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THE

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And Industrial World.

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THE

Canadian Manufacturer

AND INDUSTRIAL WORLD.

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FREDERIC NICHOLLS,
Managing Editor

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Toronto, Ont.

THE ELECTRIC LIGHT.

It may be that material improvements will have to be effected in the electric light ere it can be so managed and distributed in small quantities as to be suitable for household uses. While such adaptations of the light as would meet domestic requirements are being waited for, it seems reasonably certain that, in this age of invention and discovery, we shall not have very long to wait for them, either. In the meantime it may be considered as a thing settled that the new light is already a success for the illumination of large spaces. In some of the sawmills of the Chaudiere, Ottawa, it has allowed work to be carried on by night as well as by day; and only the scarcity of logs, due to the extraordinary low water of last summer, has delayed its general adoption in the mills of that district, some of them having had to shut down altogether for want of logs before the close of the season. The *Northwestern Lumberman* speaks of it as undoubtedly the light of the future, and quotes from the *Scientific American* the following testimony in its favour:

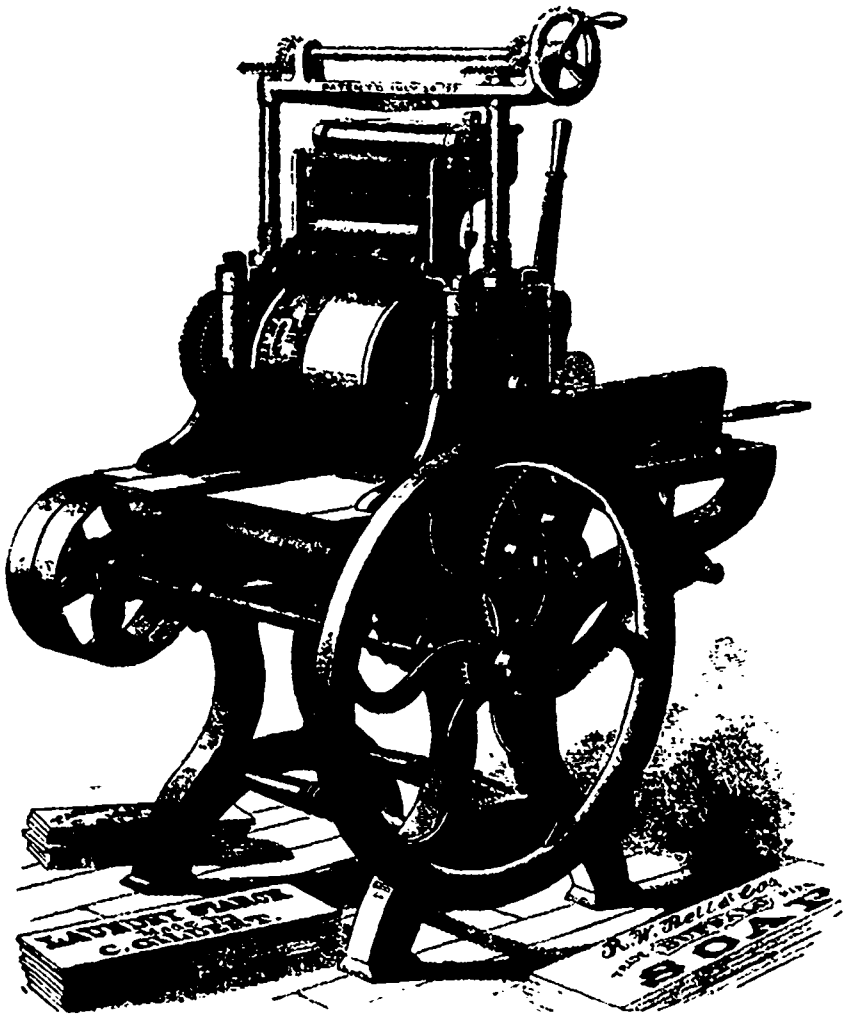
"In the matter of lighting streets and open spaces electric light possesses many advantages not possessed by any other illuminating agent. The electric lamps can be placed on top of lamp posts of moderate height, as in the lighting of Broadway, New York, each electric light providing for the illumination of a space two hundred to three hundred feet in diameter; or the lamps may be placed upon towers at a considerable elevation above the ground and above adjoining buildings, as is done in Wabash, Ind., and Akron, O.; each light or group of lights providing for a general illumination over an area a mile or more in diameter. Each of these plans is perfectly practicable and successful, and both have been thoroughly tested. For the lighting of cities and towns of moderate size, the latter plan is the most economical, and will, no doubt, be very largely adopted. The town of Wabash, Ind., was the first in the world to light its streets wholly in this way, and they find that four Brush lights, of 3,000 candle-power each, placed on an iron flag-staff on the dome of their court-house, at a height of about one hundred and thirty feet above the ground, are sufficient for the general illumination of an area from one-half to three-quarters of a mile in every direction. Some of the streets are, of course, much better lit than others, although they are not nearer to the lights, because the light is not intercepted by intervening buildings. It is stated, however, that even in the streets where no direct light falls, there is yet enough diffused light to permit of getting around without the use of other light. It is also stated that even at a distance of two miles from the lights there is a sort of general illumination produced which is of considerable value. By placing a sufficient number of powerful electric lights upon towers high enough, it is, no doubt, possible to produce an amount of light that would be practically as efficient as daylight for the lighting of all spaces within a reasonable distance of such towers. A sufficient amount of light could be thus provided to light the interior of buildings and dwellings sufficiently for all ordinary purposes. This is the plan that has been proposed for the lighting of the capitol and its surroundings at Washington."

The line of the new Welland Canal, it is stated, will next season be illuminated from end to end with the electric light, an improvement which will add at least fifty per cent. to the capacity of the canal to pass vessels through in any given perid of twenty-four hours' time. The Grand Trunk Railway Company is introducing the light into its extensive workshops at Point St. Charles, with such advantages gained as are at once evident and indisputable. At Montreal the greater dispatch given to the loading and unloading of ocean steamers, through the facilities for keeping the work going both day and night, has already proved an inestimable boon to shippers. With coal and the steam engine furnishing the motive power, the electric light is still a cheap acquisition for such purposes as hurrying on the dispatch of ocean steamers —cases wherein the saving of even a little time means the saving of a good deal of money. But wherever water power is available, there the electric light may be considered almost "dirt cheap." Wherever such light as this is wanted, and where at the same time water is running to waste, the case is decided in its favour at once. The *Newcastle Chronicle*, quoted by *Wool and Textile Fabrics*, says that in the little town of Godalming, in Surrey, it has after trial since September last proved "successful in the highest degree." In this case water power is used, supplemented with steam, and the two, it is said, are made to pull together efficiently and economically.

An enterprising Ontario manufacturer, who has been thinking of trying the electric light in a woollen factory, sees a certain practical question which must be considered. With only one light for a large space, will not the shadows from the machines and framework keep in the dark, comparatively, many places where a good light is wanted? It may be that in some manufactories the electric light will not answer until the problem of its division and distribution to many small illuminating points has been solved, as it almost surely will be before long. Meantime, however, its perfect adaptability, not only to the lighting of large out-door spaces, but also of public halls and large in-door spaces generally may be regarded as settled.

PATENT BOX BOARD PRINTING MACHINE.

The cut below represents a machine for printing box sides and ends, instead of stenciling, doing the work *ten times faster* and much better than can be done by hand. It will readily be seen the great advantages this machine has over the ordinary mode of stenciling a card or trade-mark upon sides and ends of boxes. It has the advantage of printing in a very rapid and clear manner all cards or trade-marks much more perfectly than can be done in the usual manner, thereby rendering it of great importance to the merchant or manufacturer using large quantities of boxes for shipping, such as starch, saleratus, soap, oil, &c. It is very simple in its operations, so much so that any boy of ordinary intelligence can operate it with very little experience. Its construction is not only very simple, but very strong and durable. All the running parts are of iron and steel and nicely fitted. All the gears are from cut patterns, thereby rendering the running of the machine, however rapid, almost noiseless. The type or form is cast in brass, and secured to the upper cylinder, but in such a manner that it can be easily and rapidly adjusted to print upon the board at the proper time. The inking upon the form is done by composition rollers, and supplied to the latter by a reservoir, rendering the supply constant, and distributed by a distributing roller evenly over the type, rendering the work more perfect than can be done without such distributing roller. The inking rollers, by means of the lever, can be instantly raised from the type or form to prevent inking when the machine is not fed with boards. It will print boards varying from one-eighth of an inch to one and a half inches in thickness, and at the rate of 1,500 to 2,000 impressions per hour. The boards or sides of boxes are introduced to the machine in quantities of ten to twenty pieces at a time, and the bottom piece of the pile is fed by the reciprocating bar to its proper place in order to receive the impression at the proper time, the boards above dropping down to be fed in like manner until all are printed. A trial of this machine will convince the merchant or box manufacturer of its great utility in doing the work much more rapid and perfect than otherwise can be done.



PATENT BOX BOARD PRINTING MACHINE.

The manufacturers, Messrs. Connell & Dengler, of Rochester, N.Y., will be happy to furnish any further information.

ASSOCIATION AND ITS PURPOSES.

It is a well-established modern practice for persons of the same or nearly similar occupations to associate themselves together for the protection and advancement of their common interests. The Ontario Manufacturers' Association having set the whole Dominion an example which is deemed specially suitable for the present time, the Toronto *Globe* comes at once to the front, in order to denounce what it calls "a manufacturers' league." As for the right of association in this case, it ought to be clear enough. There are just as good reasons for the existence of a Manufacturers' Association, or "League," if you choose to call it such, as for that of a Board of Trade or a Corn Exchange. Nor can

it be said that the great interest of agriculture is behind with its example. We have a Department of Agriculture for the Dominion, also Agricultural Associations for Provinces, for counties, and for townships. With other great interests thus working up in their respective spheres the principle of association, it would be strange if the manufacturers did not try the same thing We may say that they have only in a manner begun to try what has long been in constant practice by other interests. After several former attempts, with ebbs and flows of activity, the manufacturers appear to be getting hold of a truth for which we have been contending -- that their organization must be *perpetual*, and not a thing of fits and starts merely.

However, it is not so much the right of association as the expediency of it in the present case which the *Globe* calls in question. By leaguing together the manufacturers are isolating themselves from other interests, and so courting danger, we are told; nay, more, it is charged that this is being done by a small section of the manufacturers only—those among them who are "monopolists" in a special sense—and "moderate" men among them are warned to "keep away from the league." The word "league" is good, by the way; it almost suggests the idea of conspiracy or something akin to it. The sufficient answer to all this is that manufacturers may and should associate for the defence of their interests, even though their interests are substantially those of the community at large.

Is the *Globe* prepared to argue that *any* particular interest, organizing for its own defence or advancement, thereby of necessity places itself in antagonism to all other interests in the community? Or will our contemporary take up the contention that, while each and every other interest may put in practice the old teaching that "God helps them who help themselves," the manufacturing interest must be the only exception, doomed to enforced helplessness? For a proper community of interests, and in order that there may be fair play all round, it is surely a plain and simple requisite that each one be fairly represented both in and out of Parliament. And it so happens that the *Globe's* breathings of threatening and slaughter against the manufacturers do, in reality, constitute a very visible and pressing reason why organization on their part is specially necessary to avert the evil which is threatened. That a manufacturers' association should be driven to even the appearance of taking up a political or party attitude is to be regretted; and it is to be hoped, as we have before said, that the reasons which have to a certain extent compelled this will as soon as possible disappear. And if the *Globe* wishes to hasten that day, when the trade question shall have become a scientific rather than a political issue, it can best do so by ceasing to threaten the manufacturers with political vengeance.

THE ONTARIO MANUFACTURERS' ASSOCIATION.

ANNUAL MEETING—ELECTION OF OFFICERS—A VIGOROUS POLICY TO BE CARRIED OUT.

The annual meeting of the Ontario Manufacturers' Association was held at the Rossin House here on Thursday, January 12th. At the hour named—eleven o'clock—only a few members had arrived, but after waiting for some time quite a respectable number assembled, among those present being Messrs. E. Gurney, D. Lamb, Wallace Millichamp, J. J. Smith, R. W. Elliot, C. H. Hubbard, George Booth, A. W. Wright, John Maclean and C. A. Kelly, jr., of Toronto; Jas. Watson, Hamilton; R. McKechnie, Dundas; J. B. Armstrong, James Goldie and W. Wilkie, Guelph; James Newton, Lime house; Oliver Wilby, Weston, and J. McIntosh, Woodbridge.

On the opening of the meeting the President, Mr. Gurney, made his annual address. He urged the necessity of perfecting the organization, as, in view of the approaching election, it was necessary to put themselves in a position to efficiently protect their interests. He eulogised the National Policy, which he claimed had largely benefitted not only manufacturers but the general community as well.

After the presentation of the treasurer's report, Mr. A. W. Wright was asked to address the meeting. He did so, pointing out the necessity of perfecting the organization to the end that the policy of Protection should be placed in a position independent of the fate of parties. He suggested a plan of organization, which he thought would effect this.

The election of officers for the ensuing year was then proceeded with, with the following result:

President—R. McKechnie, Dundas,
1st Vice-President—R. W. Elliot, Toronto.
2nd Vice-President—Adam Warnock, Galt.
Treasurer—George Booth, Toronto.
General Secretary—A. W. Wright, Toronto.
Honorary Secretary—C. A. Kelly, jr.

Executive Committee—Edward Gurney, Hamilton; Edward Gurney, jr., John Gillespie, W. F. Cowan, W. Millichamp, C. A. Kelly, jr., John Lamb, Toronto; J. Perley, Ottawa; S. S. Fuller, Stratford; Jas. Smart, Brockville; Hon. D. McInnes, Jas. Watson, Hamilton; Robert Barber, Streetsville; John Riordon, Merritton; W. Wilkie, Guelph.

Mr. Wm. Lukes, the Government Inspector of factories, then addressed the meeting by request, and asked the opinion of members on the question of the employment of women and children in factories, the compulsory protection of belting and shafting so as to avoid accident, etc.

Some discussion was held, but it seemed to be the general opinion that as the particular industries most likely to be affected by the law respecting the labour of women and children were not fully represented, it would not be advisable to give an expression of opinion on this matter. The proposal to compel the guarding against accident from belting and shafting met with general approval.

Some discussion arose in reference to a rumour that the Board of Dominion Appraisers was likely to be abolished, several members strongly deprecating the dissolution of a body which had proved so useful. The following resolution was moved and carried unanimously:

Moved by Messrs. Watson and Gurney, that this meeting, recognizing the valuable assistance the Dominion Board of Appraisers have been in the collection of customs revenue on an equitable basis in many departments of trade, would urge the Government to continue the system and to develop it by making appointments of men who thoroughly understand the nature of all the leading departments of trade.

It was decided that the General Secretary should personally visit the various manufacturing centres for the purpose of perfecting the organization and holding public meetings.

After votes of thanks to the retiring officers, moved by Messrs. R. W. Elliot and W. Millichamp, the meeting adjourned.

PUBLISHER'S NOTICE.

Both covers of the "Canadian Manufacturer" were originally intended to be reserved, but the demand on our advertising space has increased so rapidly that we have to transfer some advertisements to the back cover. The front cover is still reserved, and to advertisers wishing to make use of its columns rates will be furnished on application.

Editorial Notes.

We return thanks to our many patrons, who, since our first issue saw the light, have sent in their subscriptions. It is by such substantial recognition of our endeavours that we will be enabled to place before our readers a paper in every way worthy of the great interests we humbly represent.

If we would gain foreign markets we must be prepared to meet the peculiar requirements of the people we want to get for customers. For instance, it might be thought that, supposing Canadian flour proved to be of good quality, it ought to sell readily wherever good flour is wanted. But the fact turns out to be that in the West India and South American markets the best flour is unsaleable unless put up in barrels of a certain description. To this certain description of barrels have the people of these Southern countries been accustomed, and none other will they buy. The difference to our millers is probably nothing at all in the way of actual cost, or not over a very few cents per barrel at the outside. But it makes a great difference in the sale of the flour, if offered for sale where the coffee plant and the sugar cane grow. The Brazil steamer which recently left Halifax would have had more flour offered for the trip than she had, but for the fact that the special kind of barrels required for this trade were not ready. They will be ready next time, let it be hoped. To just such things as these must our exporters give attention, if they would build up a direct Southern trade.

The time was when the north of Spain was of great fame as an iron manufacturing district, but lately the valuable iron deposits of that region have been used chiefly to feed English, French and German furnaces. According to recent accounts, however, a turn of the tide appears to have set in, and the production of iron and steel on the spot is likely soon to be greatly extended. New iron works are to be erected in Bilbao with foreign capital, with the object of smelting on the spot the deposits of ore already owned by foreign firms, and thus reducing the cost of carriage. Herr Krupp's firm is named first as having adopted this resolution, and a number of Belgian and English firms are also said to have come to a similar decision. Similar works are also to be erected at Santander, and again at Belmez. In the province of Oviedo, Bessemer works, with the latest improvements, are to be erected for the manufacture of steel from iron containing phosphorus by the dephosphorizing process. The exports of ore from Bilbao last year amounted to 2,345,000 tons, of which 1,688,489 tons were shipped to Great Britain, 293,758 tons via Holland to Germany (200,000 tons of this quantity being exclusively for the Krupp works), 245,011 tons to France, 83,491 tons to Belgium and 34,849 tons to the United States. During the first five months of 1881, the exports amounted to 1,150,000 tons, and it is expected that the total for the year will not fall short of 2,500,000 tons. Spain appears to resemble Canada in this respect,—that her native iron ores are carried long distances, and made by foreigners the means of a paying business and work for many hands. Might we not take a lesson from Spain, and try whether the money now made by Americans out of our valuable iron ores, could not be made by our own capitalists and workmen instead?

SPECIAL NOTICE.

The "Wilson Scale" has achieved an enviable reputation for its manufacturers, and is certainly a credit to Canadian workmanship.

It has, in many instances, replaced those of other makers, who for years had a monopoly of this market, till the Wilson asserted its superiority, by its durability and accuracy under severe tests and in long service.

The Town of Cobourg have taken out their "Fairbank" Market Scales, and replaced them with the Improved Wilson Scales. Capacity, six tons. They weigh the load, subtract the waggon, and give the net weight without using any loose weights. Toronto, Windsor, and other places are using them in preference to any other make. They will turn the beam at one pound on a Ten Ton Scale, at its full capacity, 20,000 lbs.

A NEW SOURCE OF GLUCOSE.

A company is being formed by a number of capitalists in Philadelphia to make glucose from cassava, a tuber which grows luxuriantly in the southern part of the United States. Glucose has become a very important article of commerce during the past few years, and the consumption of it has reached 200,000 tons in this country alone, and a large quantity is imported. It has been made heretofore from corn, which has advanced so much this year as to make this much-needed article quite expensive. The demand for it is very large and exceeds the supply. A bushel of corn weighing 56 pounds will yield about 30 pounds of sugar or glucose. The average net profit on a bushel of corn is between 40 and 50 cents. The prospectus of the company now being formed to make glucose gives some comparisons as to the cost of raising corn and cassava. The average production of corn in the States of Pennsylvania, New York, Ohio, Michigan, and Illinois is 35 bushels to the acre. The amount of glucose produced from one bushel is 30 pounds, or 1,050 pounds to the acre. Well-authenticated evidence is at hand to the effect that 20 tons of cassava to the acre is no unusual crop in Florida. This, at 56 pounds to the bushel, would give a yield of over 700 bushels to the acre, or at the rate of 30 pounds of glucose per bushel, would produce 21,000 pounds of glucose per acre. A comparison of the yield of glucose from corn and cassava shows that 1,000 acres of corn yield about 500 tons of glucose; 1,000 acres of cassava yield about 10,000 tons of glucose.—*Grocers' Bulletin.*

LUBRICANT FOR BELTS.

An English paper says: "A good lubricant for the preservation of belts is said to be obtained by mixing rosin oil with ten per cent. mica. In the case of a new belt, several coatings of this grease are applied with a brush until it absorbs no more. After this the belt may be used without any fear of part of the lubricant emerging from it under pressure or tension, since the pores of the leather hold the grease very firmly, and only allow a few small drops to appear on the surface. After a few weeks the operation may be repeated on a smaller scale. Some months may then be allowed to elapse without greasing the belt, to which by that time the lubricant has imparted a good deal of tenacity and power of resistance. The belt thus lubrified adheres very well to the pulleys, and is not affected either by changes in the moisture of the atmosphere or by corrosion."

CANADIAN INDUSTRIES.

THE JOSEPH HALL WORKS—OSHAWA.

The town of Oshawa long since became an important manufacturing centre, and, although its industries suffered heavily during the protracted period of commercial depression, they are now running with their old-time vigour and experiencing the benefit, in common with the rest of the country, of the era of renewed prosperity which has now fairly set in, and which we hope has "come to stay."

The subject of the present sketch, the "Joseph Hall Manufacturing Company," takes a leading place amongst the manufacturing enterprises of the Dominion, and in 1876 employed no less than about four hundred hands, all skilled mechanics being then at the height of its prosperity. The period of "hard times" we have since passed through and from which we have but lately emerged, did not leave this industry unscathed; it, along with many others, was crippled for a time, but is now rapidly pushing ahead and resuming its former prestige, as a walk through the workshops sufficiently shows that from the amount of work in hand, the present large force of men must shortly be increased to keep pace with orders coming in. The works came into the hands of the present Company in 1870, they buying out the interest of the late Joseph Hall, and electing as their President Mr. F. W. Glen, who still holds that responsible position.

From the time of organization to 1876, they were running very strongly both in general machinery and agricultural implements, but in that year sold their hay-rake, grain-drill and broadcast seeder business to the Mason Manufacturing Company, and their general machine trade to the McGill Mfg. Co., the latter, however, being ultimately re-bought. The grounds of the various works at present comprise about five acres, the larger part of which is covered by substantial workshops, storehouses, stables, &c., the rest being used in storing lumber, moulding-flasks, &c. The first building entered was the

MOULDING SHOP,

built of brick, 200 ft. x 65, and one storey high. Close to the wall, about half way from either end, is the cupola furnace, in which the metal is melted. Two immense cranes, of twenty and twelve tons respective capacity, are so placed that the ladles of molten metal from the cupola can be conveyed to any part of the shop to be run into the moulds. At the time of our visit a cast had just been made of a 72 inch Leffel double turbine water-wheel, which, when completed, will weigh twelve tons. At the northern end is an outhouse called the

MILLING SHOP,

in which the castings as they come from the moulds are cleaned by being placed in revolving cylinders with small pieces of scrap, which removes all sand and scale by friction. Those intended for the machine shop are afterwards dipped in vitriol to leave a thoroughly clean skin, so as not to damage the machine tools. The next entered was the

BLACKSMITH SHOP,

in which are seventeen forges, two trip-hammers, two heavy drop-hammers, and large punching shears which will cut through a bar of iron one inch thick. A noticeable feature here observed is the forging of the guards for reaper knives, they being made of a solid piece of wrought iron, whereas in other factories malleable iron castings are used. One of the greatest improvements in their celebrated "Champion Reaper" is this guard, which is chilled on the outside, making it as hard as cast steel, the inside, however, still retaining its elasticity. The next building visited was the

GENERAL MACHINE SHOP,

which is 350 ft. long by 70 wide, with a wing 100 x 70 extending at right angles, the whole built of brick, and 3 storeys high. The scene here presented to view is one of great activity, the numerous machines in operation, the whizzing of the belts, the grinding of tools, noise of the hammers, all combine to make a seeming confusion, which, however, when one gets accustomed to the sight and sound, is in reality the most perfect order.

Near the northern entrance, convenient to the moulding shop, is an immense "Sitting Bull" lathe for turning the heaviest casting. It weighs twelve tons, and can take in a casting fifteen feet in diameter. At present it is engaged in turning a curb for the seventy-two inch water wheel, part of which we before saw in the moulding shop. Another machine, more noticeable among the many others from its great size, was the "Monarch" lathe, which has a swing of fifty-two inches, and can take in an eighteen-feet shaft.

These, and nearly all the other machines here, were made on the premises, and show a high standard of workmanship and mechanical ingenuity, one special feature being that the teeth in all gears are cut out of the solid metal, giving them a far greater mathemetical exactness and durability than when cast. Some of the ordered work we passed in various stages of completion were a forty-eight-inch water wheel for Nova Scotia, making the fourth shipped to that Province during the past month; several portable "Champion" Threshing Machine Engines, Leather Splitter for Hopewell, Nova Scotia, two Shingle Machines, their respective destinations being Prescott and Quebec, knife-grinders, etc.

In this department are also manufactured Gordon, Washington, and Taylor printing presses, stationary steam engines of all sizes up to 150 horse power, circular and gang saw rigs, water works machinery, &c. It may here be mentioned that this firm put in the whole of the Ottawa Water Works machinery, plant, &c., and also completely furnished Mr. H. H. Cook's saw mill, one of the largest in the country, with three Steam Engines, seven Boilers, four Gang Saws, a Slabber, and a Stock Saw, besides a large amount of miscellaneous machinery, such as pulleys, shafting, &c.

In an annexe of this building is a Tool Shop, in which are made, repaired, and stored all turning tools, taps, dies, and smaller mechanical appliances that easily go astray. As an instance of the perfect order prevailing throughout the works, it is sufficient to state that no employee is admitted to this room, on any pretext but has to summon the foreman by ringing a bell, who hands him the article required through a wicket, and then makes an entry of who received it in a book kept for that purpose. The

AGRICULTURAL IMPLEMENT SHOP

is a continuation of the general machine room, and is 100 feet

long by 70 feet wide, with a wing extending westward 150 x 70 feet, thus giving a total length under one roof of these several departments of 700 feet by 70 in width, all three storeys high, and making it one of the largest buildings for industrial purposes in the country. Here the machine work of the "Champion" Reaper and Mower, Threshing Machines, Clover Mills, Horse Powers, &c., is done, and the economical arrangements for saving both time and labour are perfect, all work entering at one entrance close to the moulding shop, and as it goes through the different processes incidental to its being completed in a finished state, works its way gradually down to the other end, where an elevator is situated, and is by that carried to the upper floor, to be fitted in the woodwork of the machine for which it is intended. The platform of the elevator is 60 x 18 feet, and will carry a weight of 20 tons, and as it extends the entire height of the building, the work is easily transferred from one floor to the other.

Two great labour-saving inventions that were at work in this department must not pass unnoticed, the first being a Gang Drill, which bores twenty-two separate holes at one time, the drills being set at the distances required, thus saving an immense amount of labour; and we were informed that with this machine one man can now do as much work in one day as it formerly took twenty men three days to complete. The other machine has a somewhat similar object in view, being a combination bolt cutter, cutting the thread of four bolts at one operation. The

ENGINE ROOM

is built off this section, and the motive power for the work shops is furnished by a 100 horse power engine, made by the firm. In this room is also a double action Steam Pump, which is used both for supplying the boilers and for fire purposes, a patent heater by which the exhaust steam is utilized in heating the water previous to its being conveyed to the boilers, and a No. 8 Sturtevant Pressure Blower, which furnishes the air blast for the cupola. The Boiler Room is of course adjacent to that of the Engine, and contains two large Boilers, which supply the Engine, and also the pipes by which the building is warmed. All the refuse wood and shavings from the upper floors are dropped down a shaft to the front of the furnace, and are consumed with other fuel, in all four cords being consumed daily. Ascending the stairs we reach the Wood-Working Department, in which all the Wood Work for Horse Powers, Reapers, Threshing Machines, etc., is finished. This is a busy spot, the buzzing of the machine knives when brought into contact with the hardwood making conversation almost impossible. Wood-working machinery is always interesting, and when a rough block of wood is in a few minutes planed, bored, morticed and bevelled ready for use, it brings to mind the old question of machinery *versus* manual labour, for how tedious and expensive would have been the same process if done by hand. Amongst other machines here are lathes, planers, shapers, rip, crosscut and band saws, and all else necessary for saving time, and as a consequence—money. On the same floor, but divided off by a partition, is the

PAINT SHOP,

and a long row of implements were undergoing the painting and decorating process, the brightness of the colours used giving them a most attractive appearance. The machines are also tested on this floor, and each and every one that is turned out is first subjected to a test that is equal to the ordinary use of it on a farm of one hundred acres for three years. When this important fact is considered, one ceases to wonder at the popularity of the "Champion" make. The paints and other materials are stored in a room kept especially for that purpose, and extra precautions against fire are taken on account of their inflammable nature, in fact it would be difficult for a fire to get headway in any of the buildings, as Babcock Extinguishers are placed throughout them, in easily accessible positions, and as the night watchman is always patrolling, any chance of a fire getting headway is reduced to a minimum. The

PATTERN SHOP

and Draughtsman's Office is on the third flat. Patterns in a foundry business represent a large amount of capital, and those accumulated by this Company are valued at the large sum of two hundred thousand dollars. They are stored in three separate buildings, and are so arranged that, out of the immense number on hand, any one can be readily picked out when required for use. The work on patterns is very particular and must be exact; consequently much time is expended in making them to a nicety from drawings furnished by the draughtsman, and the lumber used has first to be stored and dried for from three to five years, so as to reduce all chances for it to shrink, warp, or crack. The draughtsman has a comfortable office, and it is his duty to furnish drafts and designs for all the work, and his responsible position, we uld judge, is no sinecure. The

WAREHOUSE

for storing finished goods, ready for shipment, is 250 feet by 80 feet in width, 3 storeys high, and at present is well-filled with Agricultural Machines for the coming season's trade, which promises to be an exceptionally good one, as the millions of acres in our North-West are, from the attention that is at present being directed to them in the Old World, sure to attract a large stream of immigrant farmers, thereby creating a market for Ontario manufactures, the importance of which cannot be over-estimated. Our limited space will not permit us to describe the other auxiliary buildings, such as Repair and Erecting Shops, Fire-proof Oil House, and others of more or less importance. Indeed, so much material for a descriptive notice was before us, that it has been impossible to more than glance at a few of the more interesting features to be met with in works of such magnitude. In every branch appeared that order and regularity which enables a great enterprise to be handled as one vast machine, and with the help of responsible officers, all accounting to the General Manager, (and our courteous and obliging guide, Mr. Kennedy), a system of internal economy which is so essential to success, is perfected. We must now bring this very incomplete description to a close by returning thanks to the President, Mr. F. W. Glen, M.P., who placed every facility in our way for collecting the information given above.

Manufacturing Notes.

Messrs. Leadley & Barber, the latter of Messrs. Barber Bros., propose erecting a cotton mill on the dock at the foot of Frederick-street. They held a conference with the City Clerk on the matter the other day.—*Globe.*

Messrs. Wanzer & Co., of Hamilton, made a shipment of sewing machines a few days ago per the new Canadian and Brazilian line of steamers to Demerara. This is the first shipment made by Hamilton manufacturers per this line.

The Kingston Knitting Mills, which were destroyed by fire on the 13th inst., only commenced operations in June last. Negotiations are already commenced for the formation of a new company, with $75,000 capital, the premises to be four times the size and capacity of those burned. Goods to the amount of $4,000 that were ready for shipment were destroyed.

Some Montreal capitalists, who recently visited Ottawa to secure a site for smelting works, are now about completing arrangements for the erection of works in the immediate vicinity of the city, with a view to smelting iron ore from the Hull mines. They want a site on the Rideau Canal in proximity to the Canada Atlantic, so as to have facilities for shipping their product by rail or water to markets in Canada and the United States.

Two carloads of machinery arrived at Kingston recently for the cotton mill, and the balance is expected in a week or so. Several families, numbering fourteen persons, mostly experienced operatives, have arrived from England, and will commence work with the opening of the mill. A large number of girls in this vicinity have made application for work. Cotton will probably not be made until the middle of February.—*Mail.*

Mr. A. Beauchemin has established a shirt factory at St. Hyacinthe, Que. The municipality has guaranteed exemption from taxation for ten years, besides giving a $2,000 bonus conditional upon thirty hands being employed. The required number are already at work, and the first instalment of the bonus is about to be paid. It is intended to manufacture for the wholesale trade.

All the foreign staff in connection with the Halifax sugar refinery, including Messrs. Donner, the manager, and his assistant, and Mr. Alton, the secretary, have their connection severed with the refinery, which will, when it re-opens, be run under new management. In the meantime Thomas Cutler is acting as secretary at the company's office. The annual meeting of the shareholders takes place on the 7th of February, and there will be no resumption of operations before that.

A public meeting was held at Colebrook, Ont., on Saturday evening, to consider the practicability of erecting a paper mill at that place. It was decided to form a joint stock company with a capital stock of fifty thousand dollars, in shares of one hundred dollars each. The amount of twenty thousand dollars in stock was subscribed, when the meeting was adjourned until Saturday evening, the 21st instant, for the purpose in the meantime of getting more stock subscribed, and advertising for a competent paper-maker to engage in the supervision of the enterprise.

Notices are given that applications for charter by letters patent will be made as follows:—

By Louis Bredannaz and Edmond Armant, of Montreal; Frederick A. Howland, of Lambton Mills; Allen J. Stephens, Oliver A. Howland, and Samuel Trees, of Toronto, as the "Toronto Patent Wheel and Waggon Company (Limited), for the purpose of manufacturing, selling, and dealing in all kinds of vehicles and acquiring and working patents relating thereto. Chief place of business, at Toronto. Capital $25,000

An immense steam press run by a direct steam cylinder 40 inches in diameter and 48 inches long, has been set up at Campbell and Son's Sewer Pipe Works, Hamilton, to make pipes from 24 inches in diameter to 4 inches in diameter. The machine, which is a very complicated one, has been successfully at work for two weeks. It is so constructed that it makes more durable pipes than have been previously made, as the clay is forced in a solid body into the dies, and not split in sections, and again united, as in ordinary machines. It was built and designed by Killey & Co., Mona Iron Works, Hamilton.

What manufactures will do for a town and the surrounding country is seen in the case of Moncton, which has established within its limits a hardware factory, a sugar refinery, a flouring mill, and a cotton factory is now going up, all within the National Policy period. The country round is thriving in consequence, and farmers are doing well, and making money. The flouring mill went into operation this week. Several car loads of Ontario wheat are now on their way thither. The amount deposited in the Post Office Savings Bank in the town has increased from $57,000 in Oct. 1880, to over $120,000 in Dec. 1881, chiefly the savings of mechanics and labourers.—*Mail, Toronto.*

The Belleville *Intelligencer* says: "We have been shown a letter from Mr. T. G. Hall, stating that the Ontario Steel Association had been organized with himself as President, H. M. Clay as Vice-President, and G. H. Van Vleck as Treasurer and Secretary. The company have bought all Mr. Hall's steel patents and all others necessary to make steel of all kinds. They have also acquired eight hundred acres of iron land, including the Hobson and Richardson mines. "We propose," writes Mr. Hall, "to make all the steel we sell, and ship it to the States, and sell all the iron ore we can. We intend to have a large steel plant somewhere in Canada and to gobble up the market in steel. I have just got this thing in a nutshell, and I know we can make two millions per annum on steel alone with a capital stock of three millions, without counting the ore we can sell and the wrought iron we can make and sell.'"

ANOTHER WAY OF PRESERVING WOOD.

That mortar is a preservative of wood is a fact well known, and many instances are noted of its value for this use. It has recently been stated that a schooner of unseasoned Maine timber, laden with lime, which went ashore and bilged forty years ago, was raised some time after and is still in service. Another instance is that of a platform, consisting of nine planks, which had been used successively by father, son and grandson for mixing mortar, was thrown aside, allowed to be overgrown with grass, and after sixty years was resurrected, and found to be in a perfect state of preservation. It is somewhat remarkable that no systematic attempt has hitherto been made to utilize this knowledge; but recently a method has been brought forth in France, based on these facts, which is simple, cheap, effective, and requires no special apparatus. It is described by a contemporary as follows: Pile the planks in a tank, and put over all a layer of quicklime, which should be gradually slackened with water. The time required depends on the thickness of the wood. Timber for mines will be thoroughly impregnated in about a week. The material is said to acquire remarkable consistency and hardness after this process.—*N. W. Lumberman.*

The Iron Trade.

PITTSBURG.

FAILURE OF THE SIEMENS-ANDERSON STEEL COMPANY—PROBABILITY THAT THE WORKS WILL SOON START AGAIN—PRICES OF BAR IRON AND NAILS FOR 1881—NATURAL GAS AS THE SOLE FUEL IN LARGE IRON WORKS—ADVANCE IN NAILS—CURRENT PRICES.

(From Our Own Correspondent.)

PITTSBURG, Jan. 18th, 1882.

Perhaps the most engrossing topic in iron circles here, at the present time, is the failure of the Siemens-Anderson Steel Company, which was announced last week. The failure was caused by inability to secure an extension on an indebtedness of about $600,000. The works were stopped on Saturday last, throwing about a thousand employees out of work. A lot of steel and other material belonging to the Company is advertised to be sold by the Sheriff, on Saturday next. Conferences are being held by the Company with the creditors, and it is stated that there is some possibility that an arrangement will be made whereby the fo will soon be enabled to start the works again. Such a valuable pl s this will not probably be lowed to stand idle very long, at this of great activity in the trade. It will, undoubtedly, soon be put in m tion again, either under the management of the present Company or of some other. The plant consists of three different works—a Crucible Steel Works, situated on Ross-street, an pen-Hearth Works, situated on Second-avenue, about two miles from the Crucible Works, and a Siemens Direct-Process Works, situated just across the street from the Open-Hearth Works. The Ross-street Works were erected in 1845, the Open-Hearth Works in 1879, and the Direct-Process Works were completed only a few weeks ago. The latter is the only works of the kind in the United tes, except a small plant of the same variety, at Tyrone, in this State, which is owned by the same Company. The Company was incorporated in February last, by New York capitalists, under the laws of that State, with a capital of $1,500,000. They purchased the Siemen's Patents and the works in this city, then belonging to Mr. R. J. Anderson, with stocks, &c., amounting in value to $1,659,000. The steel wire for the great Brooklyn Bridge was made at these works when they were owned by Mr. Anderson.

The prices of bar iron and in this market, in 1881, are shown in the appended table:

	Bar Iron. Cts.	Nails. Dols.
January	2 25	2 85
February	2 25	2 85
February 23	2 25	3 00
March	2 25	3 00
April	2 15 @ 2 25	3 00
April 13	2 15 @ 2 25	3 15
May	2 15 @ 2 25	3 15
June	2 15 @ 2 25	3 15
June 16	2 15 @ 2 25	2 75
July	2 25	2 75
July 7	2 25 @ 2 30	2 75
July 14	2 35 @ 2 40	2 75
August	2 40 @ 2 50	2 75
August 10	2 40 @ 2 50	3 00
August 25	2 50	3 00
September	2 50	3 00
September 27	2 50	3 25
October	2 50	3 25
November	2 50	3 25
December	2 50	3 25

The last few weeks have witnessed the destruction by fire of no less than three most important manufacturing establishments in this city. A large rolling mill belonging to Groff, Bennett & Co., the extensive tool works of Klein, Logan & Co., and the glass factory of A. & D. H. Chambers, in the order mentioned. The rolling mill was among the largest in the city, and with the exception of one in Cincinnati, was the only mill in the United States having Dank's rotary puddlers. It contained ten of these mechanical puddlers, I believe.

Pittsburg has one rolling mill in her midst that uses no coal. Puddling, heating and generation of steam are all done with natural gas, which is conducted through a pipe from a well eighteen miles distant. An open-hearth steel plant and two or three rolling mills, situated in the adjoining county of Armstrong, up the Alleghany river, also use natural gas for the same purposes. In these latter cases the gas-wells are near the works.

The Western Nail Association held a regular monthly meeting at its rooms in this city on Wednesday, at the price of nails was advanced from $3.25 per keg to $3.40—an advance of 15 cents. This Association embraces the manufacturers west of the Alleghany mountains. The Western Iron Association, which is also composed of western manufacturers, will hold an adjourned meeting at its rooms here on the 25th inst. Some think the card of prices will be advanced by the association; but this is scarcely probable, unless pig iron should advance in the meantime, of which there are no present indications.

Prices of pig iron have been stationary since the opening of the New Year. Neutral Mill is quoted at $25,00; Cinder-mixed Red Short, $26.00; Bessemer, $28.00 @ $30.00; No. 1 Foundry, $26.00 @ $27.50, and No. 2 Foundry, $26.00 @ $26.50. There has been a tremendous demand for manufactured iron since June, but there have been no changes in prices since about the middle of August. Bar is quoted $2.50; No. 24 sheet, $4.30; tank, $3.30; C. H. No. 1 boiler plate, 5½c.; homogeneous steel do., 6½c.; hoop iron, for common barrel hoops, $3.10 @ $3.30; lighter sizes, $3.20 @ $5.10. All 60 days, or 2 per cent. off for cash. Nails are $3.40, 60 days, or 2 per cent. off for cash, with an abatement of 10 cents per keg on lots of 250 kegs and upwards. There has been an excellent demand since the latter part of summer. Wrought-iron pipes and tubes have likewise been in great request. Discounts on gas and steam pipe, 55 @ 57½; discount on boiler tubes, 37½ per cent. Oil-well casing, 85c. net, and tubing, 25c. net. Steel has not changed prices for many months, although the manufacturers have had all the business they could attend to. Best quality of refined cast-steel, 11c. to 12c. per pound, as to quantity purchased; crucible machinery steel, 6½ cents, and Bessemer and open-hearth do., 5 cents; Bessemer spring steel, 4¼ cents; open-hearth spring steel, 4½ cents; open-hearth plow steel, 4¼ @ 4½ cents. The Bessemer Works have orders several months ahead. Quotations, $60.00 @ $61.00, on cars at works. The works, which furnish railway trade supplies, have had a busy season, and are still pressed with orders. Spikes, 3c. per pound, 30 days; Splice bars, $2.06, and track bolts, $3.75 @ $4.00 for square nut, and 4¼c. for hexagon, cash f. o. b. Pittsburgh. Old rails, $32.50 @ $33.00 for tees, and $34.50 @ $35.00 for double heads. Prices of scrap iron steady. No. 1 wrought, $30 per net ton; selected railway machinery, $31 @ $32 per net ton; steel rail ends higher, $30 @ $31 per gross ton; old car wheels $30 @ $32, nominally, per gross ton; cast borings, $15 @ $16 per gross ton; wrought turnings, $20 @ $22, net. Connellsville Coke, $1.75 @ $2.00, to founders and others who use less than blast furnaces. The latter are supplied at $1.65 @ $1.85.

NEW YORK.

OPENING OF THE YEAR IN NEW YORK—IRON—STEEL RAILS—PENNSYLVANIA MARKETS—THE READING ELECTION—DOMINION ENTERPRISE AGAINST TRUNK LINE WARS.

NEW YORK, Jan. 18, 1882.

The two weeks' business in iron and steel for 1882 furnishes evidences of the promised extraordinary activity. Prices are on the point of advancing, but an advance is not assured, nor is it specially desired. The American iron trade has suffered severely in years past, and a repetition of old dangers is now being avoided.

In pig iron but a moderate amount of business has been transacted. Inquiries, however, afford encouragement that activity is very close at hand. Stocks are exhausted. Scotch is held at full prices, and current wants are provided. A year ago there were 60,000 tons in the Custom House yards, to-day there is less than 3,000. Entire foreign stocks are under 30,000 tons. Steam and sail freights for the next three months are nearly all engaged, and any marked decline in ocean charges is not

probable. A feeling of uncertainty, or rather of expectancy, pervades the market. The 2,000,000 tons foreign stocks of pig iron are a menace, and a sharp advance here or decline abroad may send large supplies to Atlantic ports. Importers have been quietly nursing inquiries from large western dealers for stocks, and when opportunity offers a quarter million tons foreign iron, Bessemer and common, will be bought.

The upward tendency in pig iron since last July has increased the number of furnaces in blast by forty. There are now 466 in and 262 out, or seven less than a year ago. High prices in 1880 lead eighty-nine furnaces to go in blast, chiefly anthracite and bituminous, and the downward tendency of prices during the first half of 1881 again restricted production, but during the last quarter of the year a recuperation took place.

English and Scotch pig is in light supply, and is held at $22 for Middlesborough, and $25.50 for Glengarnock.

Rails are steady. Mills quote $58 to $60. Neither buyers nor manufacturers are anxious to enter into engagements. Large buyers represented this reason to your correspondent to-day, that it is impossible to state just what the productive capacity will be at any given time in the future, and that, if a financial stringency occurred, there would be more or less dropping of contracts, delays, and failures to accept. Then, besides this feature of the case, it is urged that the activity abroad may weaken in six months, and in that event competition with American mills would reappear and affect quotations. As the Bessemer companies cannot promise delivery before fall, and then adhere to strong prices, declining to discount probabilities sufficiently, there is a growing disposition to put off as much negotiation as is possible.

Old rails are held firmly at $28.75 to $29; doubles, $31.50 asked, $31 offered; spikes steady at $3.15; track bolts, $3.75 to $4.00.

The Philadelphia iron market is steady. Within ten days a marked increase in demand has taken place for merchant iron, which manufacturers meet in a hesitating manner. All Pennsylvania mills are crowded with orders, and prices are edging their way upward in spite of card rates. The consumers are sending in orders faster than they can be accepted, and inquiries are received from outside markets. The Bessemer rail-makers report inquiry for full deliveries, but no contracts. Muck bars are selling at $46, and in exceptional cases as high as $47. The Kensington mills report orders abundant. Structural and plate iron inquiries are in hand for spring deliveries. Quotations are 3 @ 3¼ for angles, 4 for beams, 4 @ 4¼ for tees and channels, 3½ for tank, 4 for refined, 4¼ for shell, 5 for flange, and 6c. for fire-box. Locomotive and car works, steel works, ship yards, and other establishments where large quantities of iron are consumed, are now making arrangements for an extension of contracts under which stock has been delivered since last fall. There is a little unwillingness among some to go into long contracts at present high figures, but there is no help for it. All low-grade steels have been advanced 10 to 15 per cent., and this is the cause of higher quotations in hardware, light and heavy. Bar iron was sold six months ago at 2.3, and now an order cannot be filled at 2.8. The action against advancing the card has produced good fruits. The majority expected 2.7 at least named at Pittsburgh, when 3c. would have been named at Philadelphia and here. Pig would have stood on its dignity, and labour would have suggested an advance. The present policy of naming prices at Pittsburg is designed to secure better prices and avoid all the risks.

According to estimates made there are 7,000 coke ovens in process of erection or projected. It does not mean this is all by any means, but merely that so many are known of. Coke has been advanced to $1.75 and $2.00 on cars at furnace. The anthracite production for last year was in excess of 29,000,000, or 5,000,000 tons in excess of the previous year.

The Reading election was held last week in Philadelphia, and consumed three days, resulting in the victory of Mr. Gowen, "by a large majority." Mr. Bond retires. All newspaper men and the majority of the stockholders are singing the praises of the victor. That bad management prevailed on that road none can doubt. Enormous prices were paid for coal lands to root out competion, but the effect of this was offset by the higher prices charged for coal. The panic and the loss of income led to a suspension of payments, and the revival of prosperity has brought back increasing dividends. The programme now is to allow the New York Central the control of the western-bound anthracite traffic, which is expanding every month. This year's output has been estimated at 35,000,000 tons. Cars are scarce, and mines have been hindered in their output in consequence. New mines are being developed, and consumption is expanding.

The enterprise of the Dominion is giving our merchants something to think of. Montreal and Boston are threatening New Yorkers on one side, while New Orleans is making it interesting in the south-west. The time is not so very far distant when the shippers of the north-west will not know which port to take—Montreal or New Orleans—to get to Europe. An experiment is to be made early in the spring in sending California wheat to Liverpool overland to New Orleans. The commercial problem is studied closely, for very large capitals are dependent on grain shipments for good dividends. The enterprise displayed north of us will bear rich fruits ere long, and will awaken corresponding activity in Atlantic ports.

It is too soon to say much about the doings of Congress. More is expected from this Congress than from any former one for twenty years. More is demanded, too. With 1,500 bills to work on there need be no lack of material. Five hundred million dollars are wanted for this and that. Every interest is after legislation. More States are to be made, canals built, the financial system to be amended, and commercial and industrial interests of every kind to be legislated for. Tariff interests are strongly organized, and are backed with strong public sentiment.

The terrible accident which happened here last week demonstrates again what an extreme degree of vigilance is requisite for safety to the travelling public. Railway dividends are far from being satisfactory. The "war," though not formally terminated, is practically over. Commissioner Fink has spent some weeks in the west examining the situation and formulating a protocol for the consideration of the trunk line traffic. The merchants' organizations of this city have met and "endorsed" Vanderbilt. The merchants of Philadelphia have done the same for the Pennsylvania Road, while the merchants of Baltimore have endorsed the policy of the Baltimore and Ohio management. Dividends are meagre. Stockholders are dissatisfied with the enormous traffic shipped over the road at so little cost and without resulting advantage. The Philadelphia merchants, through a sub-committee, have recently declared that the Pennsylvania has robbed Philadelphia of half the traffic belonging to it by carrying it to Baltimore and New York. This accusation, if true, will do more to push along the cause of anti-monopoly in this city than all the vapourings of interested parties besides. That party, by the way, is to assume the offensive in the coming state campaign, and will undertake to capture the legislature.

Wool and Cotton.

PHILADELPHIA.

TOTAL STOCKS OF WOOL LESS THAN AT OPENING OF 1881—MORE DOMESTIC, BUT LESS FOREIGN—CURRENT PRICES—FOUR YEARS' IMPORTS, 1878 TO 1881—THREE YEARS' ESTIMATED PRODUCTION, 1879 TO 1881.

STOCKS OF COTTON AND CROP OF 1881 LARGER THAN RECENTLY ESTIMATED—PRICES AT VARIOUS POINTS.

(*From our own Correspondent.*)

WOOL.

PHILADELPHIA, Jan. 17, 1882.

The wool trade is now in excellent condition, and presents an encouraging outlook. The product of leading mills is sold well ahead, and manufacturers meet their wants with apparent confidence that values for the raw staple are as low now as they are likely to be for some months to come. This belief is strengthened by the exceptionally favourable statistical position of the market. The January inventories in Boston, New York, and Philadelphia, disclosed a slight increase in stocks of domestic wools, as compared with the same time last year, but a material falling off in the supply of foreign of all kinds. The totals in the three markets were 34,970,000 pounds of domestic, and 8,948,990 pounds of foreign, against 30,195,750 pounds domestic, and 16,707,220 pounds foreign at the beginning of 1881. The gain in domestic stocks on the seaboard is more than offset by the smaller percentage

of unsold wool remaining in the hands of growers and "middle men" in the interior. What is regarded as the best feature of the market at the moment is this large decrease in foreign supplies, at a time when values abroad are so high—relatively—as to preclude further importations. The amount now afloat from foreign ports will not exceed 8,000,000 lbs. The bulk of this has been ordered direct by manufacturers, and will arrive at intervals during the next three or four months. Consumption is increasing, and if continued at its present rate, as seems assured by the large demand in sight, will exhaust all available supplies before the new clip can begin to come forward. Under these circumcumstances holders of wool are very confident and are not urging business except at full prices. The latter are 2c @ 3c per lb lower than at this time last year, though the position and prospects of the trade were not then as favourable as now. It is natural, therefore, to look for a strong market and perhaps a moderate appreciation of values in the near future; but fears of foreign competition are likely to prevent any very decided advance. At the moment demand is running chiefly upon the better class of wools, and notably upon fine washed clothing fleeces, which are ranging from 40c. to 43c. for Michigan, Wisconsin and New York, up to 44c. @ 46c. per lb. for Ohio and Pennsylvania. As a rule 45c. is the limit of buyers' views on the latter, but some of the choicer selections of XX and XXX wools cannot be bought under 46c. Carpet wools are in good demand and very strong under light supplies. Sales are mostly at 19c. to 21c. for Colorado and New Mexican coarse carpet stock, up to 25c. @ 28c. for fine improved and medium grades. Combing and delaine fleeces are scarce, and wanted at 47c. @ 48c. for fine, and 50c. @ 52c. for medium washed, 28c. @ 30c. for low and 33c. @ 35c. for medium unwashed.

The following is a comparative statement of the imports of wool into the United States for the last four years:—

	1881.	1880.	1879.	1878.
New York....lbs.	27,648,400	55,652,115	28,676,128	17,843,600
Boston .....lbs.	22,079,513	43,738,090	31,717,895	16,252,432
Philadelphia..lbs.	1,892,841	8,121,101	2,509,000	299,500
Total .....lbs.	51,620,757	107,541,306	65,903,018	34,395,532

ESTIMATED WOOL PRODUCT OF UNITED STATES.

(*In pounds.*)

	1881.	1880.	1879.
Iowa, Missouri, Minnesota, and States east of the lower Mississippi, except lower Southern	164,600,000	148,000,000	133,000,000
California	13,000,000	46,000,000	47,000,000
Oregon	7,000,000	7,000,000	.....
Other Western States and Territories.....	17,200,000	15,000,000	14,000,000
Colorado and New Mexico	20,000,000	15,000,000	13,000,000
Texas.....	26,000,000	22,000,000	16,000,000
Georgia, "Lake & Southern"	12,200,000	11,000,000	9,500,000
Total..... pounds	290,000,000	264,000,000	232,500,000

COTTON.

The consumptive demand for cotton has been limited for some time past to the earliest requirements of spinners, and export trade has been unsatisfactory in volume. Speculation in futures is fairly active, but the price fluctuations are within very narrow limits. Operators appear to be considerably "at sea" as to the future of values, and change front upon the development of any new point affecting the market. Crop estimates are very plentiful and conflicting, but the best authorities have revised their earliest predictions of a deficiency, and now generally incline to the belief that there will be no dearth of the staple this year in any quarter. The supply in sight showed an increase on January 13th of 376,887 bales, as compared with the same date last year; the totals of American and foreign being 3,090,866 bales, against 2,713,981 bales in 1881. The steady growth of stocks, and evidences of a larger invisible supply than had been previously supposed to exist, are factors that just now seriously interfere with any attempt to manipulate the market for higher prices. The drift of feeling in Liverpool continue bearish, and this tends to check business for export. Any showing of strength in that market is the signal for an advance here which keeps values above an export basis. By comparison with previous years the staple is not intrinsically dear at present prices, but the burdensome accumulation of stocks is against it, and foreign buyers apparently have the advantage of the position, if they can hold out long enough to combat speculative influences on this side of the ocean. The closing prices of spot cotton on January 16th were as follows:

	Middlings.	Low Middlings.	Good Ordinary.
New York	12	11 9-16	10 11-16
New Orleans.....	11⅝	11¼	10⅝
Mobile.....	11½	11⅜	10¼
Charleston.....	11⅝	11⅜	10⅝
Savannah	11¼	10⅞	10
Galveston	11½	11⅜	10⅝
Wilmington	11¼	11 1-16	10 3-16
Norfolk	11⅝	—	—
Augusta.....	11	10⅝	10
Memphis	11⅛	—	..
St. Louis.....	11⅛	11	10¼
Cincinnati	11⅛	11	10⅜
Baltimore	11⅝	11¼	10¼
Philadelphia	12⅛	11⅛	10⅜
Boston.....	12	11⅝	10⅝

Dry Goods.

NEW YORK.

A SATISFACTORY CONDITION OF TRADE IN SPITE OF AN UNFAVOURABLE WINTER SO FAR—GOOD PROSPECTS FOR THE OPENING SEASON

(*From Our Own Correspondent.*)

TUESDAY, Jan. 17, 1882

The present condition of our dry goods market, considering the unfavourable winter we have experienced, is very satisfactory, and the spring trade is approaching its opening in an encouraging manner. A large number of buyers from the west and south-west have made their appearance during the past week, and, though the present demand for staple cottons and woollens is moderate, an early improvement is anticipated. Fortunately, there is an almost entire absence of any speculative tendency among buyers, as the possibility of lower prices for cotton, together with the interruption of trade just referred to, has developed a very cautious feeling on their part. These are the only unfavourable features in connection with the market, which, otherwise, is nearly all that could be reasonably wished for. Almost all desirable fabrics, cottons and woollens, are in light supply in first hands and among jobbers, while prices generally rule firm. Retailers are not so well satisfied, and in certain lines they will have considerable stocks to carry over until another season.

In cotton goods there was a steady distribution on back orders by agents, and a fair new demand for fine and medium-fine bleached shirtings. Coloured cottons were quiet, but stocks are in good shape, and in fancy white goods, quilts, piques, and goods of a similar character, there was an active increasing business. The new styles of light fancy prints are being opened by agents at prices lower than was expected; but there was a substantial improvement in the demand therefor, while some very liberal sales of dark fancies have been made at decidedly low prices. Shirtings, Turkey reds, and furniture prints are doing fairly. The prevailing price for the new light fancies is 6¼ cents. Ginghams have been very active, more so than any other fabrics, and some of the popular makes, such as the Greylock, Canton, Renfrew, and a few other descriptions, are exceedingly successful, in spite of the competition of fine Scotch ginghams, for which large orders were sent abroad and which are now coming here freely. Dress goods are in fair request, but the season has not yet fairly opened, and transactions are confined to fancy cotton dress-fabrics; worsted fabrics ruling quiet until

the making of the new prices. Hosiery is being quite freely distributed in the execution of back orders, and there is an improved and fairly active inquiry for merino and gauze underwear and cotton hosiery, at firm prices and with stocks in good shape.

In woollens only the usual between-season quiet is to be observed but more activity is early looked for. Commission houses will not be generally prepared to offer their samples of heavy clothing woollens before the end of the month; but in a few cases some orders have been quietly placed, although it is too early to look for any business of real importance in these. Spring clothing woollens rule quiet, with nothing beyond fair deliveries in the execution of back orders. The leading makes are sold, however, to the full extent of their production, and the strength lately developed in the wool market makes it probable that any advance in the latter article will be quickly responded to in the goods market. The trade in winter clothing has not been equal to expectations, for obvious reasons, and retailers have considerable stocks left over. Wholesale clothiers are likely to, and already show a conservative policy in purchasing their supplies of heavy clothing fabrics. Other woollen fabrics rule dull. Choice styles of cloakings are scarce and firm: others are in large supply and low in price. Overcoatings are receiving increased attention, and considerable orders are being placed for fancy-backed effects by clothiers. Flannels are in good condition, blues and scarlets being in small supply, while the demand for ladies' suitings flannels has proved so satisfactory as to ensure a much enlarged production for the coming season. Carpets are moving fairly among jobbers, and are quiet and firm at the late advances with agents.

Foreign goods show little activity at present, but importers are beginning to exhibit a few of their new samples, with a corresponding increase of interest on the part of buyers. The prospects are good and the imports liberal for the season, while more than usual care has been used by American buyers in purchasing. Supplies here are moderate and under good control, and values generally firm, owing to the improvement now developing itself in foreign markets. Dress goods are in hand-to-mouth request, the new fancies receiving some, but limited, attention. Silk goods are also quiet, but strong, with indications of an early enlargement of demand. Linen goods are generally inactive, but a fairly active trade was shown in dress and blouse linens, while for white goods, laces, and embroideries, there has been a more active inquiry.

THE EXPLOSIVE POWERS OF COAL-DUST.

A report has been presented on the results of experiments made of samples of dust collected at Seaham Colliery, in compliance with the request of the Home Secretary, by Mr. F. A. Abel, C. B., F. R. S., President of the Institute of Chemistry, and Chemist to the War Department:—"The results of the experiments with Seaham and other dusts appear (says Mr. Abel) to have demonstrated—(*a*) That coal-dust in mines not only much promotes and extends explosions in mines, by reason of the rapid inflammability of the finely-divided combustible, and of the readiness with which it becomes and remains suspended in air-currents, but (*b*) that it may also be itself readily brought into operation as a fiercely-burning agent, which will carry flame rapidly as far as its mixture with air extends, and will operate even as an exploding agent, through the medium of a proportion of fire-damp in the air of the mine, the existence of which, in the absence of the dust, would not be attended by any danger. (*c*) That dust in coal-mines, quite apart from any inflammability which it may possess, can operate in a distinct manner, as a finely-divided solid, in determining the ignition of mixtures of only small proportions of fire-damp and air, and consequently in developing explosive effects. (*d*) That a particular dust, in a mine may, therefore, be a source of danger, even though it contains only a small proportion of coal or combustible matter. Although the explosion which may occur through the agency even of a non-combustible powder, in the manner described, may be of very mild or feeble character in the first instance, it may be almost at once increased in magnitude and violence by coal-dust which the first ignition will raise and bring into action. The proportion of fire-damp required to bring dust in a mine into operation as a rapidly burning or an exploding agent, even upon a small scale, and with the application of a small source of heat or flame, is below the smallest amount which can be detected in the air of a mine, even by the most experienced observer, with the means at present in use, as has been already demonstrated by the experiments of Mr. Galloway. Indeed, with dust of highly sensitive or dangerous character, under those conditions, and very possibly with dusts not more so than the least sensitive of the Seaham samples, in the presence of a source of considerable heat and flame, such as blown-out shot or an overcharged hole would constitute, a small proportion of fire-damp, the possible existence of which in the mine might not be in the least suspected, may serve as the inciting cause to the development of an explosion of coal-dust. In the complete absence of fire-damp, coal-dust exhibits some tendency to become inflamed when passing a very large lamp-flame at a high velocity: if exposed to the action of a large volume of flame, such as produced by the explosion of freely exposed gun-powder or gun-cotton, it exhibits, in addition, a decided tendency to carry or propagate flame. But, so far as can be determined by experiments on a moderate scale, this tendency is of limited nature, and very different indeed from the property of carrying or propagating flame which even comparatively non-sensitive dusts possess in the presence of a very small quantity of fire-damp. In conclusion, it may be admitted as possible that, with the large volume of flame and the great disturbing effect of a blown-out shot as the initiatory cause of the ignition of dust and its suspension in the surrounding air, such inflammation may, in the complete absence of fire-damp, be propagated to a greater distance than the results of small experiments would warrant one in assuming. But it can scarcely be maintained that the air of a mine in which the coal gives off gas at all can be at any time free from fire-damp; and as the existence of very small and unsuspected quantities of that gas in the air of a mine may suffice to bring about the ready propagation of flame by coal-dust, and thus to develop violent explosive effects, it would appear needless to assume that coal-dust may, in the entire absence of fire-damp, give rise to explosions, even of only limited character, in coal-mines, in order to account for casualties which cannot be ascribed to the existence of accumulations or sudden out-bursts of fire-damp."—*Inventor's Record.*

CARE OF TURBINES.

Most men expect when they get a turbine (says the "Wheel Book" of Messrs. Barber and Keiser) that because it is made of iron it is going to last forever—without any attention at all; and after it is started they continue to run it year after year, never taking the water out to look at it, until suddenly it breaks down; then they are very much surprised that an iron wheel should break, and get out of patience, and exclaim, "O, if I only had my wooden wheel in again!" The point is, that the wooden wheels are always in sight, and if they begin to get out of order it is seen, and a millwright is employed forthwith to put it in order: but the turbine, which is far more durable, is out of sight and out of mind. A well-constructed turbine, if looked after every spring and fall, would last a lifetime, and gives as much power and as high a percentage of efficiency at the end of thirty years as it did at the end of the first thirty days. Every wheel should be examined within two or three months after it is put in, because the bottom of the penstock may settle, throwing the wheel out of level, consequently out of plumb, and cause the shaft to wear heavily on one side, wearing out the follower, and causing the wheel to rub and wear against one

side of the casing, destroying its power and destroying the wheel. Any intelligent man can examine this by laying a spirit level on two quartering sides of the casing where it is planed off flat, or laping it on the bottom of the penstock, if originally made level, and by placing it against quartering sides of the upright shaft if the level is also a plumb-level, or test the shaft with a plumb-bob. If out of plumb, a millwright should be employed to reset it, and the probabilities are that it will remain plumb thereafter. Then observe whether any bolts have become loose or out of place, and if they have, tighten them up and replace them. Repeat the investigation every spring and fall, observing whether the running part of the wheel is wearing down the step, which can be ascertained by looking or feeling in through the chutes, and whenever the wheel has settled a half-inch, the step should be raised. The old and trite adage, "A stitch in time saves nine," never applied better to anything than to turbine wheels and all kinds of machinery.—*American Miller.*

PROTECTION FROM EMERY WHEEL DUST.

One of the most common objections to the use of emery wheels is the inhaling of the dust arising from their use, as well as the particles of metal cut from the pieces being operated upon. This is but little more objectionable than the injury to the eyes from the presence of these same foreign substances. In Germany, masks are made of mica that entirely cover and protect the face, and from which an air tube is carried around between the shoulders, where it is provided with a mouth-piece filled with a saturated sponge, through which the supply is drawn. The mica is transparent, and not easily broken. In this country exhaust fans are sometimes used to carry away the dust-laden air, inducing a constant current of fresh air to take the place of that removed by the fan. This alone is not a protection against particles of considerable size that are liable to strike the face with violence, often severely injuring the eye. It would seem probable that a combination of the two plans might work very satisfactorily.—*Industrial World.*

A NOVEL CONTRACT.

A ship-building firm on the Thames has undertaken to build an ironclad of novel construction for the Brazilian government, under a contract which includes a novel series of penalty clauses. The ship is designed to steam fifteen knots an hour; but if she fails by a quarter of a knot a penalty of $10,000 is to be paid; and so for every quarter of a knot, in an ascending scale, until for a short-coming of a knot of speed per hour a penalty of $80,000 will have to be paid; while the loss of a knot and a quarter will involve a fine $160,000, and if a speed of less than thirteen and a half knots per hour can only be obtained, a sum equal to one-sixth of the total price of the vessel will be forfeited. If, again, the vessel, when launched, draws an inch of water more than the draught named in the contract, $5,000 is to be deducted from the price paid for the ship, and so on again, in an ascending scale, until a penalty of $150,000 is reached for six inches excess of draught.

KINDLING WOOD.

In New York there are 41 different establishments devoted to the kindling wood trade alone. The largest of these concerns is C. W. Alcott & Co., who have a capital of $300,000 invested in their business, and employ in the busy season, from 600 to 700 hands. They cut and prepare most of their wood in the forests of Virginia, employing in that department a force of from 500 to 600 men. Last year they handled 25,000 cords of wood. They are interested in seven vessels, and charter others in order to keep up with the demand. Two steam engines of 60 horse power each, drive the machinery that is used for sawing and splitting,

THREAD FROM WOOD. The manufacture of thread from wood for crochet and sewing purposes has, it is said, recently been commenced in the middle of Sweden. It is wound in balls by machinery, either by hand or steam, which with the labelling takes one minute and twelve seconds, and the balls are packed up in cardboard boxes, generally ten in a box. Plenty of orders from all parts of Sweden have come in, but as the works are not in proper order, there has hardly been time to complete them all. The production gives fair promise of success, and it is expected to be very important for home consumption. *Canada Lumberman.*

THE fusibility of soft solders is increased by adding bismuth to the composition. An alloy of lead 4 parts, tin 4 parts and bismuth 1 part, is easily melted; but this alloy may itself be soldered with an alloy of lead 2 parts, and tin 1 part. By adding mercury a still more fusible solder can be made. Equal parts of lead, bismuth and mercury, with two parts of tin, will make a composition that melts at 122 deg. F.; or an alloy of tin 5 parts, lead 3 parts and bismuth 3 parts, will melt in boiling water. In mixing these solders, melt the least fusible metal first in an iron ladle; then add the others in accordance with their infusibility. To cast strips of solder, pour the molten metal on a flat surface of stone or metal, drawing the ladle along the while, to leave a thread of metal of the desired substance.—*H. W. Miller.*

Industrial Directory.

Agricultural Implements.

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

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

Bridge Builders.

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

Coal and Wood.

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

Cotton Brokers.

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

Cotton Mills.

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

Dye Stuffs.

EMIL THIOURET & CO., Montreal.—Agents for K. Oehler, Offenbach O. M., Germany.

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

Edge Tools.

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

Engines and Boilers.

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

THOS. WILSON, Dundas, Ont.—Manufacture, of stationary and portable steam enginesr boilers and machinery of every description—cotton mill calenders, hosiery steam presses and propeller wheels, all sizes.

Files.

FILE & SPRING CO., Cote St. Paul, Montreal.—All kinds of files and springs. Files recut. Sole manufacturers of Spauldings' patent concave spring.

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

Glove Manufacturers.

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

Hubs, Spokes and Bent Goods.

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

Iron Works.

CANADA SCREW CO., Dundas.—Manufacturers of iron and brass screws, bolts and nuts.

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

DOMINION BOLT CO., 139 Front St. East, Toronto.—Manufacturers of every description of bolts, hot pressed nuts, railway spikes, bridge, boiler and iron rivets.

H. R. IVES & CO., Montreal - Hardware manufacturers and founders; iron railing and ornamental iron work a specialty.

HAMILTON BRIDGE & TOOL CO., Hamilton.—Iron railway and highway bridges and iron working machinery.

McKECHNIE & BERTRAM, Dundas.—Machine tools and wood working machinery.

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

Knife Works.

THE WHITMAN & BARNES MANUFACTURING CO., St. Catharines, Ont.—Manufacturers of mowing and reaping machine knives, sections, guard plates, cutting apparatus complete, spring keys and cotters, etc.

Knitting Mills.

S. LENNARD & SONS, Dundas.—Manufacturers of plain and fancy hosiery.

Paper Manufacturers.

JOHN FISHER & SONS, Dundas.—Manufacturers of printing and wrapping papers.

LINCOLN PAPER MILLS CO., Merritton, Ont.—Manufacturers of every variety of paper, paper bags and flour sacks.

WM. BARBER & BROS., Georgetown—Manufacturers of book and fine papers.

Saw Manufacturers.

R. H. SMITH & CO., St. Catharines.—Manufacturers of all kinds of saws, plastering trowels straw knives, etc. Sole manufacturers for the Dominion of Canada of the celebrated "Simond's Saw."

SHURLY & DIETRICH, Galt, Ont.—Manufacturers of circular and cross-cut saws, plastering trowels, etc.

Scales

C. WILSON & SON, 45 Esplanade Street East, Toronto.—Manufacturers of the Improved Wilson Scales. Designers to the Government. Received 29 first prizes, medal and Governor-General's grand diploma.

Stereotypers, Engravers, &c.

F. DIVER & CO., Toronto.—Electrotypers and stereotypers. Designers and engravers on wood.

Wire Works.

B. GREENING & CO., Hamilton, Ont.—Manufacturers of wire ropes, cloth and general wire workers.

MAJOR & GIBB, 646 Craig St., Montreal.—Manufacturers and importers of wire cloth and wire goods and dealers in railway and mill supplies.

TIMOTHY GREENING & SONS, Dundas, Ont.—Manufacturers of the strongest description of steel wire cloth, malt kiln, floors and general wire weavers.

Wooden Goods.

C. T. BRANDON & CO., Toronto.—Have special facilities and machinery for the manufacture of all kinds of wooden articles. Correspondence solicited.

J. R. McLAREN, Jr., 63 College St., Montreal.—Manufacturer of Sharpe's patent safety oil cabinets; also, refrigerators, children's carts, waggons, sleighs and general woodenware.

Woollen Manufacturers.

J. ROUTH & CO., Cobourg.—Woollen Manufacturers.

JOHN WARDLAW, Galt, Ont.—Manufacturer of Scotch fingering, wheeling and knitting yarns.

Wools and Cotton Warps.

WINANS & CO., Toronto.—Dealers in wools and cotton warps.

TENDERS.

CANADIAN PACIFIC RAILWAY.

Bridge over the Fraser River, B. Columbia.

TENDERS addressed to the undersigned will be received on or before the 10th day of FEBRUARY, 1882, for furnishing and erecting a Bridge of Steel or Iron over the Fraser River, on Contract 61, C. P. R.

Specifications and particulars, together with plan of site, may be seen at the office of the Chief Engineer, at Ottawa, on or after the 10th of January, inst.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms. An accepted bank cheque for the sum of $300.00 must accompany the tender, which sum shall be forfeited if the party tendering declines to enter into contract for the work, at the rates and on the terms stated in the offer submitted.

The cheque thus sent in will be returned to the respective parties whose tenders are not accepted.

For the due fulfilment of the contract, satisfactory security will be required by the deposit of money to the amount of *five per cent.* on the bulk sum of the contract, of which the sum sent in with the tender will be considered a part.

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

By order.

(Signed,) F. BRAUN,
Secretary.

Department of Railways and Canals,
Ottawa, January 5, 1882.