and the latter at 13c. In other descriptions there is little or no change. One or two of the leather houses in this city have suffered considerably of late through the failure of a number of boot and shoe firms in the west and in the lower provinces, and we understand they have had a dose from the failure of one or two boot and shoe houses in Toronto of late. Most of the large boot and shoe manufacturers of Montreal have suffered losses through the insolvency of a number of their country customers. One firm states that the losses in the boot and shoe trade since the beginning of the year have been heavier than for any corresponding period during the last five years. We quote prices as follows:—Spanish Sole, No. 1, B. A. \$0.24 to \$0.26, Spanish Sole, No. 2, P. A.

\$0.22 to \$0.28; China, No. 1, \$0.21½ to \$0.22½; China, No. 2, 20; to \$0.21; English Sole, \$0.44 to \$0.50; American Oak Sole, \$0.45 to \$0.50; Buffalo, No. 1, \$0.22, Buffalo, No. 2, \$0.20½ to \$0.21; Slaughter, No. 1, \$0.27 to \$0.28½; Rough (Light), \$0.27 to \$0.29½; Harness, \$0.29 to \$0.33; Waxed Upper (Light) \$0.36 to \$0.39. Waxed Upper, medium and heavy, \$0.33 to \$0.35, Grained Upper (long), \$0.36 to \$0.38; Scotch Grained Upper, \$0.38 to \$0.40; Buff, \$0.14 to \$0.16; Pebbled Cow \$0.12 to \$0.15; Splits, calf, per lb., \$0.30 to \$0.35; splits, medium, Crimping, \$0.27 to \$0.30, Splits, Juniors, \$0.18 to \$0.23; Calfskin (light), \$0.60 to \$0.75; Calfskin (heavy), \$0.75 to \$0.85; French Calfskin, \$1.05 to \$1.35; French Kid, \$15.75 to \$16.50; English Kid, \$0.60 to \$0.70; Bussea Kid, \$15.50 to \$16.50, Patent Cow, \$0.15 to \$0.16; Enamelled Cow, \$0.16 to \$0.18; Green Hides, inspected, \$0.50, Calfskins, per lb., \$0.13 to \$0.13½; Sheepskins, (old), \$0.90 to \$1.25½; Lambskins, \$0.80 to \$0.95; Sheepskins, dressed, No. 1, \$5 to \$5.75; Sheepskins, dressed, X, \$6 to \$6.75; Sheepskins, dressed, XX, \$7 to \$7.75; Sheepskins, dressed, XXX, \$8 to \$8.75; Sheepskins, dressed, XXXX, \$9 to \$0.75; Sheepskins, dressed, XXXXX, \$10 to \$10.50.

Correspondence.

THE MARITIME PROVINCES.

A FORWARD MOVEMENT IN MANUFACTURES—NEW FACTORIES STARTED AND OLD ONES EXTENDING—OPENINGS FOR CAPITALISTS—THE N. P. WORKING WELL DOWN BY THE SEA.

Editor Canadian Manufacturer.

SIR,—In endeavouring to forward you a few items concerning the industrial and manufacturing interests of the Maritime Provinces, it shall be my aim to do so as correctly as possible, bearing in mind the necessity of presenting to our more experienced manufacturing neighbours of Ontario and Quebec the natural advantages possessed by the Maritime Provinces as a manufacturing field, with the hope that it may induce capitalists belonging to the Upper Provinces to invest their means in our midst, which if done will beyond a doubt reward them for their investments.

The peculiar situation of the Maritime Provinces, directly on the sea-board, and in close proximity to inexhaustible coal beds of splendid quality, not to speak of numberless water-powers through the country, and cheap lumber, brick, and stone, for building purposes, render them a desirable field for capitalists. In connection with this the assistance of a live journal, devoted to these manufacturing interests, such as the CANADIAN MANUFACTURER, will add much to the general welfare of manufacturers in the Dominion.

It might not be amiss to say that, indifferent as it would seem the Maritime Province capitalist has been in the past, he is now, under the wisdom of the National Policy, fast awakening to the advantages accruing from the erection of manufacturing factories. Numerous instances of this are to be observed, as witness the large and magnificent Sugar Refineries in Moncton and Halifax; the new Cotton Mills in course of construction at Halifax, Windsor, St. Stephen, St. John, and Moncton; the Woollen Mills at Yarmouth, N. S.; the Brass Works at Moncton; the new Shoe Factories at Halifax, N. S., and Charlottetown, P. E. Island; the Nut and Bolt Works at St. John; the new Flouring Mill at Moncton; the Glass Works at New Glasgow, N. S.; the new Organ Factory at Truro, N. S.; the new Cutter Bar Machine Co. at Amherst, N. S.; and many other concerns which will be treated of hereafter. All this, too, in addition to manufactories that were formerly in existence, now running night and day to fill the orders pouring in upon them—all taxed to their utmost capacity—is surely calculated to inspire one with such confidence in the National

Policy as to cause them to hope that this policy will be perpetuated in Canada for many years to come.

Let me add that here, down by the sea, there is still room for capitalists to come in amongst us and make investment in their several lines. There is not a small town in the Maritime Provinces having any manufacturing facilities but will meet the capitalist half way, and afford every encouragement compatible with the people's means to establish factories in their midst. I have in my mind now a flourishing town in the Province of New Brunswick, where every facility offers for the erection of a Woollen Mill, and any capitalist or company of capitalists can be sure of meeting with most favourable concessions on condition of erecting such an establishment. Should this meet the eye of any person or persons experienced in the woollen manufacture, and wishing to invest, all necessary information can be had by addressing "Maritime, care of the Editor of the CANADIAN MANUFACTURER," and it will have prompt attention.

In my next and future letters I will treat more fully of the manufactories now in existence and in course of erection, trusting that some good may come of these crude remarks in the near future.

MARITIME.

Selections.

WOOL AND COTTON ON WOOLLEN MACHINERY.

A very large and rapidly increasing class of fabrics is made in and near Philadelphia by the use of both wool and cotton, carded and spun on woollen machinery, says the *Textile Record*. It is difficult to get a proper understanding of this industry, on the part of those accustomed only to New England cotton mills, the processes differ so widely, and the fabrics are themselves so unlike. Of the 350,000 woollen spindles now in operation in Philadelphia, scarcely 50,000 are used exclusively on wool, although, in many cases, the admixture of cotton is small. A large range of hosiery and carpet yarns is made in this way, and all of the immense product of jeans, cassimeres, suitings, coatings, flannels, blankets and dress goods are now better, in fact, and preferably made, of some portion of cotton. The mixture is universal in English, as well as American uses, but the best effects of a soft, elastic, full, yet wool-like quality in all its characteristics, is only obtained by the skilful use of the best woollen machinery.

The known aggregates of woollen spindles in use within the city limits of Philadelphia at the first of June, 1880, was 314,371, and of worsted spindles 61,652. In the near vicinity there were 46,200 more, or altogether 422,223 spindles consuming wool and its substitutes. A moderate estimate, which is fully sustained by the opinions of leading manufacturers and machinery makers, adds 20,000 spindles to represent the increase since the date named, and to the close of 1881. These 442,223 spindles produce one pound of yarn each daily, or 300 pounds per year—in the aggregate 132,266,000 pounds for the year. To supply them, the best estimate of those who deliver cotton is that 15,000,000 pounds of cotton on bales is worked upon woollen spindles, while scarcely so much is spun on cotton spindles; 50,000 bales being the consumption, or 25,000,000 pounds. For wool, the most careful investigation showed 74,000,000 pounds of domestic fleece and imported wool delivered to the mills for the year ending with June, 1880, exclusive of receipts by manufacturers direct; perhaps 80,000,000 pounds in all for that year, and 85,000,000 pounds for 1881, would be a fair estimate for this class of wools, to which 10,000,000 pounds should be added for pulled and inferior wools. This would leave for all kinds of mixtures and wool substitutes, used in carpet and jacket yarns, feltings, cloakings,

skirtings and cheap suitings, about 35,000,000 pounds of wool extract, woolloid, shoddy, etc. The staple yarns spun from the best of this material can not be distinguished from ordinary yarns made of new wool when in actual use, and they cheapen a large class of fabrics to the advantage of all concerned. A vast stock of such material has, for a long period, been used in Bradford and other English districts, and their use is claimed by Ferrar Fenton to have been a great economy and a great blessing to both consumers and manufacturers in that country.

These are the leading facts in regard to the woollen machinery in use in the circle of localities of which Philadelphia is the centre. The proportions of the materials used cannot be far from correct, and the finished goods produced here could not otherwise be supplied. In Boston it is stated, on the best authority, that the consumption of wool in that market was 120,000,000 pounds in 1881, as compared with 114,000,000 pounds in 1880, and the statements appear to be sustained by the known amount of machinery in motion. There are fully 1,500 sets of wool cards in the towns and localities receiving their supplies from Boston, much less cotton being used than in the Central States, and on fine clothing and delaine wools the rate of production is much less in weight per spindle than on knit goods and carpet yarns.

At New York at least an equal quantity of wool enters into consumption, although the mills are widely distributed in New York State, New Jersey and Connecticut. In fact, the Boston aggregate of 120,000,000 pounds is a fair third of the entire consumption of fleece and foreign wool; New York and a part of New England making the second portion, and Pennsylvania, with the Western and Southwestern mills, of all classes, making the third. It is not possible to avoid the conclusion that 350,000,000 pounds of wool are consumed, with at least 50,000,000 pounds of cotton and wool substitutes worked up on woollen machinery.

In the face of this proved capacity and actual execution of the woollen machinery in use, and of the careful statements of actual sales for consumption, which reach 200,000,000 pounds in Boston and Philadelphia alone, we have an official absurdity put forth from the census office showing only 155,000,000 pounds of wool grown in the United States in 1880. For California, the quantity is given at 16,000,000 pounds, while the actual weights sent out of the State exceeded 46,000,000 pounds. In fact, the census returns cover but little more than half the actual quantity grown, the whole system of census inquiries proving valueless for such results.—*Manufacturers' Gazette*.

KRUPP AND ESSEN.

Although continually turning out immense castings of iron and steel for various purposes, it is for the noted cannon that the great establishment at Essen, in Rhenish Prussia, has the widest reputation. Alfred Krupp is a native of Essen, and is seventy years old. In 1826 the elder Krupp died without leaving any considerable fortune to his widow, who, with the assistance of her son, carried on a small foundry until 1844, when she retired in favour of her assistant. Herr Krupp continued to make great progress with his foundry, but without attaining international reputation until the great Exhibition of 1851, when he attracted attention by sending to London a single block of steel weighing 1,500 kilogrammes. In the 1862 Exhibition Herr Krupp was a most successful exhibitor, showing, among other samples of his skill, a cast steel block of 100 cwt., which, being broken into halves by a steam hammer of 1,000 cwt., was found to be perfectly clear and free from flaws.

One specialty of Herr Krupp's exhibit in 1851 must not be passed by without mention, and that is—his cast-steel guns. The attention of the French Government was particularly at-

tracted by this artillery, and the experiments that Government made with it afforded convincing proofs of the practical value of the Essen manufactory. These guns at that time were of very small calibre, but Herr Krupp was continually experimenting with them, until he finally succeeded in producing those gigantic pieces of artillery which are now world-famous. Indeed, it is asserted that upwards of 15,000 cast-steel guns have, up to the present time, been made by the Essen establishment, and disposed of in various quarters of the globe. In the Philadelphia Exposition of 1876, Krupp exhibited many wonders that startled even Americans, accustomed as they are to all kinds of mechanical wonders.

Altogether the establishment covers a superficial area of 1,000 acres, about 190 of which are covered with buildings. In the year 1877 the Krupp foundry possessed 1,648 various kinds of furnaces, 298 steam-boilers, 77 steam-hammers, 294 steam-engines, ranging from two to one thousand horse-power, or altogether 11,000 horse-power, and 1,063 other kinds of machines.

To keep all these foundries employed Herr Krupp possesses several mines in various parts of Germany, and even at Bilboa, in Spain, whence the metal is brought by a regular line of steamers to the mouth of the Rhine, and thence conveyed by rail to the furnace. Although the number of people employed by Herr Krupp in the performance of these various labours is little short of 15,000, they all work together under their employer's skilful direction with the regularity of a machine. The daily consumption of coal by this army of workers is about 2,200 tons. The creature comforts and requirements of his people are carefully provided for by Herr Krupp. He has had 3,277 dwellings erected for his clerks and workmen, in which everything needful has been thought of. Fire and life insurances, invalid and pension societies, hospital, bathing establishments, four people's schools, besides an industrial school for girls and work school for women, all proclaim the thoughtfulness of Herr Krupp, their founder and benefactor. Herr Krupp, a few weeks ago, had in his employ 23,000 men; but new orders have just obliged him to hire an additional force of 8,000, which places him at the head of the population of a small city—more than 30,000 men. The Rothschilds only, of all Kaiser Wilhelm's subjects, return a larger income than Herr Krupp. Not even the Rothschilds set in motion so many hands.—*North American Manufacturer.*

WATER-TIGHT BRICK WALLS.

Some of the technical journals are publishing as novel, a method of rendering brick work impervious to moisture by the application of a soap and alum wash. The recipe is good enough to be recalled to the attention of engineers and architects, but it should not be put forth as new. It has been known in England for at least 20 years as "Sylvester's process," and was successfully applied to the interior walls of the gate houses of the Croton reservoir in the Central Park in New York City, in 1863, on the advice of the late William L. Dearborn, C.E., and under the immediate supervision of George S. Greene, Jr., C.E., now the Engineer in Chief of the Department of Locks. The process and its results in this case are described fully by Mr. Dearborn, in a paper read by him before the American Society of Civil Engineers, May 4, 1870, and published in the transactions of the society as No. XVI., Vol. I., p. 203, from which the following description is condensed:—The process consists in using two washes or solutions. The first composed of $\frac{3}{4}$ lb. of Castile soap dissolved in one gallon of water laid on at a boiling heat with a flat brush. When this has dried, 24 hours later apply in like manner the second wash of $\frac{1}{2}$ lb. of alum, dissolved in four gallons of water. The temperature of this when applied should be 60° to 70° F. After 24 hours, appl. another soap

wash, and so on alternately, until four coats of each have been put on. Experiments showed that this was sufficient to make the wall water-tight under 40 feet head of water.

At the time of application the walls had been saturated and the weather was cold. The gate chambers were covered over and heated thoroughly with large stoves. The drying, cleaning the walls with wire brushes, and applying the mixture took 96 days. Twenty-seven tons of coal were used for the drying and one ton for heating the solution. 18,830 square feet of wall were washed with four coats.

The drying and the cleaning of the walls costs $6\frac{1}{2}$ cents per square foot, and the plant, materials and labour of applying the wash cost $3\frac{2}{3}$ cents per square foot.

From my own notes of the work I take the following which may be of interest:

Two men using the brushes, with four helpers, laid a wash on 3,766 square feet per day. For every 1,000 square feet surface there was needed for each coat of the mixture $6\frac{2}{3}$ lbs soap and $2\frac{2}{3}$ lbs. alum. The cost of the soap and alum was 13 per cent. of the total cost of the work, not including the drying by stoves and cleaning the wall. For application to a clean wall, the cost would be made up thus: soap and alum, 13 per cent., labour, 23 per cent.; scaffold and tools, 19 per cent.; superintendence, 15 per cent.—*Sanitary Engineer.*

AN IMPORTANT PROJECT.

We are informed that owing principally to strong representations on the subject which Mr. Bunting has made to the Minister of Railways and Canals, Sir Charles Tupper has decided to have a thorough survey of the valuable water power of the new canal, with a view to having it utilized with the least possible delay. He suggests that an engineer be instructed to prepare a diagram, and ascertain and determine the exact amount of the enormous water power, which specially interests the milling and manufacturing community, and to get a detailed report of length of levels, diagrams of available water-power, etc., with a view of making complete and exhaustive official reports for public purposes; and make known the advantages presented in this locality for manufacturers and millers. The columns of American and Canadian journals will be largely used. This is a good scheme, and will doubtless result in much benefit to this country, and as it can scarcely fail to bring into it many capitalists who will utilize the excellent water power provided, for supplied as it is from an inexhaustible reservoir, Lake Erie, there is no reason why the Canal should not be a large source of wealth to those investing in manufactories, as well as to the country at large.—*Welland Telegraph.*

HOW WILL IT END?—It is not many months ago that our markets were glutted with American flour, and now that the mills are again working to their full capacity, with the crop of 1881 before them, the possibility—to say nothing of the probability—of an equally large exportation of flour from the Atlantic ports of the United States, is doubtless being discounted at the present time. Independent of this consideration, our rates are now high enough to attract supplies from the continent of Europe, and these, in littles, are forming a total which is not inconsiderable. There is a very marked tendency to be noted, in respect of all the wheat-exporting countries, to send us the manufactured product in place of the raw material; and it is impossible to discount the influence which this turn of the trade may eventually have on the milling industry of the country.—*Mark Lane Express.*

WHERE THE GRAIN GOES.—The total elevator capacity of the United States in 1880 is put down by the statistician at 92,000,000 bushels. Of this amount New York gathers in 23,800,000 bushels; Chicago 20,450,000 bushels and St. Louis 8,900,000 bushels.

GILDING STEEL.

Polished steel may be beautifully gilded by means of the ethereal solution of gold. Dissolve pure gold in *aqua regia*, evaporate gently to dryness, so as to drive off the superfluous acid, re-dissolve in water, and add three times its bulk of sulphuric ether. Allow to stand for twenty-four hours in a stopped bottle, and the ethereal solution of gold will float on the top. Polished steel dipped in this is at once beautifully gilded, and by tracing patterns on the surface of the metal with any kind of varnish, beautiful devices in plain metal and gilt will be produced. For other metals the electric process is best.—*Industrial World.*

A "COTTON" LECTURE.—Mr. J. B. King gave a lecture before the Y. M. C. A. of Boston recently, on Cotton it being the first of a series of commercial lectures to be delivered, this season. He said: The history of cotton carries us back to the remotest ages of antiquity, it being mentioned by Herodotus as early as 450 years before the Christian era, while it must have been known and used in India for centuries before. Its original home was upon the banks of the Indus and the Ganges, where, with the rudest distaff and spindle, it has been manu-

factured so delicately as to be almost transparent, and so light as to be called "webs of woven wind." Alexander the Great first introduced it into Europe as an article of commerce. Its progress was then traced through the Middle Ages into its development as the greatest industry of modern times. The cotton plant was then described, with the essential conditions of its successful growth, the methods of planting, picking and preparation for the market. While silk, wool and all other materials for clothing and kindred purposes are limited in the geographical extent of their use, cotton is almost universal in its adaptation, and stands alone at the head of textile industries. The principal cotton-producing countries, in order of production, are the United States, India and Egypt. The story of the cotton interest in this country was graphically told from its first planting in 1621. The great influence of Whitney's invention of the cotton gin was shown as having wonderfully increased its merchantile importance. Most interesting figures were given regarding the magnitude of the crop of 1881, which was valued at \$300,000,000. If it had been made into common calico, twenty-eight inches wide, it would have reached around the world 483 times, or over 12,000,000 miles, and, if spun into thread as fine as has been manufactured, it would have extended further beyond the sun than the sun is from the earth.—*Manufacturers' Gazette.*

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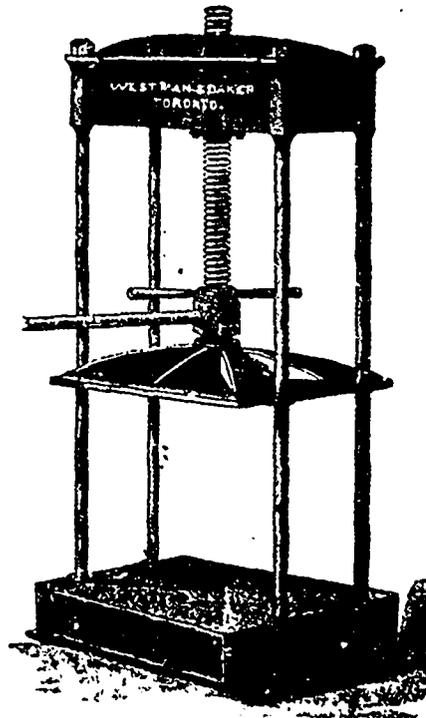
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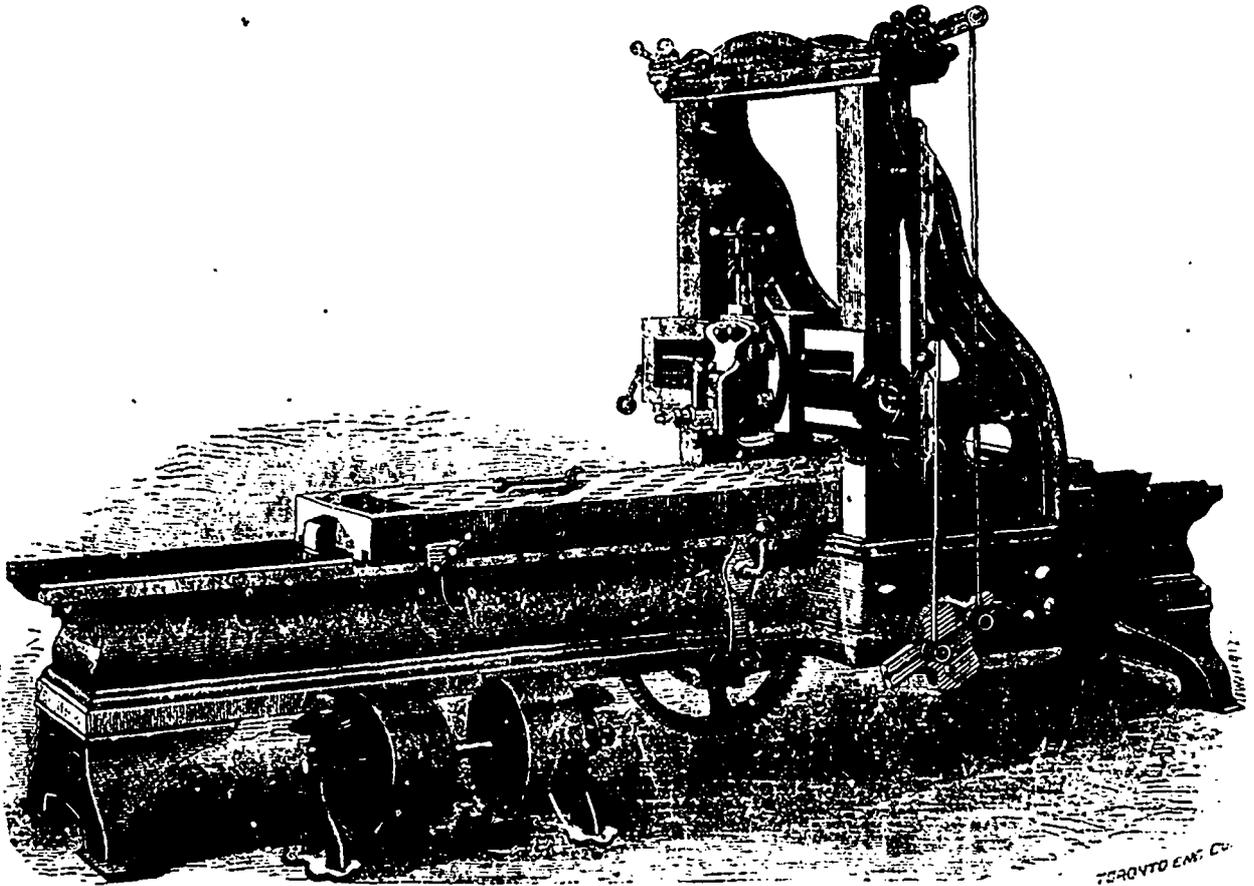
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No Tender will be received unless made on such printed forms.

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No payment will be made to Newspapers inserting this advertisement without authority having been first obtained.

FRED. WHITE, Comptroller.
LINDSAY RUSSELL, Deputy Minister of the Interior.
OTTAWA, Jan. 21st, 1882.



WELLAND CANAL.

Notice to persons skilled in fitting up Electric Lights.

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Electric Lights," will be received at this office until the arrival of the Eastern and Western Mails on TUESDAY, the 21st day of FEBRUARY, next, for Lighting the Locks, &c., on the new part of the Welland Canal by means of Electric Lights.

A plan, showing the relative position of the proposed lights, can be seen at this Office and at the Office of the Resident Engineer, Thorold, where a printed copy of general conditions and other information can be obtained, either on application personally or by letter.

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This Department does not, however, bind itself to accept the lowest or any tender.

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F. BRAUN, Secretary.

Department of Railways and Canals,
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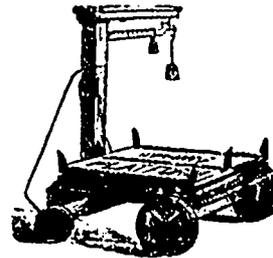
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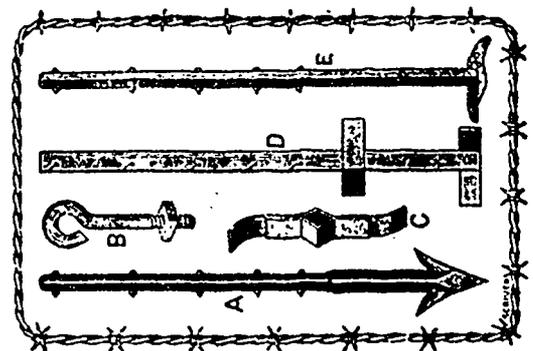
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