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CANADIAN MANUFACTURER AND INDUSTRIAL WORLD.

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

Vol. 31. TORONTO, AUGUST 16, 1895. No. 4.

NOTICE

Manufacturers and Capitalists Patent Acts of 1872, and Amendments, Section 28.

NOTICE is hereby given to all persons desirous of practising the invention in the manufacture of Aluminum and Alloys thereof, for which certain letters patent of the Dominion of Canada were granted on June 7th, 1889, to Chas. Martin Hall, assignor to the Pittsburg Reduction Co., to wit., Nos. 31, 512, 31,513, 31,514, 31,515, 31,516, 31,517; and also the invention in aluminum alloys and manufacture thereof, for which certain letters patent of the Dominion of Canada were granted on July 20th, 1892, to John W. Langley, assignor to the Pittsburg Reduction Company, to wit, No. 39,402. that the undersigned is prepared to grant licenses upon reasonable terms under each and all of same letters patent, and otherwise place the patent inventions in possession of the public in accordance with the provisions of the above recited act.

Communications to the undersigned may be addressed to 701 Ferguson Building, Pittsburg, Pa., U.S.A.

(Sgd) The Pittsburg Reduction Co
ASSIGNEE.

CANADIAN MANUFACTURER AND INDUSTRIAL WORLD
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

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J. J. CASSIDEY, - - - - - - - - *Editor.*

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THE TORONTO INDUSTRIAL FAIR.

The number of entries for the Toronto Industrial Fair has been entirely without precedent in the history of that institution. It is evident that the buildings devoted to manufactured goods and machinery have with the growth in popularity of the Fair among exhibitors, become inadequate for the purpose, many intending exhibitors who would have made a creditable display have been unable to obtain the space required.

After a good deal of discussion as to the best location of the bicycle display which attained altogether unlooked for proportions, it was finally decided to revert to the original proposition and show the wheels in the western end of the enlarged carriage building, an area of 7500 square feet having being assigned for that purpose. In all over thirty manufacturers will be represented including several of the most prominent American firms, which will give the exhibit an international character.

The music pavilion will be considerably crowded as the space at the disposal of some of the old exhibitors had to be somewhat curtailed in order to make room for new applicants.

The programme of special attractions is just out, and the list is a brilliant one including performances by many artists of note. The customary ring attractions of horse and bicycle races, athletic feats, etc., are varied by the entirely novel spectacle of a water fete and aquatic exhibition, with beautiful tableaus and splendid scenic effects, introducing a number of exciting and amusing performances on and under water such as fancy swimming, high tower diving, etc. The scenery and accompaniments are got up in the most artistic and expensive manner. The evening fire-works spectacle, always a popular feature, is the "Relief of Lucknow" in which over 400 troops and supernumeraries will be engaged, showing realistic battle scenes, marches and nautch-dances, and concluding with a brilliant pyrotechnic display.

The art department is under the control of the Ontario Society of Artists, and in addition to a full representation of native artists, they have secured several masterpieces from abroad, including the Russian painter Makoffsky's great work, "Choosing the Bride," and Hovenden's World Fair success "Breaking Home Ties."

DISCRIMINATION AGAINST GREAT BRITAIN.

Our readers know that the CANADIAN MANUFACTURER has always contended that any reciprocity treaty or other commercial arrangement with the United States which involved discrimination in favor of that country as against the merchandise of Great Britain is inconsistent with and would prove subversive of our position as a British colony. We have frequently adverted to the speech or rather the official declaration of Hon. Joseph Chamberlain, when he stated at Belfast, just before leaving for his duties at Washington, in relation to the Fisheries Question, that if Canada found it necessary to its prosperity to adopt a policy of discriminating duties against the Mother Country, the British Government might not refuse its consent to such a measure, but the question would arise whether it would be worth while for England to continue its political connection with any colony under such conditions.

This phase of the question of unrestricted reciprocity or commercial union has recently attracted our attention, through the report recently made by Lord Ripon on the Resolutions of the Intercolonial Conference, being a Parliamentary paper containing the despatches addressed by him as Colonial Secretary in the Rosebery Cabinet, to the Governors of Canada, Australia and Cape Colony, stating his Government's views on the above resolutions. The following is an extract from Lord Ripon's report:—"No

colony could offer a foreign power tariff concessions which were not at the same time extended to all the other powers entitled to the most favored nation treatment. Moreover, the Government regards it as essential that any tariff concessions by a colony to a foreign power should be extended to Great Britain."

This conclusively establishes the position which this journal has always sustained, that if any colony desires to preserve the privileges and advantages of its colonial connection, it must accept the responsibilities and duties arising therefrom.

THE SUBSTITUTION OF ELECTRIC FOR STEAM POWER.

We desire to draw the attention of our readers to the article in another column by Mr. George White-Fraser, on electrical power transmission and the use of electric motors in manufacturing establishments. We are accustomed to hear of the marvels performed by electricity, and manifest no surprise at the accomplishment of any new feat, but we do not seem yet to have fully recognized that electric power is not a scientific experiment only; is not merely an interesting toy; but that it is an actual every day fact, and that its advantages entitle it to be ranked as commercial necessity. We climb on an electric car, or an electric elevator, with no misgivings, but we regard the electric motor by itself as a power to move shafting with doubts. We quite believe the newspapers when they tell us that we shall be whirled from New York to Chicago at 150 miles per hour, at less money than the ticket costs today, and by electric trains, but we do not grasp the fact that what is the cheaper power in that case will probably be the cheaper power in our factory. Our old friend the steam engine we understand, and instinctively turn to it whenever we require power. We have got so used to long lines of piping, shafting, belting, that the many wastes and inefficiencies of such a method of transmission, have come to be regarded as quite inevitable; and so we have given up thinking how they may be avoided. That they may be the source of very considerable expense is clearly shown, as also the means for obviating them in large part. That the carrying out of the plan outlined by Mr. Fraser has resulted in great savings seems to be abundantly proved; and it certainly would appear to be the wise thing for manufacturers to do to see whether they cannot benefit by its adoption. They should, however, be very careful about securing advice on the matter, as the transmission of large amounts of power, over long distances, is peculiarly a specialty of electrical engineering, and the problems involved are such as necessitate application of purely scientific electrical principles. The investigation into the prospective advantage of a substitution of motors for steam engines is also one in which the special technical knowledge of electrical men is quite essential, if the results are to be reliable. Electrical knowledge is not to be acquired by instinct, and the state of the science is so far advanced that much more is required than common sense. While a mechanic is the proper person to attend to machinery, he cannot be considered qualified by either education or experience to give advice on electrical matters which require special scientific education. The same applies to the usual run of electric men who look after small electric lighting plants.

Mr. Fraser has gone into the subject fully; the data and calculations given will be of great interest and value, and we cannot help thinking that it is of special importance to manufacturers to give the matter very close attention, no matter how satisfied they may be with their present methods, or what difficulties they may think stand in the way of the change. A difficulty that seems inseparable to a non-professional person may perhaps be easily surmounted by an experienced specialist.

UNPROTECTED INDUSTRIES.

The Montreal Herald has been studying the census and has discovered that far the greatest progress has been accomplished in those industries which are entirely independent of tariff legislation, mentioning 1, gas works; 2, carpenter shops; 3, planing mills; 4, photograph galleries; 5, 6, tailors' and dress making establishments; 7, 8, cheese and butter factories, saying that these have but little to fear from foreign competition. Meanwhile, it says, the furniture factories, and a dozen other industries, which have been under the fostering care of protection, have sunk into a state of stagnation.

Our contemporary might very well have included many other "unprotected" industries in its list, newspapers for instance, also builders, brick and stone masons, livery stables, etc., and a very natural query would be why these industries should have been ignored when the tariff was being formed?

The point The Herald seeks to make against tariff protection is entirely too attenuated and ridiculous. There is no specific protection given to any of the industries named simply because they do not need it. But if gas could be manufactured abroad and brought into the country in any form whatever, or by any method, so as to be available for us as it is now used, then protection would be necessary for that industry. Carpenter shops do not need protection simply because when a job of carpentering is to be done, one would not call on a carpenter in Buffalo, or Detroit or any other foreign city to come and do it, nor would a carpenter be called on in another Canadian city or town to do the job, nor even in the next street, if one were nearer at hand. As regards planing mills they are protected in that a duty is imposed upon manufactured lumber. It would be quite remarkable if a photographer could drum around Canadian cities, towns, villages and country and solicit orders for pictures to be taken in Buffalo or Detroit. The business is not usually done in that manner, and wherever the pictures are to be made there must be the photographer and his paraphernalia and gallery; and if they are present in Canada no matter from whence they came, his is a Canadian institution. The Herald is mistaken, too, in supposing that the photographic industry is not protected by the tariff, for if any foreign photographer should attempt to export his products into Canada for commercial purposes, or if a Canadian dealer should attempt to import such products, it would be found that a customs duty confronted him. So, too, with tailors' and dressmakers' establishments. If a Canadian should have his clothing made up in Buffalo or Detroit, although the

measurements therefor were taken in Canada, the goods would have to pay duty when entering the country; therefore The Herald is again mistaken in supposing that clothing making establishments are not protected. And it is also mistaken in supposing that the cheese and butter industries are not protected, which fact it can verify by reference to the tariff. But it would be a sight long to be remembered to see a foreign cheese or butter factory, on wheels or otherwise, perambulating about the country engaging in its business in opposition to our own factories of similar character. The idea of such an event is simply ridiculous. So, too, with builders of houses; and The Herald would make itself the laughing stock of the community to suggest that the building industry is unprotected. Of course it is protected in the fact that buildings of any shape or size could not be constructed in a foreign country and imported into Canada. But The Herald seems to be oblivious to the fact that nothing entering into the construction of a building, from turret to foundation stone, upon which labor has been performed, is admitted into Canada duty free. So, too, with its own industry—the publication of newspapers. If foreign capital is brought into Canada and invested in the publication of a newspaper it is most assuredly invested in a Canadian enterprise. The average Canadian wants his daily paper to learn of what is going on around him, and while he may have more or less cause to grumble at the way he may be served, yet a foreign paper cannot fill the bill, and therefore for obvious reasons the industry is well protected.

And yet there are those like The Herald who think that the above enumerated industries are not protected because they are not specifically named in the tariff.

THE GALT FOUNDRY EMPLOYES AT HOME.

It was a most interesting, instructive and pleasant event, the At-Home of the employes of the Galt Foundry, at Galt, Ont., on August 2 inst., the occasion being the completion of a large addition to the works of the proprietors of the concern, Messrs. Cowan & Co. The entertainment was held in the new building, which was beautifully and appropriately decorated for the occasion, the programme including addresses by the Mayor of the city, Dr. Vardon, who was chairman of the meeting, Mr. Thomas Cowan, one of the proprietors, who is also the postmaster at Galt, and who was one of the most active organizers of what is now the Canadian Manufacturers' Association, and other prominent gentlemen. Vocal and instrumental solos and other music were pleasant features of the occasion, and later, after a substantial supper had been enjoyed, the feet of merry dancers kept time to the strains of delightful music for several hours. Perhaps the most interesting feature of the occasion was the presence of Mr. James Cowan, the senior member of the firm, a hale and hearty gentleman in the ninety-third year of his age, who became actively interested in the business in 1853 and has been steadily connected with it ever since.

Canada being a new country anything tending to show the birth and growth of any of its industrial enterprises cannot but be of interest; and the Galt Foundry being one of the oldest and most important of the iron working industries of the country, it is interesting to learn something of its history as related by Mr. Thomas Cowan. In speaking of the concern Mr. Cowan referred to the difficulties under which such enterprises labored at the time this came into existence. In February 1842, N. D. Fisher purchased the land now occupied by the establishment where they then were, that upon which the foundry proper is now situated, and erected a building in which he manufactured plows and other agricultural implements, etc. In 1853 Fisher retired, the business falling into the hands of M. C. Lutz in 1854. Then came the firm of Lutz, Cook & Co., the partners being M. C. Lutz, Peter Cook, J. Neff and James Cowan, these gentlemen assuming possession as a firm, on February 25, 1855. Later Cook and Neff retired, and in 1865 the firm of Lutz & Co. was formed, the partners being M. C. Lutz and James Cowan. In September 1873 Lutz & Co. sold out the concern to Cameron & Co., the new concern consisting of Messrs. D. Cameron, J. Ballantine, J. Smith and Thomas Cowan. In November 1877 a change in the partnership occurred, Messrs. D. Cameron and Thomas Cowan becoming the proprietors, doing business under the firm name of Cameron & Cowan. Mr. Cameron died in June, 1879, when the concern passed into the hands of Cowan & Co., under which name it has ever since been operated, the firm consisting of Thomas Cowan and J. Ballantine. Of late years other members of the Cowan family have become interested in the concern, and been made members of the firm, the personel at this time including James Cowan, Thomas Cowan, William Cowan and Arthur B. Cowan.

It will be observed that James Cowan, the father of the other members af the firm, has been connected with the concern ever since 1853, and Thomas Cowan ever since 1873.

During the long and honorable history of this establishment it graduated many ambitious and competent mechanics, not a few of whom are now operating concerns of their own, or are largely interested in them, and are doing their full share in building up the industrial greatness of this Canada of ours, Mr. Cowan in his remarks mentioning the names of many of them.

It does not often occur, even in older lands, that such a pleasant sight is presented as that herein alluded to, where the head of an important concern, and the father of his companions and associates in business, a hale and active gentleman now nearing his century of life, is surrounded by his sons and the central figure in a social reunion where friends and kindred, employers and employes, all meet on a common footing to celebrate the opening of an important addition to works where so many find pleasant and remunerative employment. And in our opinion the aged gentleman in his remarks struck a key note to the situation as it exists to day as between employer and employe when he expressed his pleasure at seeing that the occasion was such a success, and his belief that if more such events were held—gatherings at which man and master would meet on the same platform and under such pleasant surroundings, there would be less misunderstandings between capital and labor than is, unfortunately, too prevalent. Such reunions, he believed, so conducive of sympathy and good feeling, of friendship and brotherly love, would bring men

all the world over to "brithers be for a' that; for rank is but the guinea's stamp, and a man's a man for a' that."

SOUTH AFRICAN TRADE.

Some months ago one of the most energetic manufacturing concerns in Ontario sent an agent to South Africa, with a good assortment of samples, to discover if any good openings existed there for the sale of such Canadian made goods. Our friends are in receipt of a letter from their agent, dated at Cape Town, on June 21 last, portions of which we are permitted to reproduce. The writer says:—

No doubt you have been expecting letters from me regarding the outlook for business in South Africa. I have been doing my best to find out how your lines of goods would sell here; and I find that even before samples can be shown in this colony the salesman is compelled to take out a license at a yearly cost of £25, or $125, so I have come to the conclusion that on that basis it would never pay me to attempt to sell your goods. Board in a private house cost £6 per month. The railway fare from Cape Town to Johannisburg is, 1st class £12; 2nd class, £8; and 3rd class, by which only the natives travel, £4.10s. In the Transvaal, and also in Natal a similar tax of £25 per year is imposed. The people are very conservative, and it is somewhat difficult for a new comer from a different country to successfully compete against the old established English houses, yet careful management and good business shrewdness will enable one to work up a first-class trade. I called on one of the largest wholesale and retail firms in the colony, and left samples of your goods for their inspection. They were liked very much, and prices were all right, and they were willing to place a sample order, which, in view of the penalty for violating the license law, I declined to accept. In fact one of the proprietors advised me not to incur the risk. I regret very much that I am unable to push the sale of your goods, but under the circumstances I cannot afford to try to do so.

Is it not possible for the Government to do something in the way of having this heavy tax upon commercial travellers in South Africa done away with? Strong and laudable efforts are being made to encourage trade between that country and this, and perhaps if proper representations were made in the right direction the obstacle would be removed. We know that certain lines of Canadian goods find ready sale in South Africa, but there are many other lines that would require pushing by representatives who should pay personal visits to the merchants and dealers, but who are handicapped by local taxation.

THE GERMAN REICHSTAG VERSUS WILFRED LAURIER.

In his speech at the Windsor Hotel in Montreal last winter, Mr. Laurier endeavoured to persuade the manufacturers and merchants of that city, that free trade would prove to their advantage. In order to illustrate the injurious operation of protection, he selected the protective and export bounty system of Germany for sugar as a strong argument in favor of his proposed policy. Although wrong as to many of his dates, facts and figures, he was quite correct in stating that in some years the export bounty was much larger than was either necessary or advisable, and did impose a pretty heavy tax upon the people. He omitted, however, to state that the beet-sugar industry in Germany has prospered so well that for 25 years past it has ceased to require protection, and that country has become a large exporter rather than an importer of sugar. He omitted to inform his audience that the extravagant bounties of former years has been gradually reduced until they are now of merely nominal amount, and that under the Act in force at time of his speech, the bounty was to cease altogether in 1897. He also omitted to state that the beet-sugar industry of Germany has now become its most important industry, indispensable to the prosperity of its agricultural, commercial and manufacturing interests. It cannot be disputed that this industry could never have been established and maintained in competition with the old cane sugar industry except by a high protection tariff against foreign sugar, nor could its exports of sugar have reached their present enormous value, except under a liberal export bounty policy.

The recent legislation of the German Reichstag affords a clear indication of the importance which that Assembly attaches to the maintenance and prosperity of this industry. Under the existing Act, the export bounty was to have been further reduced in this month (August.) In consideration of the low price of sugar this season, the German Parliament or Reichstag by a vote of 191 to 45, legislated to postpone the reduction of the bounty for another year. The Reichstag, is largely composed of the leading financiers, merchants, manufacturers and land owners in the Empire, men of practical business experience, infinitely better qualified to judge of the advantageous or inurious operation of the sugar bounties than is Mr. Laurier or any other of the Canadian apostles of free trade theories. They have decided by a majority of over 4 to 1 to maintain the policy which Mr. Laurier condemns. They may not be favorable to unnecessary or extravagant protection, but are quite willing to grant necessary and reasonable protection or bounties.

EDITORIAL NOTES.

James Bowron, treasurer of the Tennessee Coal, Iron, and Railroad Company, has written a letter to the London Ironmonger concerning the exportation of Southern pig iron to England and the Continent. Mr. Bowron says: "The great advances that have been made in furnace practice in this district have enabled us for the past two years to produce iron at prices which would permit exporting to Europe. I have been for nearly a year endeavoring to obtain satisfactory rates for export from the American railroads, and within the past few months have accomplished this and have been working up the matter of marine transportation. In pursuance of all this we have already made two shipments to Liverpool and one to Genoa, and had business opening in half a dozen other ports when circumstances arose to bring all this correspondence practically to an end for the time being. The prices of all iron and steel commodities are now advancing, and likely to continue to do so, at such a rate as will, for the time being, utterly preclude our giving any attention to the foreign market. Our prices have been advanced four times since April 1, the advances in all amounting to about 6 shillings per ton, [now 10 shillings,]

and while theoretically our figures may still be a trifle below the parity of English prices the difference would not repay us for the extra trouble, time, and risk involved in dealing with foreign lands."

According to a statement made by the Bureau of Statistics of the Treasury Department, the amount of revenue derived during the eleven months ending May, 31, 1895, from our imports of sugar, iron ore, and bituminous, coal was as follows: Coal, bituminous, $537,880; iron ore, $102,308; sugar, $15,642,648. Total, $16,282,836. Had these three articles been placed upon the free list the deficiency of the Treasury Department for the fiscal year just ended would have been increased by nearly $18,000,000. This additional deficiency the people would have paid now, or later on, in the shape of an additional increase in the national debt. There would have been nothing free to the people, excepting the mere cry of free raw material. If the people do not contribute to the revenue of the country in one way they do so in another. The "free" cry is a humbug.—American Economist.

The cars, engine and tender of the Intercolonial Railway train for Halifax on Saturday were all painted red. Another train is being painted in the same way, and this week the daily trains to and from Halifax will be red. Surely there is something unseemly about this proceeeding on the part of the Government. Are there no good old Tories to object to such disloyalty by their party. Manifestly these trains should be colored blue.—Monetary Times.

Why blue? No doubt this item was intended to cover a certain amount of "sarkasm" if one could only discover it.

Managers of mills, factories, etc., and parties starting manufacturing enterprises and needing machinery or supplies of any kind will find it profitable to consult the advertising columns of THE CANADIAN MANUFACTURER. Its pages contain names of the best houses in the country among manufacturers of and dealers in machinery and mill supplies.

Does free trade give the British manufacturer the control of the markets of the world, or even keep him in possession of those that he has occupied for many year? Does it keep him abreast in intelligent business methods with his competitors in protecting countries? Hear what the Manchester, Eng., Textile Mercury says:—

The returns for 1892 and 1893 give some startling figures regarding the decadence of British trade with the Plate. In the former year the imports into Argentina from Great Britain amounted in value to £7,167,000, and in 1893 to £6,504,000 only. The full table, which cannot be given here, shows the astonishing result that in 1893 Great Britain was the only country that lost a large amount of import trade to the Argentine Republic represented by £663,000, while all the others have gained considerably. Belgium importing £598,000, the United States £447,000, and France £338,000 more than in 1892. A total gain of £1,632,000 is shared amongst Belgium, the United States, France, Italy, and Germany, while the United Kingdom loses £663,000. Even Spain, Brazil, and Chili also, all show increases in imports. Two nations only in 1893 show a decrease in imports, and they are South American—namely Uruguay and Paraguay, to the value of £388,000, almost the whole decrease being in trade with the Republic of Uruguay. * * * There can be but three explanations to this decrease as regards England; either that a large part of what was formerly British trade has been handed over to Belgians, Americans, Frenchmen, and others; or that there has been a large decrease in local consumption of some branches of English manufacture, or great development of locally-made goods similar to the European article. On looking at the imports, it is seen that there is a decrease in 1893 of £560,925 in woven and spun goods, probably mostly from England. This can be attributed partly to a restricted consumption and increase in local manufacture. But there is no increase in other branches of English import trade to compensate for the increase that the other nations acquired in that year, amounting to a total of £1,632,000. So that this double loss must be attributed to a transfer of orders from British houses to Continental ones, probably due to want of enterprise and precautions on the part of the English manufacturers or exporters, and to the easier credits given by Continental houses. When foreign competition is so keen and all-pervading, it is a pity that British manufacturers do not push their goods in Argentina as much as other foreign manufacturers do, by sending out more commercial travellers to scour the country, and by more often issuing in Spanish catalogues of their manufactures. The English language is little known for commercial purposes, even in the capital, Buenos Ayres, and not at all outside big cities.

Under an Order in Council, passed the 27th day of July last, additional regulations respecting the inspection of of electric light were adopted as follows:—All electric light supply meters in use at the time of the passing of "The Electric Light Inspection Act" shall be presented for verification as follows:—One-third before 1st December, 1895; one-third before 1st March, 1896; one-third before 1st July, 1896. For every unverified meter found in use after the first day of July, 1896, the owner thereof shall incur a penalty of twenty-five dollars. For every failure or neglect to comply with the provisions of section 22 of the Act, in relation to affording the department testing facilities, the contractors shall incur a penalty of fifty dollars. For every failure to procure a certificate of registration as required by section 35, and the payment of the fee established therefor, within thirty days after the first day of July in each year, the contractor shall incur a penalty not exceeding one hundred dollars, and not less than fifty dollars.

Canadian bicyclists who may have oscasion to take their wheels with them into the United States, may be interested in a ruling recently made by Acting Secretary of the Treasury Wike allowing free entry of bicycles into that country as personal effects under certain condition. In a letter to the Collector of Customs at Plattsburg, N.Y., Mr. Wike says:

"The department is in receipt of a letter dated Rouse's

Point, in which application is made for the free entry of two bicycles as personal effects of E. Goemans, who lately arrived in your district from Montreal. The applicant states that the bicycles have been in use for two or three years, and claims that the same are free of duty under department's decision of September 26, 1893. In regard thereto I have to state that you are to be governed in all cases by the decision of the department above referred to, which, under the opinion of the Attorney-General places a bicycle accompanying the passenger as a personal effect under the provisions of paragraph 752 of the act of October 1, 1890, now paragraph 669 of the act of August 28, 1894. Under date of the 16th of November, 1885, the department decided that the free entry of bicycles as personal effects is limited to one of such articles, and under dates of October 14, 1880, and August 4, 1887, the department also decided in the case of watches brought in as personal effects that free entry should be limited to one watch. You will be governed accordingly, and refund the duty assessed on one of the bicycles in question, under department's decision of October 28, 1874, which holds that 'goods presumably free as personal effects are not subject to protest and appeal.'"

Dr. H. A. Everett, vice-president and general manager of the Detroit City Railway, writes us that the road is now in operation, the first car having been taken over the road by Mayor Pingree, who wore a motorman's uniform. The Company has about 27 miles all constructed and is operating already about 15 miles. The franchise covers 55 miles of track in the city proper and about 9 miles in the immediate suburbs. The road bed is laid in concrete in accordance with the Canadian practice of Dr. Everett and his associates ; and it is believed that maintenance will be very slight for a number of years. The best that can be bought has been put in, and expense has not been spared in any department. The cars in use are of the combination pattern. The motors are of the latest Westinghouse make. The poles are entirely of iron, and the overhead system was laid out for economical operation with a oo trolley wire. The Company has built a very substantial brick power house 150 feet by 270, with a brick stack 12 foot flue and 250 feet high. The engines are direct connected, cross compound Allis-Corliss, two of 600 H. P. and two of 1200 H. P. It is expected to have power from the plant by September 1, and to have the line under pretty fair operating conditions by November, with 75 regular cars in service. The Company sells 8 tickets for a quarter.—Electrical Engineer.

There is a good deal of force in the suggestion that good brakes are more necessary to street cars than the indifferently successful fenders which are in use. It is not for lack of good and quick-acting brakes that the feeble and out-worn hand brakes are retained. The inventors have devised power brakes by means of which the motorman, by a slight movement of the hand, can stop cars at a high rate of speed ; but the companies do not adopt the improved appliances, because they cost more than the old.—Boston Transcript.

Under the British "most-favored-nations" treaties the following nations will be entitled to the same privileges in the Canadian market as have been granted to France by the Tupper treaty :—Argentina, Russia, Belgium, German Zollverein, Austria-Hungary, Norway and Sweden, Chili, Colombia, Bolivia, Uruguay, Salvador, Costa Rica and Muscat.

The 14th annual convention of the American Street Railway Association will be held at Montreal, Canada, opening on Tuesday, Oct. 15, and closing on Friday, Oct. 18, 1895. The officers of the Association have spared no pains to make this meeting the most interesting and profitable one ever held. The Association has issued a pamphlet containing the rules and regulations applying to the exposition feature of the convention, as well as information concerning the shipment and handling of exhibits, which is of much importance to intending exhibitors. Copies of the pamphlet can be obtained from Mr. John A. Partridge, Secretary, Brooklyn, N. Y.

The following suggestion is submitted to the Toronto Railway Company:—

Baltimore has invented an attractive novelty for evening trolley car parties, says an exchange. Last week a party of 40, comprising a due proportion of gay youths and maidens properly chaperoned, started for a ride to Glyndon. On the return trip a member suddenly left his seat and had a long whispered consultation with the motorman, whose subject he refused to divulge to his curious companions, although, stimulated by the mischievous twinkle in his eye, they plied him with questions. On merrily went the car till, all at once the motorman sung out : "At the top of this hill, look out for the tunnel !" The mystified members of the party looked at him and one another in amazement, for no tunnel could they remember on the road. But when the top of the hill was reached they shot into quick darkness, for the motorman had turned off the electric lights. A peal of laughter rose as the joke was seized, and then all over the car arose sounds of an osculatory nature which the perplexed chaperones could not locate, but were pacified when told the girls were only kissing their hands in deference to tunnel customs. Six tunnels were passed, and finally the motorman cried out : "Last tunnel before we reach the city !" and the tunnels were unanimously voted the best part of the jolly ride.

A danger hitherto unthought of has revealed itself recently in connection with the use of electric wires on upholstered walls. In one instance the walls of a room were upholstered with stuff, whether silk or woolen it was not stated, in which were interwoven a great number of metal threads. Electric wires being placed on the walls, when the current was turned on the whole room became ablaze. Evidently the current found congenial company in the metal threads which were meant to embellish and not to destroy. The arrangement of drapery around or near to the lamp sockets of electric lamps is fraught with danger unless an expert is doing the work. We predict that the introduction of wires into dwellings will soon become an exact science. Indeed, it is such now, but it is evident the upholsterer and the electrician are not in full accord. It is amazing to find how easily electricity may be generated about the house. It is quite a sport with some young people to shuffle rapidly over a velvet or moquette carpet, and to touch the faces of each other with the tips

of their fingers—a strong electric shock being the result. The rubbing of silk also produces electricity. An instance is related, where a lady, having on a black gros-grain silk waist, scorched the garment and ruined a valuable silk tapestry covering on the back of the rocker, by the friction of her back as she swayed to and fro.—American Carpet and Upholstery Trade.

Good Housekeeping for August shows no "vacation dullness;" on the contrary its pages teem with interesting matter relating to all phases of the home life—material, social and spiritual. As usual there is a strong flavor of the passing season, and the housewife who desires recipes for jams, jellies, pickles and preserves, will find them in abundance and of reliable quality; the lover of a pleasing story or a fresh bit of verse will be gratified; in the department of Food for the Family, some of the less common fruits are discussed; there are suggestions for entertainments, and for making the home attractive; as well as a prize puzzle department which is proving very popular. It is, as ever, a magazine to interest all the members of the family. Clark W. Bryan Company, publishers, Springfield, Mass.

The August or midsummer number of The Canadian Magazine is covered with a beautiful and appropriate design, while the contents are interesting in a high degree, comparing most favorably with those of any midsummer number of the year. The fiction is abundant and excellent and includes two prize stories, one relating to the Niagara frontier and another to life in Quebec Province. The sketches and descriptive articles from many different parts of Canada, as well as illustrations are excellent.

Herbert Spencer opens the August Popular Science Monthly with the fourth of his papers on Professional Institutions, in which he shows that the functions of the orator, poet, actor, and dramatist are all developed from the acts of the primitive tribesman in welcoming his victoriously returning chief. Andrew D. White, writing on The Continued Growth of Scientific Interpretation, describes the battle by which reason conquered tradition in English theology. In the series on the Development of American Industries since Columbus, John G. Morse describes Apparatus for Extinguishing Fires, with many pictures of apparatus, ancient and modern. It is many years since the lyric Muse has been admitted to the Monthly, but in this number are some lines by David Star Jordan addressed To Barbara, with a portrait of a charming little girl. It is all strictly scientific, however, for the verses relate to heredity. Prof. John T. Stoddard gives a full account of Argon, the new constituent of the air. Dr. John Ferguson writes on The Nervous System and Education. In the Editor's Table there is a reply to Mr. Clark's article, in this number, a tribute to Prof. Huxley, and some remarks on Mr. Spencer's declination of the honor offered to him by the Emperor of Germany. New York: D. Appleton & Company. Fifty cents a number, $5 a year.

ELECTRICITY AND MANUFACTURING.

GEO. WHITE-FRASER, ELEC. ENG.

The keen competition to-day existing in all branches of manufacturing industries, has the tendency to cheaper cost of production, either by (a) the use of more efficient methods, or (b) lowering the quality of the good; i. e., adulteration. The latter, while commending itself to a certain short-sighted section of the manufacturing interest, very soon works out its own condemnation, for the great public eventually appraises goods at their intrinsic value, and passes by the inferior quality. Omitting all considerations of fair dealing, and honesty—the true business policy is to keep up the standard of quality, or even raise it if possible; and to meet competition by lowering the cost of production. This is only possible by the utilization of cheap sources of power, the introduction of high grade labor saving machinery, concentration of plants, reduction of necessary capital, and minute economy in every department and stage. It is also very important to get into direct connection with the great markets, by locating near railroad centers so as to eliminate the high cost of land transport. How, while economy is possible everywhere, and everyone can use high class machinery who has the money to pay for it, it is often quite impossible with existing means and methods, to secure both the advantages of cheap power and good railway location? Cheap power means either good water pressure, natural gas or proximity to local mines; and as a general rule great water powers are some distance away from railroads so that, either the power must be transmitted in some way from the water to the railroad, if the factory requires great shipping facilities, or the raw material and furnished articles must be transported from and to the railroad, if the power is the first consideration. Any means which permits the enjoyment of all the advantages enumerated above, and which at the same time secures economy, concentration, efficiency, and great convenience, is certainly worthy of the very careful investigation of manufacturers who desire to be abreast of the times. Economies may be either relative, or absolute; either produce the same article at a lower cost, or a greater number at the same cost. Either check waste of power or material, or raise productiveness. Cheap power, concentration, and transport facilities, lower the cost; efficient machines increase the output. It is the purpose of this article to show how and where the use of electricity, judiciously applied, can secure both the abolute and the relative economy; to consider the matter in the abstract and also to show what actually has been and is being done. As regards the utilization of cheap sources of power, there is no demonstration required to show the advantage of using water power, so that if a factory can be placed right on the railroad, and at the same time use a good water privilege two considerable savings are at once introduced. The only question is, how to transmit the power? The answer is ready. Electricity will do it simply, cheaply, and efficiently. There is nothing abstract to consider here. Large quantites of power are transmitted in practice over great distances, with absolutely satisfactory results and can be referred to. In Europe there are several such installations—such as at Chambery—where 2,000 horse power are electrically transmitted over 11 miles; at Oerlikon 50 h. p. over 27 miles; Gringesberg, 400 h. p. over 8 miles; at Lurin, 18 miles; in Milan etc. In the States, we have power transmitted over 13 miles; 11 miles; 16 miles and 28 miles; and over every intermediate distance. These plants have been so long running, as to have been thoroughly tested, and there can not be the slightest question of the entire practicability of such transmissions from an engineering point of view, and of their success from the commercial. The engineering features of such enterprizes are of great interest to electrical engineers, involving as they do the consideration of many and important factors contributing to the efficiency of transmission; but as these factors consist of such purely electrical phenomena as self and mutual induction, resonance, etc., and have important influence on the design of the transmission and utilization plants as regards frequency, voltage, etc., they will not be of any interest to the non-professional man, who possibly is not aware that such things exist. The power once developed may therefore, be electrically transmitted over any distance practically, and brought by wires into the factory which may be located purely with reference to transport facilities. Thus in one case of a large weaving factory, the question was whether to locate beside the river, and team 4½ miles to the railway, or to locate beside the railway, saving the teaming, and use steam. The matter was decided by locating on the railway, and transmitting the water power electrically. A little consideration shows what the saving was—first all the coal was saved; next the 4½ miles of road teaming, and one handling of goods was entirely eliminated, and the management stated, "we were able to select the location of the mill with a view of obtaining the best light and ventilation, which we could not have done with the source of power located immediately in the mill building, and were also able to make our location convenient to the railroad."

In a country like Canada, where great water powers abound, this flexibility and efficiency of transmission should be regarded as a special feature of manufacturing enterprises.

The power once brought to the factory, may be used in any convenient manner, either in large units to drive lines of shafting and counter-shafting, belted to machines, or to drive individual machines in small units. Electric motors may be placed on the ground, on wall brackets, or suspended from the ceiling, in any way that is most convenient, and that will save floor space, etc. They are used in every industry, and for every purpose, in weaving mills, iron foundries, machine shops, printing establishments, in fact wherever power is required, and the many advantages attending their use are recognized wherever they have been installed.

The questions to be considered in any establishment using scattered steam engines to drive shafting, and thinking of substituting electric motors, are, of course—Will the expense of changing be justified by the savings effected—will electric power effect any saving at all, and how will the substitution affect the output of the factory? It will be as well to take certain actual cases, which probably represent average conditions of power using, and consider them with respect to the above questions.

Take, therefore, a factory, recently under the notice of the writer, using about 300 h.p. in 11 steam engines, ranging in size from 50 h.p. to 6 h.p. The steam was supplied from a center boiler plant, located as conveniently as possible, and was carried in pipes to the engines, one of which was 250 feet from the boiler, two more were 200 feet away, while the rest ranged from about 40 feet, to 150 feet distance. This may seem an unusually scattered plant, but as a fact it is not so. The engines were belted on to lines of shafting, sometimes 200 feet in length belted to machines and to counter shafting, in one or two cases there were right angle shafting with bevel gears, or crossed belting. Let us consider this system of power generation, transmission and use, with regard to its economy and efficiency. The boiler plant being centrally situated and all in one battery, could probably not be improved on. The steam piping, leading in many directions, over considerable distances, and even between buildings in the open air, is an inevitable and unfailing source of waste, through radiation of heat, and consequent condensation, drop in pressure due directly to distance of transmission, angles, leaks, etc. The actual loss in heat, or power, is no matter of abstract guessing, or uncertainty; it can be calculated, and in a building of the size considered would mount up in the course of the year to a very appreciable figure. For instance a pipe of 100 feet long and 3 inches in diameter, bare, will radiate about as much heat as is contained in 5lbs. of fair coal, if steam pressure be 100 lbs., and the atmospheric temperature be 70°. This loss continued 10 hours a day for 300 days

mounts up to a clear waste of almost 8 tons of coal per annum. In our particular building, there must have been at least 1200 feet of piping, most of it larger than 3 inches, and a good deal of it naked, so that the actual waste of fuel would mount up to about 100 tons of coal per annum, or somewhere between $350 and $400 in radiation from steam pipes alone, not taking into consideration the losses to be considered later. There is an appreciable loss due to the friction of the steam flowing through the pipes, and the bends, but as this is somewhat difficult to exactly estimate, it will not be figured. The next loss is in the engines themselves, and is due to the inefficiency of small steam engines, as compared with large ones. It is not so much a loss, as it is an increase in steam consumption owing to necessary conditions, which consumption, under more favorable conditions, might be greatly reduced. The steam engine, highly developed as it is, is neverthless, a very inefficient machine, and this inefficiency becomes more marked as the size decreases. Thus, while a 500 h.p. simple non-condensing engine requires about 32lbs. of coal at 80 lbs. pressure to develop each horse power, a 100 h.p. engine requires about 36 lbs., a 50 h.p. engine will take quite 40lbs. while a 10 h.p. or smaller will probably require 60lbs. per horse power per hour. In such an extended plant it would be practically impossible to run condensing, except for the nearer and larger engines, so that the simple engines are necessary.

By the use of a smaller number of larger engines, a considerable reduction might be made in steam consumption (and therefore, of course, in fuel;) but in that case each engine would have to run longer lines of shafting, would probably be working most of the time at a very small proportion of its rated capacity, and therefore at low economy. This matter of the average load is well worth looking into more carefully. In most factories will be found all kinds of different tools, drills, planers, saws, looms, spinners and so on, all of which are required during some stage of the process of manufacture, but at any instant of time not more than possibly half of the total number will be in use together, but all of which must be connected to shafting in some way, and power provided sufficient to run the whole together, if at any time it might be necessary. Now, if one large engine be used to run the entire building, the loss in radiation will be perhaps entirely saved, and the increase in engine efficiency taken advantage of; but then this large engine will be running all the time, to probably not more than half its capacity, and every foot of shafting throughout the entire shop will run continuously. The engine itself will decrease greatly in efficiency at half load, and the porportion of its power absorbed in overcoming its own inertia and friction, will increase from about 10 per cent. to 20 per cent. The loss of power from the shafting will also be very great and will be considered later. On the other hand, if small engines be used their comparative inefficiency will be apparent, and the loss in radiation introduced.

The third loss is a very considerable one, and is in the transmission by shafting and belting. Its magnitude is scarcely appreciated by those who have not investigated the matter. With overhead shafting and vertical and oblique belts, the losses are 8 per cent. and 10 per cent. approximately, that is to say, to get 100 horse power at a machine the shafting must be run at 110 horse power, the other 10 h.p. being wasted merely by the belt. As to the loss in the shafting itself, a great number of tests have been made by competent engineers, the results of some being given below. A test carried on during a whole day, with observations made every 15 minutes, showed an average power of 44.1 h.p., of which 21.3 h.p., was absorbed by the shafting alone. Another test made by an equally well known man showed, that in a factory using 1000 h.p., the shafting alone took about 206 h.p. A third writer gives as the result of his experience that the power required to drive shafting is on the average 38 per cent. It is unnecessary to multiply evidence. Assuming, therefore, a tool or machine requiring 100 h.p. belted vertically to a shaft which is run by a belt from a simple, non-condensing engine, if the engine is run at 100 h.p. there will be 60 h.p. only delivered to the machine, the other 40 h.p. being wasted. Taking the engine as requiring 36 lbs. of steam per h.p. per hour, we find that to deliver 60 h.p. to the machine requires 3600 lbs. of steam or 60 lbs. per h.p. We have gone into the various inevitable losses met with in the running of factories by more or less scattered steam engines and shafting, and it remains to show how they may be either entirely eliminated or largely reduced by the substitution of electric motors instead. Going back to our factory then, we will re-design its power distribution system and carefully consider results.

We shall put in a compound condensing engine of high class of of about 300 h.p. capacity, and use steam at probably 150 lbs. pressure, this as close to the boilers as we can get. We shall also put in an electric generator of pretty nearly the same capacity, if possible directly connected to the engine—if not then by a belt. We shall cut up the shafting in convenient lengths, and belt a small sized electric motor to each length, endeavouring so to locate machines, that all those on the same shaft shall be either going or at rest together, and we shall connect the motors to the generator by wires allowing about 5 per cent. loss. Taking the various efficiencies at the same as above for shafts and belts, assuming direct connection of generator about 90 per cent. efficiency for generator, which is rather below the mark, and about 80 per cent. for motors of about 5 horse power and

over which is also low, we shall find the 100 h.p. in the engine will result in delivering 66 h.p. to the tool, if the generator is half loaded, and more if it be fully loaded. Now a compound engine of this size run condensing, will take about 20 lbs. of steam per horse power per hour, so that we have in this case a consumption of only 30 lbs. of steam per horse power delivered to the tool per hour. We arrived before at the figures for the simple engine and transmission by belting and shafting, and found them to be 60 lbs. per h.p. delivered to the tool per hour; so here we have at once a very remarkable saving effected in fuel consumption, by using electric power. Nor have we even considered the saving in knocking down our old lines of piping which cost us, as we found, about $350 per annum through wasteful radiation. So far our saving is the result of concentration of steam plant and the use of highly efficient machinery, instead of scattering small steam engines, and using long lines of shafting. There are other matters, however, which are equally well worthy of investigation. It is generally possible so to arrange the tools in a shop, that certain of them shall be required at the same time, and can be shut down at the same time. Now the shafting can be cut up into lengths that shall serve such groups of machines, and a comparatively small motor put on such length. When it is required, the closing of a switch will operate the motor, which can be shut down equally easily.

Now, the efficiciency of a small motor to do such work may safely be taken at 80 per cent. which is based on the low steam consumption of a large central engine; while that of a small steam engine to do the same work would not be more than one-third as great, and the steam pipe would always be full and radiating whether it was working or not. The advantage of being able to cut up the shafting into small lengths is perfectly evident; for a line that would require 20 horse power merely to overcome its own friction, and which was all running, whether all the machines were being used or not, could be operated by judicious location of machines and motors, so as to eliminate two-thirds of this dead power, and of course save so much fuel. This principle of distribution by small motors can be followed out absolutely by the use of single motors to each individual machine. This is done in very many cases, with marked success. In such a case, all shafting and belting is entirely done away with, the motor being geared to the tool.

The absence of shafting and belting is felt in the better lighting of floor space, and in the greater convenience for cranes and travelling hoists, and besides, the roof and ceiling timber may be made much lighter and less expensive when they have not all the weight and strain of shafting to support.

The above may be thought to be all theory, and mere claims

resting on no foundation of facts. This is not so. Facts innumerable can be cited in support of all these statements. The transmission of power by electric means is done every day in our streets over the trolley wires; countless motors are used for every conceivable purpose, and the question as to whether the substitution of electric power for steam engines in factories will actually be an advantage or not, is easily investigated and settled by a competent electrical engineer. With these prospective advantages to be gained, it certainly should be the first thought of every power user to have this question gone into with regard to his own business, for the difference between a consumption of 60 lbs. of steam per horse power hour with small scattered engines, and 30 lbs. with a concentrated steam and electric generating plant, reduced to a matter of dollars and cents, amounts to a saving of nearly $2,000 per annum for 100 h. p. plant operating 10 hours a day for 300 days.

Here are some data: In one factory requiring 1,200 horse power, the substitution of motors of sizes varying from 100 h. p. to 1-6 h. p. for steam engines resulted in saving 3,000 tons of coal per year. In another case, a long comparative test with an electric crane, showed that it required 4 kilograms of steam to produce the same effect as 10 k. g. with a steam crane.

Reports by a member of the society of Mechanical Engineers showed that motors to the power of 29½ h.p. replaced 94 h.p. in engines, and did the work as well. In an 80 h.p. mill, coal to the extent of $700 per annum was saved, over and above the interest on the cost of substitution. A locomotive works saved $5,000 in coal similarly. In a 500 h.p. factory, that used to use 36 tons per day, the substitution of electricity caused the consumption to drop as low as 13 tons per day. This was in a prosperous engine works, when presumably things were well looked after. One factory increased its output 50 per cent., another 25 per cent., and both thought it was because of the greater convenience and general efficiency of the motors. In every instance where motors have replaced steam engines, the results have more than justified the change. The writer does not wish to convey the impression that in every case this substitution must necessarily result in a saving. The particular conditions of each case must be considered on their own merits, but with these great savings possible, the enterprising manufacturer who refuses or neglects to carefully consider the question, is shutting his eyes deliberately to what may be his own advantage.

New Aniline Dyestuffs.

The Farbenfabriken, vorm. Friedr Bayer & Co., of Elberfield, Germany, have lately brought out some new dyestuffs of some interest. They say that the direct violets for cotton which have hitherto been brought out have not been notable for brilliance of color and could not by any means compare with the methyl violets in beauty of tone but, Benzo-Violet R. goes a long way in this direction and by its means some fine violet shades can be dyed ranging from a pure lavender shade to a deep violet. It is dyed like all the benzo colors from a bath of soap and soda, or Glauber's salt and soap, the shades obtained being level and of a good tone. They are fast to dilute acids, strong acids turn them a little bluer, alkalies turn them pink, while they are quite fast to soaping. In these respects Benzo-Violet R. will compare well with most other coloring matters and will no doubt be found extremely useful in dyeing.

We are invited to notice three new basic coloring matters which have been placed on the market by the same firm, which are, Rhoduline Red G. and B. and Violet. They are particularly adapted for cotton dyeing, but are also applicable to jute. For calico printing they will also be found useful.

Rhoduline Red B. dyes from pale pink to deep crimson shades of considerable intensity and brightness on cotton which has been mordanted with tannin and tartar emetic, 2 to 2 1-2 per cent. of dyestuff being sufficient for the deepest shades, while even as little as 1 oz. will give a good shade of pink. The shades so obtained are quite fast to soaping, are turned violet by dilute acids, blue by strong acids, and browns by alkalies.

Rhoduline Red G. dyes from bright rose pink to deep scarlet red shades, which have the merit of being very bright, comparable with the Rhodamines in that respect. Using 2 to 2½ per cent. of dyestuff, the full shades are readily obtainable, while ¾ to 1 oz. is sufficient to give a good pink. The shades so dyed are fast to strong soaping; they are turned violet by dilute acids, blue by strong acids, brown by alkalies.

Rhoduline Violet. This produces lavender to reddish violet shades on cotton, the shades being comparable with those obtained from the red shades of methyl violet. The shades dyed with Rhoduline Violet are quite fast to soaping; dilute acids turn them violet; strong acids turn them blue, while alkalies turn them brown.

While the best process of dyeing cotton is that of mordanting, yet some fairly good shades can be obtained on unmordanted cotton. These, however, are not quite so fast as those on mordanted cotton. The Rhodulines may also be dyed on wool and silk from neutral baths, when some fine bright shades are obtained, thus the new products will be found useful by the wool or silk dyer.

Sulfon-Black G. and R. (Patented). These new blacks are specially adapted for combinations for Sulfon-Cyanines, well known fast navy blues. Sulfon Blacks G. and R. are similar in their properties to Sulfon-Cyanines; they resist equally well, alkalies, perspiration, acids and carbonization, and are faster to light than a Logwood Black.

Diazo-Red Blue 3 R. (Patented). Next to black the most important color and the one most in use is blue. The Farbenfabriken have just invented a new blue known as Diazo-Red Blue 3 R, which when developed with Beta Napthol, gives a full reddish blue. After diazotising and developing with the well known developer, Beta Napthol, which is very much in favor with dyers especially on account of its low price, a full red navy blue is obtained. This will be found very fast to alkali and acid, whilst it has great fastness to light and washing.

On account of its fastness to acid, cotton dyed with this blue may be woven with wool and the wool afterwards dyed in an acid bath. Such yarns may be used for different purposes of warp, and possess the advantage over indigo that after remaining for a long time in an acid bath they do not become lighter and grey like Indigo. Diazo-Red Blue 3 R is only suitable for cotton or mixed goods. For samples and further particulars address, The Dominion Dyewood and Chemical Co., Toronto, sole agents for Canada.

Cochineal Scarlet PS. This new colour belongs to the class of Azo Acid Colours, and on account of its excellent properties in wool dyeing, will be found exceedingly useful.

Cochineal Scarlet PS dyes wool with an addition of Glauber's salt and sulphuric acid, and produces a beautiful scarlet red which is especially remarkable on account of its clear and fiery colour. As will

be understood from the name, this new colour will chiefly be used as a substitute for Cochineal, which it even excels in fastness to light and air. It dyes wool evenly exceedingly well and also penetrates well. It is further remarably fast to stoving and also perfectly fast to alkali and acids.

The colour, if printed on acid, in the usual manner, is very suitable for direct wool printing. When dyed on woolen cloth it can be discharged with tin crystals and should therefore be useful for colored discharge printing. Sole agents for Canada, Dominion Dyewood and Chemical Co., Toronto.

Tannin Heliotrope.

W.J. Matheson & Co., New York, sole agents for Leopold Cassella & Co, have sent in the following circular having reference to the Tannin Heliotrope manufactured by Messrs. Cassella :—

On cotton, mordanted with tannin and tartar emetic, Tannin Heliotrope gives a bright reddish violet, especially suited for the production of garnets as well as any reddish violet tints. In fastness to washing and light, it is equal on cotton to Safranine, and far superior to Methyl Violet.

Tannin Heliotrope is not only well adapted for calico dyeing and printing, but also for silk dyeing, owing to its bright shade and the fact of its being much faster than Methyl Violet.

The following recipe has been found to give good results in calico printing :

30 grams. Tannin Heliotrope,
240 " Hot Water,
50 " Acetic Acid, 9 deg. Tw.,
1200 " Thickening,
} boil ; when cold, add

60 ccm. Tannin, dissolved in
60 " Acetic Acid.

After printing, steam as usual, and pass through a tartar emetic bath.

The Kingston Blast Furnace and Steel Works.

The proposal to erect a furnace of 125 tons capacity, and steel works comprising furnace and rolling mill of 40 tons daily capacity, has been before the Kingston people and excited more than local interest. The advantages of the site and the vicinity of abundant iron ores of various qualities, have fostered an impression that Kingston, more than any other place in Eastern Ontario, is wonderfully well situated for such an enterprise. It is only the scepticism which ignorance engenders that entertains any doubt of the feasibility of obtaining charcoal supplies on the lines of the Kingston and Pembroke, Canadian Pacific, and Ottawa and Parry Sound railways, for a length of time beyond the average duration of the charcoal furnace. A project that would put in circulation for labor $6.50 for the fuel required for the manufacture of each ton of pig iron, should have some consideration from merchants and railway carriers.

Nevertheless, neither the scheme submitted by H.G. Hamilton and others has materialised, nor has any counter proposition been made by the Kingston people to invite the erection of a plant, which, as outlined by the Youngstown promoter, seem to be very suitable for the requirements of Ontario industry. The proposition submitted to the city plausibly offered in return for a grant of the site and a loan of $250,000, a mortgage of the works and of the Government bounty per ton of iron and steel until the loan should be fully repaid with interest. There seemed every probability that beyond the expense of the site the city would receive its entire outlay.

The negotiations do not appear to have been conducted with skill on either side. The Youngstown proposal apparently involved the disposal of more or less of an existing plant. The examination of this part of the proposition should at once have been committed to a competent engineer. It is more than likely that there are many plants in the United States which would profitably bear removal to Canada. There are also others which are best suffered to remain on their sites as monuments of the folly of the mad speculation which founded them. It was not seemly on the part of the Kingston people to arrive at any premature conclusion as to the Youngstown proposition without at least the opinion of some one competent to pronounce upon the value of the plant proposed to be erected.

Before obtaining any evidence on this point the promoters were called upon to furnish evidence of the capital available for the enterprise. Here, the proposition received its quietus. There was plainly on the part of the city a demand that at least half a million of dollars should be in view before they would submit a by-law for the loan of about $300,000. It is doubtful if any proposition will ever be presented to any Canadian municipality where such a condition would be satisfied. A little care on the part of those engaged in promoting this enterprise might have led to the modification of the proposition for the loan and the city would thus have encouraged the erection of works, the want of which is a hindrance to the progress of the Province of Ontario.

The Youngstown proposal to Kingstonians was for a coke furnace. But we do not see why, having a meridianal railway worthless without traffic in forest products or minerals, the promoters were not

invited to submit a proposal for a charcoal furnace. Probably it was thought the Youngstown gentlemen knew their own business. The Kingston people ought to keep in mind that in the townships in their rear there would soon be a different state of affairs if the charcoal burner were invited to ply his calling instead of that fire fiend, the free-grant settler. Charcoal at 5 cents a bushel makes the ordinary forest worth to the laborer one hundred dollars an acre, and to the railway carrier an average of twenty dollars an acre. Such figures ought to arouse the sleeping beauty, whose mausoleum is the Limestone City, from her slumbers. It is to be feared the effort will be in vain to arouse her. Fearing a renewal of Mr. Hamilton's proposition, one of the city papers came out with the request, all too pleasant in Kingstonian ears : "Give us a rest."—Canadian Mining Review.

Beyond Expectation.

The Buffalo Forge Company have favored us with a copy of a letter written by Messrs. Schoellkopf & Co., a large manufacturing concern in Buffalo, N.Y., who operate two extensive factories, to the John C. Jewett Mfg. Co., also a large manufacturing concern of that city, having reference to the forced draught plants in the Schoellkopf works, supplied to them by the Buffalo Forge Co. It will be observed that not only does the Buffalo forced draught system accomplish all that was directly required of it but it entirely obviates the smoke nuisance also. The letter of the Schoellkopf Co., to the Jewett Co., is dated August 2, instant, and is as follows :—

Gentlemen,—Replying to your favor of the 29th ult., inquiring as to the results of our experience in the use of the forced-draft system, supplied by the Buffalo Forge Company will say that we are even more impressed with the advantages accruing from its use than when we furnished them with our first letter of approval about a year ago. No matter how damp or foggy the atmosphere we have no difficulty in obtaining all the draft required. As regards smoke we find the system reduces this baneful nuisance to a minimum. In fact its service is so complete in this respect that we can find no excuse for our neighbors' troubling us with their chimneys and we are contemplating the entry of a formal request to the proper authorities for the abatement of this nuisance as altogether unnecessary.

Big Lumber Cut Expected.

According to reports from Saginaw and other points in Michigan, the present season will witness the sawing of large amounts of Canadian logs in Michigan mills. The total that will cross Lake Huron from Canada to Michigan this season is set down at 350,000,000 feet of logs. So large an importation of logs, much of them by firms who own mills in Canada, would seem to mean that the Americans operating in Canada do not intend to let their American mills fall into decay. It may also mean that they do not find the operation of saw mills in Canada either so easy, so attractive or so profitable as they expected to find it. Again, it may mean that they find the transportation of the logs by lake so cheap that they find at least as much profit in sawing on this side as they find in the sale of lumber sawed in Canada and brought over by lake and rail. Viewed in any light, the movement is so large as to form an interesting feature of the trade. It is suspected that the Americans operating in Canada do not expect to see the present free-lumber tariff standing more than two years from the present time, and that their expectation of a restoration of the tariff in 1897 or 1898 will prevent them from going to great expense to erect large mills in Canada. With Canadian saw millers rushing their mills to their full capacity, with many Americans operating large sawmills on both sides of the border, and with American mills cutting about an average of lumber in addition to the very large amount of "scorched" lumber that has been and is being "cut to save it," there is no immediate prospect of an advance in the prices of any of those lines of lumber concerned in these transactions in the markets of the United States.—Lumber World.

The Marine News, speaking of the Sault Ste Marie Canal, says :—A vessel owner, who recently visited the Canadian Sault and made enquiry among the engineers regarding the work generally, is of the opinion that some misleading reports, whether intentional or otherwise, have been circulated about the canal. There is probably little cause, he says, for the statement that vessels are liable to injure their sides or bilges through contact with the sides of the canal. It has been said that the stone work for a mile or so above the locks on both sides of the canal had been left in the rough and projected inward, in a manner dangerous to all passing vessels. This is hardly borne out by an examination of the canal. The sides of that part of the approach in question are of timber crib to within one or two feet of the surface, and on top of this the stone rough work is laid with a slant outward from the water's surface. The timber crib sides under water project out some two feet, I think, beyond the stone work, so that there is little chance of a vessel striking the stone work under any circumstances. Lake vessel owners and masters who have examined the canal, may be familiar with these facts, but I mention them for the reason that I think there has been something of a misunderstanding, and our Canadian friends should be given the full credit to which they are entitled for a big work of this kind.

It is not easy to determine the efficiency of boilers. Various and diverse methods have been in vogue to measure it. A 100-horse power boiler for a compound engine often becomes only a 50-horse power boiler for a single engine. The difference in that instance is of course with the engine, not with the boiler. By the old standard from 12 to 15 square feet of heating surface in the boiler was considered equivalent to one horse power. The amount of steam used did not enter into the calculation. The business of a boiler is to furnish steam and its evaporating power is the standard of quality recognized by the American Society of Mechanical Engineers. In an editorial upon this subject the Boston Journal of Commerce thus concludes: Do not buy boilers by the horse power estimated from heating surface. This method is antiquated and can be entirely superseded by the better standard of the actual capacity of the boiler to evaporate water, if buyers of steam boilers would insist upon a guarantee that the boilers purchased shall evaporate a certain amount of water in a certain time.

Plumbers have been helped out of one of the greatest difficulties of their calling by a new electrolytic method of joining metal to earthenware. As is suggested by an expert, the making of a true connection between the lead pipes and the earthenware of closet pans and lavatory basins has always been a source of trouble, but the new process is said to make a perfect and permanent junction of the surfaces. The earthenware should have an unglazed surface, but, if otherwise, the glaze is removed, and the surface is coated with plumbago and placed in an electrolytic bath, thus obtaining a metallic coating. To this coating the lead pipe can be soldered in the ordinary way by means of a plumber's "wiped" joint. This process will probably entirely supersede the use of rubber sleeves, washers and putty, with which imperfect joints are but too often associated.

False Free Trade Arguments.

The requirement that liars should have long memories has most impressive illustration in the fact that the free trade journals, in their effort to prove that the Wilson tariff is beneficent, are now printing extended lists of manufacturers who have voluntarily increased the wages of their employes. This action has been taken, usually without pressure from any source, by men who have in years past been denounced as robber barons, as oppressors of the poor, and as tariff beneficiaries who employ national legislation for their own advantage, giving no share to the workmen. The favorite argument of the free traders has been that the laboring man is simply a victim of a system which has permitted manufacturers to fill their pockets with plunder. But now it is freely admitted that the very moment business begins to improve, employers, without waiting for strikes, concede to their operatives a share of the newly-acquired advantage. Any gain made by manufacturers, under the Wilson tariff, must be pitiful indeed; but, small as it is, the man who toils is obtaining, according to the eager testimony of the free trade journals, some part of it as a free will-offering. He gets more, because the employer has more to give; and when there shall be a demand that he shall receive less, let him try to understand that the fault is rarely with the employer, but nearly always with the conditions in which the employer is helplessly involved. It is clear enough, also, that if the duty-rates were now as high as they were in the McKinley tariff, the share of the workmen would be still larger. The fact cannot be disputed that the tariff-rate, in industries subject to sharp European competition, inevitably fixes the rate of American wages.—The (Philadelphia) Manufacturer.

In An Incandescent Lamp Factory.

The beautiful little glow lamp, with its fragile bulb and delicate filament, is a far more interesting production than its massive and cumbersome progenitor, the arc lamp. In our rapid tour through the incandescent lamp factory we are more struck than ever by the share that female labor takes in the electrical industries. We know that the inhabitants of "Central" all belong to the gentler sex, and that the telegraph key is often handled by the nimble fingers of a woman; in the factories that we have already visited we have seen girls busily employed in winding fine wire on the spools of small electro-magnets for telegraph and telephone instruments, and coarser wire on the armatures of small dynamos and motors, and in many other of the lighter and finer tasks incident to electrical manufactures. Electricity has opened many new avenues of employment for women who have to earn their own living; the work is almost always of an attractive nature, and as increased skill is acquired with practice and experience, a very satisfactory rate of pay, compared with that which obtains in other industries where female labor is largely used, is attained.

As we pass from one part of the lamp factory to another we see the little bulbs in a formative stage, like a small bottle with a neck at each end, in one place, the carbon filaments in another, the bases and connecting wires in a third, the finished lamps in a fourth. The process of manufacturing the carbon filaments from bamboo threads is a long and intricate one, and is carried on in strict seclusion as a

trade secret. But we can see the quick-fingered girls pick up the hair-like filaments and join them to the little pieces of platinum wire which are fused into the neck of the bulb; to the platinum wires are soldered other pieces of copper wire, which connect with the brass screw cap and button, insulated from each other by plaster of paris, that form the base of the lamp.

When the filament is inserted in the bulb and the base sealed up, the tube which projects from the top of the bulb is connected to a mercury air pump to exhaust the air from the bulb; this done, the tube is cut off and the bulb sealed up at the same moment, leaving the little point or cone that is to be seen on the top of all incandescent lamps. There are many intermediate operations in the evolution of the glow lamp, and every part of the work is checked by the most careful supervision, and each lamp is closely examined and tested before being wrapped and packed for shipment. The carbon filaments must be accurately measured and their resistance tested, the platinum wires must be just so long—or rather just so short—and no longer, every joint and connection must be perfect, and every juncture of glass with metal must be rigorously air-tight.—Harper's Weekly.

A Ship-Canal That is a Reality.

In these days of numerous ship-canal schemes, on paper, it is a pleasure to describe a canal that is a reality, and which was planned and built to serve a commerce that awaits its opening. The Baltic and North Sea canal, which is to be opened on June 20 by the German government, connects large bodies of water, alike to the Suez and St. Mary's Falls canals. The line of the canal starts at Kiel, on the Baltic Sea, and crossing the Prussian province at Holstein joins the Elbe at Brunsbuttel, below Hamburg. Work was begun on June 3, 1887, and over 8,600 men were employed during the summer months, while in winter the number was reduced to about 4,700. The plant comprised ninety locomotives, 2,473 cars, sixty-six dredgers, 153 lighters and fifty-five engines. The estimated cost was about $37,400,000, and the thoroughness of preparation and efficiency of execution can not be better illustrated than by mentioning the fact that the estimate has not been exceeded.

There will be two locks—one at the Baltic end, open all the year round, except during twenty-five days, and one on the Elbe, open three to four hours during every flood tide, so that it may almost be termed a tidewater canal. Its length is 53½ miles, average depth 29½ feet, width at bottom 72 feet, width at water level 213 feet. At Brunsbuttel, on the Elbe, there is an outer harbor 1,312 feet long, by 328 feet wide, then follows the lock, 492 feet by 82 feet and 32 4-5 feet deep, and then an inner harbor 1,640 feet by 656 feet. Two suspension bridges cross the canal nearly 138 feet above water level, so that railway traffic will not be interrupted.

The speed allowed on the canal will be 5.3 miles per hour, making the time of passage about thirteen hours. The toll will be 18 cents per net register ton, loading capacity. It is expected that about 18,000 ships will make use of the canal annually, representing about 7,500,000 tons. Hitherto about 35,000 ships passed every year through the Skager Rack and the Cattegat, between the Baltic and the North Sea, so that the estimated percentage seems fair. The saving of time will be considerable, since for all ships bound to or from any point south of Hull the distance will be reduced by 238 miles while Bremen ships will save 322 miles and Hamburg ships 424 miles. But more important than the saving in time is the avoidance of danger, the passage through the sound between the Scandinavian peninsula and Jutland being considered one of the most dangerous in Europe. Statistics show that about 200 vessels founder every year on these coasts.

The strategic value of the canal is, beside, of the greatest value to Germany, because its men-of-war will be able to pass from the North Sea to the Baltic with ease and safety, avoiding the passage through foreign waters, and permitting rapid concentration on the north or the west coast.—Marine Review.

CAPTAINS OF INDUSTRY.

This department of the Canadian Manufacturer is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business.

Wm. Zinger's woolen mills, at Teeswater, Ont., were damaged by fire August 2; loss about $2,200.

Messrs. Leary & McGrew, suspender manufacturers, have commenced business at Vancouver, B.C.

Mr. White-Fraser, consulting electrical engineer, Toronto, is making the preliminary investigations for the substitution of steam power by electric power, in two of the largest factories in Ontario.

The Babcock & Wilcox Company are installing a pair of their 220 h. p. wrought steel boilers in the new Bell Telephone Building now being erected in Montreal.

Mr. White-Fraser, Toronto, consulting electrical engineer, is engaged in the preliminary engineering for the transmission of 400 horse power over four miles, for lighting and power purposes, from water power.

The St. John, N.B., municipality is considering an offer from the Street Railway Co., to furnish the city with 129 electric lights, of 2,000 cp. at the rate of $85 per annum. The Board of Safety has recommended the acceptance of this offer.

The Rat Portage, Ont., reduction works and about eight mining locations have been purchased by E. Brusewitz, of London, England. It is the intention to equip the reduction works with the most improved mining machinery at once, and also to construct extensive developments on mining locations purchased.

The Halifax, N. S., Electric Street Railway are installing another battery of 500 h. p. of the Babcock & Wilcox Co.'s new wrought steel boilers. These boilers are to supplement the 500 h. p. battery which they have been using for the past five years to operate their electric light plant. A third battery of 500 h. p. Babcock & Wilcox boilers will be added later on.

The Dodge Wood Split Pulley, Co., Toronto, have in work for the E.B. Eddy Co. of Hull, Que., two mammoth rope drives, each drive to have a guaranteed capacity of 700 h.p. The drives are used in the transmission of power from new McCormack waterwheels, now being installed for the Eddy Co., for the purpose of increasing the pulp grinding capacity of their plant.

The Chanteloup Manufacturing Company have been incorporated with a capital stock of $10,000, headquarters at Montreal to manufacture species of material necessary for the manufacture of brass, iron, tin, copper works, etc.; and to carry on the general business of manufacturers, plumbers, finishers of iron and brass goods and other kindred metals. The letters patent are issued to David Yuile, James Cochrane King, William Robinson, Donald William Ross, jun., and John Watson, all of Montreal.

The Babcock & Wilcox Company apparently do not suffer greatly from lack of trade. They report business as excellent, their orders for June alone exceeding 25,000 h. p. Of this amount they have orders for 6,000 h. p. of their water tube marine boilers from the Plant Steamship Company. All the boilers built by the Babcock & Wilcox Company at their Belleville shops, are of all wrought steel construction, having a capacity for 200 lbs. working pressure.

Experiments have been in progress for some time in the United States in the interests of the Michigan Central Railway Company, for the construction of search lights of sufficient power and quality to illuminate Niagara Falls.

Mr. White-Fraser, consulting electrical engineer, has been retained to superintend the placing of lights and motors in the new building for the Toronto Lithographing Co. The motor will run individual printing presses.

The Central Light and Power Company are applying for incorporation with a capital stock of $50,000, headquarters at Montreal to construct and operate works for the manufacture, and distribution of electrical machinery, apparatus and material, and of electricity for the purposes of light, heat and power in cities, towns and other municipalities in Canada.

The Packard Electric Co., manufacturers of transformers, incandescent lamps, and electrical supplies, St. Catherines, Ont., have issued the following announcement that explains itself:—We are pleased to announce that our new factory, one of the finest manufacturing sites in the Dominion, is now in full operation manufacturing lamps and transformers. Our factory is equipped throughout with new and improved machinery, and our product is, in quality, superior to anything in the same line heretofore produced. Our new "Packard Lamp" marks a distinct advance in the art. In order to give the business personal attention, Mr. W. D. Packard has assumed the General Managership of the Company, with Mr. G. A. Powell as Assistant, and we can assure our customers that any orders with which they may favor us will receive careful attention. We have revised our prices and will be pleased to make quotations.

The Sturtevant Mill Co., Boston, Mass., manufacturers of Sturtevant mill and rock emery mill stones, have sent us a circular in which they inform us that the great success of their rock emery millstones and mills, and the increasing demand for the Sturtevant mills and crushers, has compelled them to erect large works into which they have moved the Company's offices. Their address is now Sturtevant Mill Company, Harrison Square, Boston. They say that they now have the great advantage of showing office visitors rock emery mills and millstones at all times in process of construction and operation, that will reduce to any degree of fineness all substances. Vistors are not likely to bring any material that they cannot economically and rapidly grind or crush to their satisfaction. Besides the well-known Sturtevant Giant crushers and grinders, and their rock emery vertical and horizontal mills and millstones, they manufacture nearly all of the older machines found in rock reducing plants.

Mr. M. Stewart is erecting a sawmill at Tilbury, Ont.

The new Light Co., Montreal, has been incorporated with a capital stock of $60,000.

Mr. G. A. Pringle's sawmill, Dobbington, Ont., was destroyed by fire Aug. 4 ; loss about $2,500.

The Milton Electric Light and Power Co., Milton, Ont., has been incorporated with a capital stock of $15,000.

The Swansea Forging Company, Swansea and Toronto, have been incorporated with a capital stock of $100,000 to manufacture iron, steel and other metals, including all kind of drop and carriage forgings.

The Anderson Furniture Company has been incorporated with a capital stock of $250,000 to acquire the business now being carried on at Woodstock Ont., and Walkerton Ont., by Messrs. Anderson & Co., as manufacturers of furniture, etc.

The Dominion Government have contracted with Messrs. Carrier Laine & Co., Levis, Que., for the immediate construction of six large steam boilers and steam fog horns to be placed at certain points along the shores of the Gulf of St. Lawrence to give warning, during fogs, of dangerous places to vessels navigating those waters. The cost of the apparatus ordered will be about $200,000, which includes the installation. The intention in placing these fog horns is to see if they will answer the desired effect ; and, if so, several new ones will be ordered.

The Light, Heat, and Power Co., Lindsay, Ont., has been granted a charter with a capital stock of $70,000.

The Berlin Thresher and Manufacturing Company, Berlin Ont., has been incorporated with a capital stock of $40,000 to carry on a business indicated by the name.

The Quebec, Montmorency and Charlevoix Ry. Co., Quebec, Que., are acquiring the water power at Montmorency Falls, and have been granted power to lease their surplus power and to enter into an agreement with the city of Quebec to construct and operate an electric street railway in that city.

A representative of the firm of E.P. Allis & Co., Milwaukee, Wis., was in Kingston, Ont., a few days ago, investigating the opportunity of entering into an engagement with that city to erect smelting works there. His firm, he says, would not ask a cent until they have their establishment running, and then they would want a bonus of $5,000 a year, on condition that the works turn out 100 tons of iron per day.

When the steamer Constance recently arrived at a Canadian port on the Pacific, needing extensive repairs to damaged machinery, it was thought that some parts of the mechanism would have to be ordered from Glasgow, where she was built. It is to the credit of New Westminster, B.C., that the work of repairs has been entrusted to the Reid & Currie Iron Works of that place. It is said the work will be the most important ever carried out by a machine shop in that city, and will include a new cast iron liner, 21 inches in diameter, in the low-press cylinder.

Manson Campbell, Chatham, Ont., is erecting another fanning mill factory at that place.

Wilson, Moore & Co., of Arden, Man., are building a new elevator of 30,000 bushels capacity.

J. Simpson, Manufacturing Company of Brantford Ont., has been incorporated with a capital stock of $45,000, to manufacture all kinds of carriages wagons, etc.

The Woodstock Woolen Mills Co., Woodstock, N.B., are increasing the capacity of their mills. A Galashiels fulling machine made in Hespeler, Ont., and several knitting machines made in Georgetown, Ont., are being added to the plant.

The Metallic Roofing Co., Toronto, inform us that they have lately supplied their "Owl" brand of galvanized corrugated iron for the Electric Light Company's buildings, and their galvanized "Eastlake" steel shingles for the roof of the Princess Theatre, both in Toronto.

The Dodge Wood Split Pulley Co., Toronto, have suppled R. Thackray of Ottawa, with a very neatly designed rope drive, for the transmission of the power required in the new extension just built to his already extensive planing mills. They have also supplied the required belt pulleys for new mill.

The Robb Engineering Co., Amherst, N.S., have been appointed agents in Nova Scotia, for the Dodge Wood Split Pulley Co., of Toronto. Messrs. Robb will carry a full stock of pulleys in all sizes for immediate delivery. They will also handle the Dodge patent split friction clutches and couplings, special dynamo and motor pulleys, heavy saw-mill pulleys, rope driving, etc. The fact that the Robb Engineering Co. is a leading mill supply concern in the Maritime Provinces, this appointment will no doubt, prove a valuable agency for the Dodge Company, and be a great convenience to pulley users in that part of the country.

The directors of the smelting works have been in consultation for the past two days with Manager Gordon, of the Philadelphia Engineering company, and have completed the arrangements for pushing on the erection of the plant. The local members of the company express themselves satisfied with the result of the meeting, and say that everything is "all right." The company has experienced some hitches in turning itself from an American institution into a Canadian concern, and these difficulties have been overcome. The engineering company and capitalists have come to an understanding and the Philadelphians have put up a forfeit and engaged to have the plant in operation here by Jan. 1, in time to earn the bonus.—Hamilton Spectator.

The Mooretown Salt Co., Courtwright, Ont., are applying for incorporation with a capital stock of $10,000 to manufacture salt. The head office will be at Wallaceburg, Ont.

The Canadian Mining and Development Company have been incorporated with a total capital stock of $100,000, headquarters at Montreal, to acquire, operate and develop mica mines and properties, and generally to carry on any enterprise or business connected with phosphates or mica, or products thereof.

Messrs. Gooderham & Worts, Toronto, will have a very complete pumping plant of their own. Their principal object in installing this plant is to give them better fire protection; but one pump will be kept in constant use for supplying the distillery with all water used for manufacturing purposes. Compound condensing pumps will be used, and the steam furnished by a pair of 200 h. p. Babcock & Wilcox Wrought Steel High Pressure boilers.

Some interesting pioneer work in concrete pier building is now being carried out at Port Dalhousie, Ont. This work is being done by Battle & Newman, of St. Catherines and Thorold, and consists in the substitution of blocks of concrete for the present timber piers. An attempt was made to do the work by another contractor last year, but it was thrown up, and the present contractors have undertaken the continuance of it in a systematic way which augurs success. The work is being done on the east pier, on which the lighthouse is situated, for a distance of 700 feet shoreward from the end; the work for the balance is to be carried out in future seasons. The narrow part of the pier is 20 feet, and the wide part 30 feet. The concrete is made in blocks 4 feet by 4 feet and 6 feet deep. These are prepared on the shore near the pier, and molded on a large circular table, so that 100 blocks can be made at once within the swing of a derrick-boom of 50 feet. The blocks, after being made, are swung on a tram car and carried thereon to the channel, where they are swung on to a scow by means of a stiff-legged derrick, and thence carried to their places in the pier. A layer of these large blocks is made in white Portland cement on each side of the pier, and all the intervening space is filled up with a bed of solid concrete from hydraulic cement. In the present contract 1,500 barrels of Portland cement and 3,000 barrels of hydraulic cement will be used. The top of the pier is finished with a floor 1½ feet thick of concrete, nicely rounded at the edges of the pier, and having mooring rings cemented in at distances of 60 feet. The present season's contract applies to about 900 feet of the pier and has a fine appearance. The work is under the superintendence of James Battle, assisted by two foremen, G. W. Read, of Port Dalhousie and George Boyd, of St. Catherines.

John McAdam's sawmill at Woodstock, N.B., has been destroyed by fire.

Mr. P. O. Pelletier's carriage works, Montreal, were damaged by fire July 31, to the extent of about $5,000.

The Dodge Wood Split Pulley Co., Toronto, have been awarded the contract for supplying the split pullevs and split friction clutch pulleys for the Ottawa Porcelain & Carbon Co.'s extensive new works at Ottawa.

Messrs. Wm. Davis & Sons, Ottawa, Ont., have been awarded the contract for constructing the dam and power-houses in connection with the Lachine, Que., Rapids hydraulic company. The dam will be nearly 5,000 feet in length, and from the head of water the company expect to derive over 14,000 horse-power.

The Gilmour Co., of Trenton, have a drive of 40,000 logs now running over the Coboconk slide into Balsam lake. This is the company's second drive this season. Three more large drives are at hand and have come down over the new tramway built last year from the Black river waters to the Gull river. These large drives will all be floated down to Trenton, where they will be manufactured at the company's mills.—Peterborough Review.

The Farbenfabriken, vormals Friedr Bayer & Co., Elberfield, Germany, have just placed on the market a new Alizarine product specially suited for printing, viz., Brilliant-Alizarine Blue, SP. This color is faster to light than indigo and produces a brighter shade than the ordinary alizarine blues. Also alizarine blue-black B. (patented). This new product is exceedingly fast to light and the best color for obtaining light fashion shades. Can also be dyed in copper vessels without injurious results. For further particulars address the Dominion Dyewood and Chemical Co., Toronto.

The Packard Electric Company, St. Catherines, Ont., who recently removed to that city from Montreal, and who now have one of the largest and best equipped electrical works in Canada, write us that they are nicely at work producing their Packard lamps and transformers. Prof. Thomas, of the Ohio State University at Columbus, that state, who was chairman of the Chicago World's Fair Committee on Incandescent Lamps, and who is an admitted authority on that subject, ends up his report regarding the Packard lamp by the following statement:—"Taking economy, maintenance of candle power, and freedom from blackening into account, the results obtained from these lamps are much superior to any heretofore published." This is a very strong and important statement. The Company inform us that they have laid aside all of their old stock of lamps, and are sending out only the new lamps on orders.

Messrs. Piggot & Sons' planing mill, at Windsor, Ont., was destroyed by fire July 30; loss about $20,000.

C. P. Burton has placed an order with the B. C. Iron Works for machinery for a saw mill at Naas Harbor, B. C.

The Rathbun Company, Deseronto, Ont., have placed another machine in their match factory, making a total of six now in operation.

Wm. Lee, proprietor of the saw and grist mills at 20 mile house, Pavilion, B.C., is remodeling the flour mill and putting in a complete roller system.

The municipality of Alexandria, Ont., have appropriated the sum of $23,000 for the construction of water works, which will be proceeded with at once.

The large Howry drive of saw logs has arrived safely in Cameron lake. This drive contains 80,000 pieces of good timber, all pine. This will be all manufactured at the company's mills at Fenelon Falls, Ont.

The mammoth pulp paper mill, which is being erected at Sault Ste. Marie, Ont., by Boston capitalists at a cost of $1,000,000, is approaching completion. This concern will give employment, both direct and indirect, to about ten thousand persons.

It will be remembered that last year the factory of the Paris Carpet Company, at Paris, Ont., was destroyed by fire, the salvage therefrom including several looms, boilers and engine, and also the boiler house and dyeing house. Mr. William Holt is now reorganizing the company, with a view of rebuilding the factory, the old company becoming interested therein to at least the value of the buildings, machinery, etc., saved from the fire.

An order-in-council having been passed granting permission to Messrs. W. McLea Walbank and Thomas Pringle of Montreal, pending the incorporation of Lachine Rapids Hydraulic and Land Company to construct the dams and power house at the Lachine Rapids to supply cheap electric power to Montreal and vicinity, the tenders have been opened, and the contract awarded to William Davis & Sons, the well known contractors of Cornwall and Ottawa. The contractors intend to start the work immediately, pending the active incorporation of the company itself, when the contract will be transferred by the present promoters to the company. The contractors guarantee to supply electricity in the city of Montreal from the works by May 30, 1897. It is expected that something like 8000 horse-power will be developed at the dam, resulting in cheaper electric light for the city. The Company has also secured 180 acres of land adjoining, to lay out what they say will be the finest suburb in Canada, connected by electric railway with the city.

Peter Egar, sawmill, Clinton, B.C., will remove his plant to Barkerville, B.C.

The Hough & Harris Company have been incorporated with a total capital stock of $15,000 to carry on the business of lithographing in the city of Toronto.

Mr. White-Fraser, consulting electrical engineer, is putting 350 lights and motors into the Kemp Mfg. Co.'s Factory ; motors to run saws and elevators.

The Champlain Tannery Co., Montreal, are organizing a company with a capital stock of $100,000 to operate the large sole leather tannery at Warwick, Que.

The Point Ellice Iron Works, Victoria, B.C., owned by Messrs. Baynes & Co., were destroyed by fire July 25. The plant will be immediately replaced ; loss about $3,500.

The Ingersoll Power and Light Co., Ingersoll, Ont., has been incorporated with a capital stock of $45,000 to distribute electricity for heating, lighting and power purposes to that town.

The Canadians included in the promoters of the American Tobacco Co., of Canada, which is being incorporated at Montreal, with a capital stock of $1,000,000, are Messrs. Samuel Davis, M. B. Davis, M. E. Davis and M. H. Davis, all of Messrs. S. Davis & Sons, Montreal.

Mr. E.H. Hilborn, and associates, will manufacture bicarbonate of soda and chloride of lime at Kincardine, Ont. They propose to make, at the outset, about a ton per day. The plant will cost about $15,000.

The Gillies Mnfg. Co., Carleton Place, Ont., are applying for incorporation with a capital stock of $120,000 to acquire the foundry business, etc., and the woolen factory of John Gillies, of that place, to manufacture mill machinery, agricultural implements, woolen goods, etc.

The Dominion Dyewood and Chemical Co., Toronto, report doing good business in their new grade of Logwood extract, Mucklow's S C brand, which is specially useful for wool dyeing, taking the place of Logwood chips. The quality of Mucklow's extracts and dyewoods are already well known in Canada. The Dominion Dyewood and Chemical Co., are the sole agents for Canada.

Messrs. McCaskill, Dougall & Co., Montreal, manufacturers of varnish, japan, etc., write us that they have just completed building new warehouses and factory on block of land bounded by Manufacturers, D'Argenson and St. Patrick streets, Canal Bank. The buildings are of most modern design and substantial character throughout, walls being of double contruction or hollow, with cellars cement floored, and containing large heating apparatus, enclosed in fire-proof casing applying absolute uniformity of temperature throughout settling and ripening departments, etc. Tank and oil rooms adjoining storage and shipping warehouse fitted with suction and force pumps from factory are all fire-proof. Ceilings covered with metallic lath and Royal cement plaster. The light is obtained from iron skylights, each ten by five feet, glazed with heavy rolled plate glass, no side lights exist. Flooring of firmest concrete and Portland cement. Doors all sheeted with metal. Oil house adjoins varnish tank house, is of similar construction, entirely cut off by heavy iron sheeted doors. In rear of above building, facing on St. Patrick street, is the boiling and fusing house, built under superintendence of an expert from London, Eng., with all the latest improvements and methods of construction for the manufacturing of finest qualities of varnishes and japans, rectifying, refining and boiling linseed oils, etc., the expensive plant for above being imported expressly from England. The buildings are electric lighted throughout, and contain laboritories and testing apartments for ensuring absolute uniformity of products. We are informed that there is no manufactory in the world more complete for the production of high class varnishes and all appertaining to same than above mentioned new works of McCaskill, Dougall & Co.

The Lake of the Woods Milling Co , Keewatin, Ont., will build a new elevator at Moosomin, N. W. T.

Representatives of The St. Anthony Lumber Co., have been up the Ottawa river looking for a site for a large saw mill, which they propose to erect. They think favorably of Pembroke, Ont.

The Farbenfabriken have just issued a new shade card showing 63 shades of their substantive or direct cotton colors, which can be had on application to the agents for Canada, The Dominion Dyewood and Chemical Co., Toronto.

The Imperial Oil Company, Petrolea, Ont., will shortly commence the erection of a new building, and some additions to present structures on their property near Louis bridge, Winnipeg, Man. A new barrel warehouse will be built, stands erected to hold three large tanks, and a wing will be added to the cooper shop.

The Continental Twine and Cordage Co., at present operating a mill in Brantford, Ont., have decided to equip another plant, which will be located either in Brantford or Hamilton, Ont. The mill will consist of 250 spindles, and be fully equipped with modern labor-saving machinery, and will manufacture cordage of all sizes as well as binder twine of different qualities.

F. H. Lamb, Hamilton, Ont., and George Bengough, of Toronto, are promoting the formation of a company with a capital of $200,000 to establish a factory for the manufacture of the new Burns typewriter for the Canadian and European markets. The new machine it is clained, has several advantages over the old style. It is now being manufactured in Buffalo, N. Y., for the American market. At the outset the factory will have a capacity of 30 machines per day.

The Kansas City Consolidated Smelting and Refining Co., Vancouver, B. C., will erect a large smelting plant at Nakusp in West Kootenay, B.C.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from May 11 to May 28, 1895.

Information regarding any of these patents may be had on application as follows:—

Fetherstonhaugh & Co.,	Bank of Commerce Building,	Toronto.
Ridout & Maybee,	103 Bay street,	Toronto.
A. Harvey,	Central Chambers,	Ottawa.

Copies of American patents corresponding to Canadian patents can be procured from either of these attorneys for the sum of twenty-five cents each.

48,925 Motor, Wm. H.D. Ludlow, Tecumseh, Neb.
48,926 Tire cooler, Robt. McKay, Shelburne, Ont.
48,927 Hot water boiler, Jno. Halt, Toronto, Ont.
48,928 Walking stock, Johann J.W. Behrens, Lubeck, Germany.
48,929 Umbrella, Johann J.W. Behrens, Lubeck, Germany.
48,930 Envelope machine, The W.J. Gage Co., Toronto.
48,931 Saw set, Mrs. Lydia Moyer, Berlin, Ont.
48,932 Printing telegraph, Oscar L. Kleber, Pittsburg, Pa.
48,933 Wax thread sewing machine, Francis J. Freese, Montreal, Que.
48,934 Carpet stretcher, Jno. R. Lvon, Seaforth, Ont.
48,935 Electric arc lamp, Peter Kirkegaard, Brooklyn, N.Y.
48,936 Ironing machine, August Metger, 10 Hohenstrasse, Homburg, Germany.
48,937 Cheese box trimmer, Reuben A. Oakley, Montreal, Que.
48,938 Ice velocipede, Alfred T. Firth, Chicago, Ill.

48,939 Inward flow turbine, Albert Singriin, Epinal, France.
48,940 Barrel truck, Edward A. Smith, St. John, N.B.
48,941 Process of making enamelled sheet metal articles, etc., Ed. Puttmann, Schwelm, Germany.
48,942 Washing compound, Cleophas Dubrule, Montreal, Que.
48,943 Distillation, Odilion Perrier, Paris, France.
48,944 Carpet Sweeper, T. Stewart White, Thos. Friant, Gaius W. Perkins, and Chas. J. Reed, Grand Rapids, Mich.
48,945 Sewing machine, Francis J. Freese, Montreal, Que.
48,946 Biographical and statistical tablet, Adolph Peterson, St. John N.B.
48,947 Fire ladder apparatus, The Horton Fire Ladder Co., Halifax, N.S.
48,948 Pattern for moulding stove plates or lids, The James Smart Mfg. Co., Brockville, Ont.
48,949 Bicycle lock and alarm, Edward A. Parson, Chas. E. Parson, and Geo. W. Parson, Ottawa, Ont.
48,950 Gauge for rolls or roller mills, Jno. S. Cameron, and Addison W. Igleheart, Evansville, Ind.
48,951 Boiler tube and expander, Danl. J. McCormack, Ballour, and Alex. Cartues, Aspen, Col.
48,952 Base for fence posts, Melvin J. Baer and Ed. L. Baer, Millford, Ind.
48,953 Pipe wrench, The Paris Tool Mnfg. Co., Paris, Ont.
48,954 Oil gas lamp, Louis Friedlander, and Theodor Muller, Berlin, Prussia.
48,955 Sewer valve, Wm. Godfrey, Saugatuck, Conn.
48,956 Automatic door closing device, Chas. Wincklhofer, Newark, N.J.
48,957 Valve, Jno. T. Christie, Troy, N.Y.
48,958 Motor operated vehicle, Andrew W.J. Best, Arcadia, Fa.
48,959 Ox yoke key, Benj. W. Johnson, Buna, Tex.
48,960 Scale for historical charts, Arthur H. Scaife, Victoria, B.C.
48,961 Trip sling, Jas. W. Provan, Oshawa, Ont.
48,962 Scythe, Erich Kohtz and Julius Schulz, Steinversrub, Germany.
48,963 Button setting machine, Alex. G. Wilkins, Meadville, Pa.
48,964 Car coupling, Wm. Brooking, Rover, Ind.
48,965 Horse shoe, Frederick W. Bach, New York, N.Y.
48,966 Rubber boot and shoe, Chas. L. Higgins, Montreal, Que.
48,967 Rea harvester, Wm. Glover, St. John, N. Sunderland, Ont.
48,968 Book support, Chas. L. Work, Cincinnati, O.
48,969 Door knob lock, Geo. L. Barney and Jno. L. Clough, Indianapolis, Ind.
48,970 Road scraper, Peter D. Fretz, Bertie, Ont.
48,971 Washing machine, Jno. N. Strong, Woodbridge, Ont.
48,972 Hinge, Wm. B. Diming, Bentonville, Ark.
48,973 Shingle bracket, Julius W. Flowers, Newport, Ore.
48,974 Car coupler, Wm. L. Gelston, Chester, Pa.
48,975 Railway car, Benj. G. Wright, London, Ont.
48,976 Milk aerator, Danl. Shaw, Almonte, Ont.
48,977 Air pump, John Moreland, Detroit, Mich.
48,978 Seeding machine, Jos. A. Archambault, St. Hyacinthe, Que.
48,979 Railway, Wm. F. Hutchinson, New York, N.Y.
48,980 Method of manufacturing plush fabrics, Ira Ickringill, Laurel Mount, Eng.

48,981 Cot bed, Delivan W. Scott, Watkins, N.Y.
48,982 Union joint for pipes, Louis Bredannaz, Toronto, Ont.
48,983 Perforator for letter files, etc., Wm. O. Gottwals, Ottawa, Ont.
48,984 Calculating machine, Wm. W. Hopkins, St. Louis, Mo.
48,985 Flash light machine, Jas. H. Hopkins, St. Thomas, Ont.
48,986 Rotating fan, Ira E. Stump, Canton, O.
48,987 Cleaning attachment for dust collectors, Alex. Dobson, Beaverton, Ont.
48,988 Round about, Hugo Engel, Berlin, Germany.
48,989 Removable saw teeth, Philias Bertrand, St. John, N.B.
48,990 Method of doubling and twisting yarn, etc., Geo. H. Smith, Middleton, and Banj. Cooper, Manchester, Eng.
48,991 Sleigh runner, Wm. DuBois, Stevensville, N.Y.
48,992 Electric switch, Chainsonovitz P. Elieson, London, Eng.
48,993 Inkstand, Charles E. Jewell, Toronto, Ont.
48,994 Wagon bolster stake, Alexis Conard, North La Crosse, Wis.
48,995 Cant-hook, Thos. Pink, Pembroke, Ont.
48,996 Closed conduit for electric railways, Wm. Lawrence, New York, N.Y.
48,997 Saw filer, John L. McDougall, and Danl. McMillan, Winnipeg, Man.
48,998 Sectional feed roller and pressure bar for planers, McGregor, Gourlay & Co., Galt, Ont.
48,999 Saw for cutting iron, The Aper Mnfg. Co., Chicago, Ill.
49,000 Saw for cutting iron, The Aper Mnfg. Co., Chicago, Ill.
49,001 Expansible bung, Louis Wagner and John Marr, Baltimore, Md.
49,002 Compound steam engine, The Richmond Locomotive Machine Works, Richmond, Va.
49,003 Chimney, Chas. House, California, Ia.
49,004 Picking rod, Chas. A. Gregory and David B. Towsley, Montreal, Que.
49,005 Furnace, Chauncey E. Holaday, Ridgway, Pa.
49,006 Door mat, Allen G. Ingalls, and Chas. L. Higgins, Montreal, Que.
49,007 Machine for embossing photographs, Andrew B. Breckner, and Edward L. Decker, Newton, N.J.
49,008 Bicycle with package holding attachment, Lawson Adams, Alex. Gleason and Wm. P. Smith, Buffalo, N.Y.
49,009 Amalgam separator, Arthur Kitson, Philadelphia, Pa., and Alex. Keith, Toronto, Ont.
49,010 Bicycle, John McLeod, Murphy and Wm. J. Dixon, Danberry, Conn.
49,011 Wire sewing machine, Michael C. Mullarky, Montreal, Que.
49,012 Kneading pan, Jos. W. Jack, Truro, N.S.
49,013 Carriage top, Emil A. Sommerfruechete, St. Louis, Mo.
49,014 Running gear, Geo. Harris, Belmont, N.Y.
49,015 Automatic water power for tunnels, George Guttenbrumer, Ticin, Bohmen, Austria-Hungary.
49,016 Boot lace clamp, Ed. Johnson, Montreal, Que.
49,017 Car signal, Frank Nicholson, Oakfield, N.Y.
49,018, Feed water heater for steam boilers, Robt. Lowe, Washington, Pa.
49,019 Process for the recovery of gold and silver from solutions, Ed. D. Kendall, Sewaren, N.J,
49,020 Carpet lining, Chas. C. Stewart, Philadelphia, Pa.
49,021 Pillow or cushion, Wm. Vogler, Summerville, Mass.
49,022 Pillow or cushion, Wm. Vogler, Summerville, Mass.

49,023 Mould for brick presses, Peter L. Simpson, Chicago, Ill.
49,024 Wire stretching and splicing machine, Geo. W. Boxborough, St. Mary's, Ont.
49,025 Nut lock, Robt. E. McConley, Whitcomb, Wis.
49,026 Press, Harman Bunker, Barrie, Ont.
49,027 Steam trap, Wm. J. Gregg and The Laconia Car Co., Laconia, N.H.
49,028 Fire escape, Geo. M. Thompson and Chas. B. Cutler, Lowell, Mass.
49,029 Water wheel, Frank W. Wood, Baldwin, and Jos. Owen, Portland, Me.
49,030 Stove and grate, Mary McNamara and Cornelio Cotton, Bath, N.Y.
49,031 Machine for painting fabrics, John McIvor, Toronto, Ont.
49,032 Attachment for harvesting machines, Anthony McConnell, Palmer, Wis.
49,033 Hot gas valve, John T. Christie, Troy, N.Y.
49,034 Rotary engine, Albert A. Kryszat, Aschersleben, Germany.
49,035 Washing machine, Napoleon L. Gobeille, L'Ange Gardien, Que.
49,036 Bicycle tire, Richard Russell, Hamilton, Ont.
49,037 Bicycle saddle, Wm. C. McIntire, Washington, D.C.
49,038 Keg, Frank H. Waite, Holley, N.Y.
49,039 Excavating machine, John Hy. Stephens, Peterborough, Ont.
49,040 Lining, John A. Kramrer, Brooklyn, N.Y.
49,041 Ball bearing, Jas. H. Myers, Grand Rapids, Mich.
49,042 Bottle stopper, John J. Varley, London, Eng.
40,043 Process of and apparatus for milling ores, John Glenville and Richard W. F. Abbe, New York, N.Y.
49,044 Coupler, for straw carriers, Allan J. Lindsay, Renfrew, Ont.
49,045 Mining machine, Jas. A. Wiggs, jr., Birmingham, Ala.
49,046 Pill making machine, Arthur Colton, Detroit, Mich.
49,047 Coin operated vending machine, Jos. Mackin, Toronto, Ont.
49,048 Machine for coating chocolate, Peter J. Vanderlinda and Herbert M. Dickinson, Grand Rapids, Mich.
49,049 Velocipede, Wm. C. Foster, La Crosse, Wis.

The CANADIAN MANUFACTURERS' ASSOCIATION

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ASSETS.

	1889.	1894
Cash	$ 6,179 14	$ 39,210 03
Bonds and Mortgages	228,473 21	692,751 45
Other Assets	58,939 88	89,359 40
Total	$293.592 53	$821,320 88

LIABILITIES.

Reserve, and on acct. of Policyholders	$160,401 00	$642,248 68
Other Liabilities	5,884 76	1,282 48
Net Surplus	Nil.	50,469 72
Income	157,354 97	306,715 63
Expenditure, Total	147,158 37	153,493 37
Insurance in force	6,110,100 00	9,555,300 00

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