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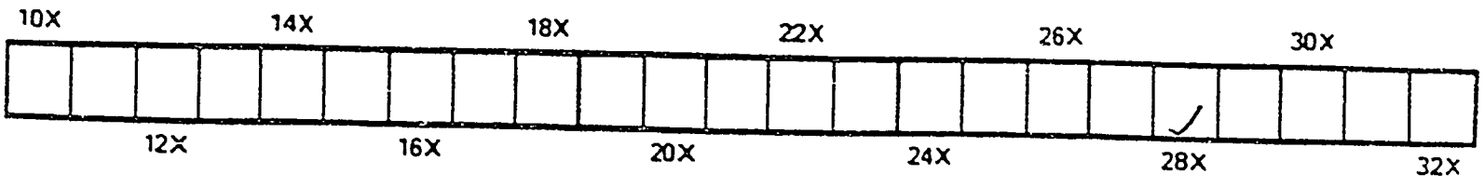

CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

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AS TO SUGAR.

We recently took occasion to criticise the present position of the government on the sugar question. Believing that the truest friends of any government are those who frankly and candidly state their opinions as to any errors of administration which they believe to have been committed, we expressed our disapproval of the new sugar tariff, as being at variance with the fundamental principles of the National Policy, and as not being in accordance with the best interests of the Dominion. Being of opinion that in the interest of the principles of protection, and of the party supporting this policy, important changes in the sugar tariff should be made, we regret to find that many Conservative newspapers, the Hamilton *Spectator*, included, show a disposition to defend the policy recently announced by the Government; and that in doing so they are making use of statements and employing arguments which the common sense of the people undoubtedly rejects. Why pretend that sugar is free, when all the qualities in ordinary use are subject to a duty of 80 cents per 100 pounds? If refined sugars were admitted free of duty, foreign granulated sugars could now be imported at a cost of about $3.80 per 100 pounds, delivered in Montreal, where the same quality of Canadian refined is now selling at $4.62½. The *Spectator* claims that the 80 cents duty on refined sugar is only a proper protection necessary for the maintenance of the refining industry of Canada, and it attempts to sustain this position and the reasonableness of this rate of duty, by showing, taking present quotations for granulated sugar in Montreal, that they compare favorably with those of New York The *Spectator* quotes prices as being 4½ cents in New York and 4⅝ cents in Montreal, and claims that taking into consideration the different rates of discount prevailing in the two markets, the difference is very trifling. We might take exception to the quotation given for New York, as the New York *Shipping and Commercial List* has for some time been quoting granulated and granulated fine, at 4¼ cents in that market, but we do not insist upon this point, as the *Spectator* may have some equally good authority for its quotation. Admitting this, this does not prove the reasonableness of the price in either market. The point is, whether at present prices for the raw material, the present prices for refined are reasonable prices, and such as only afford a fair profit for the service of refining; or whether, through the operation of the respective tariffs of the two countries, refiners are being enabled to exact from consumers much greater profits than this service is worth.

What is a fair difference between the price of good raw sugar for refining and the different grades of refined sugar; what is the actual outlay in refining from which the country is supposed to derive a benefit; and what protection can the country afford to grant in order to secure this outlay?

During the discussion which took place in England a few years ago anent the Sugar Bounties Convention, a number of facts were stated which throw considerable light on these questions. On behalf of the refiners, Mr. Duncan, chairman of the British Sugar Refiners' Association, in a letter addressed to the London *Times* showed that for some time previous the difference in value between imported raw and refined sugar had averaged about 2s. 9d. per cwt., or about 60 cents per 100 pounds. It was argued that British refiners could not compete with the bounty-fed refiners of the continent. On the other hand it was contended that the whole cost of refining sugar in the United Kingdom did not exceed 2s. per cwt; of which 7½d. covered the wages of the operatives, and 1s. 4½d. the other charges, including management, fuel, material, interest on capital, insurance, etc. It was agreed that, apart from the interest of consumers, there were a larger number of people employed in industries requiring cheap sugar than there were employed in refineries; and that in former years, before the competition from the continent became important, English refiners had charged such exorbitant profits for refining that the government would never consent to allow them to again obtain a monopoly of the trade. It would not be difficult to prove that for several years past, especially since the formation of the American Sugar Trust, United States and Canadian refiners have, by means of combinations, and through the operation of the tariffs of the two countries, been exacting unnecessarily large profits from the consumers.

There are several features connected with the present position of the sugar trade which throw additional light on this question. The London *Economist* has for several weeks past, quoted beet sugar 88° f. o. b. Hamburg at 13s. 3d. to 13s. 9d, the averag price being 13s. 6d., while on same dates, it quoted superior crushed sugar in bags f. o. b. Holland at 16s. 3d. to 16s. 6d., the difference between the two qualities never

exceeding 3s. per cwt., or about 64 cents per 100 pounds. That this quality of refined sugar is equal to American granulated is evident from the fact that American sugar was quoted during all these weeks in the London market at 17s. per cwt. This shows that on the continent of Europe, 64 cents per 100 pounds covers the waste and cost of refining. During the above period the quotation for 88° raw beet sugar was 14s. per cwt. c. i. f. at New York, equal to $3.00 per 100 pounds. As has been already shown, American granulated sugar was being sold during these weeks at 17s. per cwt. in London, equal to $3.70 per 100 pounds, after paying ocean freight and insurance, landing charges, commissions, etc. During this time, this grade of sugar was being sold in New York at $4.25 per 100 pounds, or, according to the *Spectator* at $4.50. With the raw sugar costing $3.00 per 100 pounds in New York and American granulated selling in London at a price equal to $3.70 per 100 pounds, it is a fair inference that the waste and cost incurred in manufacturing granulated sugar in American refineries does not exceed 60 cents per 100 pounds. The United States customs duty on refined sugar is 50 cents per 100 pounds, equal to 83⅓ per cent. on the waste and cost of refining; and properly speaking, the proportion of waste should not be included, as the same waste is incurred in foreign refineries. If the American refiners are able to compete in free trade England with British and European refiners, it is clear that this industry does not require any protection in the United States. The refineries in the Atlantic cities of the United States are of immense capacity, and are equipped with the finest machinery; they are advantageously situated for receiving the raw sugars of the West Indies and South America at low rates of freight, and their only disadvantage is in high wages for operatives, an item which bears a very small proportion of the cost of refining. The wrong done to the American consumer by the high rate of duty on refined sugar consists in this, that while no revenue is derived by the government the refiners are enabled to demand and obtain from their own countrymen over 50 cents per 100 pounds more than they are willing to sell at to the consumers in England. Assuming that a fair profit is being realized from the shipments of American sugar to London, thus, taking the expenses of shipping to that market into account, say 25 cents per 100 pounds, American consumers are being charged 75 cents per 100 pounds more for their granulated sugar than a fair profit to the refiners warrants. The *Economist* of July 4th, showed that the imports of refined sugar into the United Kingdom, from the United States during the six months ending June 30, were:

1890.....56.240 cwt; value £47.919 (about 17s. per cwt.).
1891...-525.250 cwt; value £441.342 (about 16s. 9½d. per cwt.).

The Canadian refiners are equally well situated for receiving raw sugar, and have some little advantage in the cost of wages and fuel. If a protection of 50 cents per 100 pounds on refined sugar is unnecessary for American refineries; if it involves the loss of a large revenue from raw sugar, without any corresponding advantages to the consumer, and along with this, affords to the refiners a means of exacting exorbitant profits from the public, what can be said in favor of the higher rate of 80 cents per 100 pounds, under the Canadian tariff? The Canadian consumer is not only placed in a worse position than his neighbors across the border by the higher rate of duty, but he is further debarred from obtaining that relief which is afforded in the United States, where fair qualities of domestic brown sugars can be imported free of duty, sugars from No. 14 to No. 16 D. S. being subject to prohibitory duties in Canada. If 60 cents per 100 pounds covers the cost of the labor, cooperage, management, interest on capital, insurance and repairs of buildings and machinery, and all the money expended in Canada in refining, and this is the only part of the cost which should be protected, then about 40 per cent. on this amount, or say 25 cents per 100 pounds, should be ample protection. Under this rate, refiners would have a fair margin for profit, and the consumers of Canada would save 50 cents per 100 pounds, or about $1,250,000 per annum on the 125,000 tons of sugar consumed annually. From a careful consideration of the surrounding facts we have been forced to the conclusion that the present sugar policy of the government is not in accordance with the principles of the National Policy, and that it has not been framed in the best interests of the people.

THE SUGAR REFINING INDUSTRY.

THE placing of raw sugars upon the free list was an eminently wise thing for Finance Minister Foster to do. Tea and coffee were already upon the free list, and now these most important articles are supposed to be quite as cheap in Canada as the circumstances of trade will admit of. No doubt tea and coffee are, but is sugar? In making the necessary change in the duty upon refined sugar incident to the removal of the duty upon raw sugar, Mr. Foster places the duty upon refined sugar at eight-tenths of one cent per pound. In other words the Canadian sugar refiners have it in their power to obtain eight-tenths of a cent per pound more for their product than they could if refined sugar had also been placed upon the free list. The policy of protection is, where a duty is to be imposed upon an article, to place it at a mark just where the protected industry can thrive and no higher. If the duty is below that mark there is no protection, and it becomes a duty for revenue only; and if it is materially above that mark it tends to unduly enrich the manufacturer at the expense of the consumer. Mr. Foster was induced to place raw sugar upon the free list chiefly because the United States had done so; for without such a change there would have been such a wide difference in the prices of sugar in the two countries as would have induced much smuggling of the article into Canada. We are accustomed to regard the McKinley tariff as the acme of protection, and when the American Congress placed the duty upon refined sugar at one-half cent per pound it may be safely inferred that that amount of protection to the American sugar-refining industry was quite sufficient to secure the manufacture of refined sugars to American refiners. That this matter was well considered and digested is evident from the fact that in debating the question in Congress it was contended that even a lower duty—four-tenths of a cent per pound—was sufficient for the purpose; but the McKinley spirit prevailed and the rate was fixed at one half cent per pound. If, then, ten dollars per ton duty is high enough to protect American refiners, why would not that duty be high enough to protect Canadian refiners? Canadian refineries are no new institution. They have been, generally, in successful and profitable

operation for many years, and it is to be supposed that as far as their management, their machinery and their appliances go, they can be operated quite as economically as American refineries. Why then should they be protected by the tariff to the extent of six dollars per ton more on their products than American refineries? This is not according to the ethics of protection.

We illustrate our contention by the presentation of a few facts. Mr. Foster stated in his budget speech that in 1889 the consumption of sugar in Canada reached the enormous amount of 223,841,171 pounds, or, in round numbers, about 112,000 tons. If this quantity of sugar were refined in the United States the protection upon it there would be, at $10 per ton, $1,120,000, representing what the refiners would obtain for their services. But being refined in Canada, the protection now offered by Mr. Foster would be, at $16 per ton, $1,792,000, or $672,000 more than the American refiners under the McKinley tariff would receive for the same service. Why should Canadian refiners receive 60 per cent, or $6 per ton more for their services than what the McKinley tariff gives American refiners? On June 19, 1889, the London *Times* published a letter from Mr. James Duncan, chairman of the British Sugar Refiner's Association, in which he stated that in the previous year 740,000 tons of sugar were refined in the United Kingdom in twenty-six refineries, employing 4260 men. An average distribution of production and labor in this British industry would give 28,450 tons to each refinery working with 164 hands. There are said to be four refineries in Canada, and it is supposed that they have capacity to manufacture all the refined sugar required in the country. This being the case an average distribution of production of 112,000 tons of sugar among them would be 28,000 tons each, a little less than the average to British refineries. On the same basis only 164 hands would be required to each refinery and the whole number of hands required to operate these four Canadian refineries, manipulating 112,000 tons of sugar per year, would be only about 650 men. Allowing that, as in the case of the American refineries, a duty of $10 per ton is sufficient to maintain the industry, afford fair remuneration for capital invested, and guarantee employment to labor, we find that the higher Canadian duty of $16 per ton represents an opportunity to the Canadian refiners to further benefit themselves to the extent of $720,000 per year. This is not according to the ethics of protection.

Surely Mr. Foster must have viewed this question in this light when considering the duty he proposed levying upon importations of refined sugar. The high duty of $16 per ton will effectually shut out all importations of refined sugar, and therefore the revenues cannot possibly be benefited by it; and he may be sure that the refiners—after the adjournment of Parliament—will govern their business according to the unique advantage he has placed within their reach.

TAX EXEMPTIONS.

ALLUDING to some recent propositions to exempt certain manufacturing concerns in Toronto from municipal taxation, the Toronto *Telegram* says:

While the taxes are bearing so heavily, especially on the smaller property owners, it is hardly a favorable time to make large exemptions in favor of a particular class; and although the city is benefited by the success of her manufacturers, the extra burden that would be thrown on the remainder of the citizens by exempting business buildings and plant from taxation should be taken into serious consideration.

It would be a difficult matter, indeed, to estimate the number of persons who could claim exemption under such a broad heading as "manufacturer" on the amount of their assessment, which would foot up to a surprisingly large sum. While it is not denied that some firms are establishing themselves in the outskirts, at Toronto Junction and Mimico, and purposely without the liberties of Toronto, they are just as truly helping to build up the city of the future as though they were within city proper limits. It is only a question of time when Toronto will stretch out her arms and gather them all into one community. Great cities are not made in a day, and there is no great cause for alarm that manufacturers should seek relief from temporary high taxes by locating out of their reach. The neighborhood of a large city is necessary to them in many ways and eventually, when ripe for annexation, these places now struggling to obtain a foothold will come in as strong and flourishing towns.

The *Telegram* speaks in what it considers the best interests of Toronto when it deprecates showing any special municipal favor to manufacturing industries, and in the main we do not disagree with it, for as a class, all that our manufacturers ask is that they may have a fair show. But this is just what they do not have in Toronto, and because they do not have it we see quite a large number of very important manufacturing industries being moved away from the city, while at the same time we also observe that neighboring towns and villages are being chosen as sites for such industries, which would, without doubt, have been domiciled in Toronto if a fair showing could have been assured them. Important manufacturing industries naturally gravitate towards large centres of population, for it is there that the best facilities of transportation are enjoyed at the minimum of freight rates; and it is there that the supply of labor is largest and most steady. Of course the presence of large manufacturing establishments means large population, and it is this that makes a city prosperous. Whatever, then, that tends to drive manufacturing concerns away from the city, or prevent them locating there, is most assuredly a drawback to that city, and if the authorities thereof are wise and have the best interests of their city at heart they will remove whatever obstacles there may be to the existence of manufacturing industries there. It is the removal of obstacles rather than the bestowment of municipal favors that can make a city like Toronto rich in manufacturing industries.

The *Telegram* does not display any amazing amount of sturdy even-handed British justice, which it frequently professes to admire so much, when it intimates that although some Toronto manufacturers, driven away because of the unfair municipal treatment they experience, are establishing themselves in the outskirts of the city, and beyond the bounds of the present corporate limits, will soon be embraced in the arms of the municipal octopus. It tells these fleeing manufacturers that although they have purposely removed beyond the liberties of the city, it is only a question of time when the city will stretch out her arms and gather them all into one community. Why should it be so? Are these manufacturers never to be safe from the clutches of the city within the limits of which there is no industrial prosperity for them? In the

case of the settlers at Mimico, a number of enterprising manufacturers, finding themselves painfully handicapped by inequality of taxation in Toronto, purchased land that had been used only for purposes of cultivation and are now building up a thriving manufacturing town. They could not move their factory buildings to Mimico, of course, and so they were abandoned, and large capital is being invested in other factory buildings in the new town. And not only new buildings, but highway roads and streets, depots and warehouses, railway switches, etc., none of which would have been necessary if these manufacturers had been allowed to remain in Toronto. It is readily perceived that even before a fire can be started under a boiler or a wheel moved in these new factories, there must necessarily have been large investments of capital which would not have been necessary if no removals had been made. Certainly these manufacturers have some rights which ought to be respected. If they move from under the incubus of unequal taxation in Toronto, locating themselves a few miles away, why should Toronto extend its incubus over them again as soon as they have established their plants and begun operation? There is not a city, town or village in Ontario but would gladly have paid large bonuses to have had any of these concerns locate in them, and perhaps, by and bye, when the octopus arms of the city reach out and gather them in, as the *Telegram* suggests, these manufacturers will wish they had gone almost anywere else where they would have been a certainty of escape from what they are now fleeing.

If the *Telegram* wants to battle for good even-handed British justice and equity, let it wield its influence to have all real property in Toronto bear its fair share of taxation; and to have the municipal authorities abstain from making presents, gifts and bonuses such as they are in the habit of bestowing, except upon such charitable institutions as are entirely under their control. There is about twenty million dollars worth of real property in the city of Toronto upon which never a dollar of taxes is paid into the city treasury. This property enjoys equal advantage with the overburdened tax-paying manufacturer as regards paved streets, sewerage, gas, water, fire and police protection, and all the other conveniences incident to the city, and under certain circumstances the city would be liable to whatever damage this property might sustain. Why not treat all the people of the city alike, and make all real property bear its fair share of the municipal burden? And why should the municipal authorities vote thousands of dollars every year to universities and similar institutions in which the masses of the people are not specially interested, and wring the money for this purpose out of the taxpayers, including manufacturers who are being driven away from the city because of the excessive and unfair taxation?

With all the superior facilities Toronto possesses for manufacturing enterprises this city should be a veritable hive of manufacturing industry. Tall chimneys should be seen in all directions, and the hum of machinery and the bustle of business should be heard on every hand. But this can never be until there is an equalization of taxation. The manufacturers do not ask for special favors—they ask for justice. If Toronto is ever to become a manufacturing town the manufacturers must have justice shown to them.

THE EDUCATION OF DOCTORS.

In a recent issue of this journal, in an editorial, entitled "The Education of Convicts," it was suggested that, inasmuch as the labor organizations of the country objected to the teaching of manual trades to the convicts in penitentiaries, seeing that the result of so doing is to bring the products of convict labor into unfair competition with the products of free labor; and that it was also unfair for the State to become a manufacturer of marketable products with convict labor, in competition with other manufacturers who invest capital in their business, and give employment to more expensive free labor, it might be well to educate the convicts to become doctors of some sort instead of mechanics.

The fact is, complaints are being made constantly of the overproduction of doctors, and yet there does not seem to be any systematic efforts made to restrict it. Usually, where there is an overproduction of manufactured merchandise, the ones who suffer most from it are the manufacturers, but the method of producing doctors is quite different from that of producing wheelbarrows and garden hoes. In the latter case, the manufacturer has to invest his own capital in buildings and machinery; while in the former it is the State, generally, which invests the capital, and then taxes the community to support it. The university or college being built and equipped, it is exempt from taxation, and the professors, who are employed in this noble occupation of making and turning out doctors, are also generally paid by the State. The result of this system in the city of Toronto alone is the existence of many extensive and expensive buildings, occupying most valuable ground, the value of which amounts to many millions of dollars. Of course these establishments are all exempt from taxation. They enjoy all the advantages of a large city—paved streets, water, gas, electric light and sewer service, and fire and police protection. These advantages cost a great deal to those who pay taxes, and because the universities and colleges do not pay taxes, the burden is all the heavier upon those who do. The taxpayers, among whom are the manufacturers, and the workingmen employed by them, are flattered with the assertion that the doors of these institutions of learning are open to their children, and that they are free to avail themselves of the advantages offered. But this is exceedingly delusive, for what hope or prospect is there for the son of a workingman, who finds it difficult to win bread for his family, to enter his son at a university, support him while there, and meet the necessary expenses of books, etc.? It may be asked if this poor man contributes to the support of this university. Of course he does. He contributes in the greater rent he has to pay for his cottage, for, the university being untaxed, the cottage pays a higher tax. And this higher tax, which has also to be paid by the manufacturer who employs this poor man, tends also to lower wages, for the manufacturer, in estimating what wages he can pay his employees, must take into consideration the taxes he has to pay. Indeed, it is entirely out of the question for the poor man to have his son educated in the university. In fact, none but the rich can afford this advantage, and we are safe in saying that a very great many of those who are students in our universities would not be there were it not for the contributions forced from poor men in the way indicated.

There seems to be no doubt of the fact that there is a great overproduction of graduates from these universities. We make no objection to the manufacture of young men into professional doctors, but our contention is that those who desire such education, or their friends, should pay the cost thereof, and that it should not be saddled upon the general public. And in this particular the church edifices stand in the same catagory with the universities and colleges. They are all luxuries which those who enjoy should pay for, for usually a poor man has no more prospect of a welcome into a fine church than his son has of obtaining an education in a fine university.

This overcrowding of the professions led to a discussion in a recent issue of *The Canada Educational Monthly*, wherein a parent asked why, when young men obtained a certain amount of education in the universities, they do not take off their coats and work at trades, such as bricklaying, etc. The explanation offered was that educated young men prefer professions to trades, and because the world holds a doctor in greater estimation than it does a bricklayer. No doubt an honest doctor may be as good and respectable a man as an honest bricklayer; but it is safe to say that, while honest bricklayers have no difficulty in earning their living, there are thousands of honest doctors who cannot earn honest livings by their professions. Why then do parents, in view of this fact, educate their sons to be doctors, uncertain that they will earn honest livings as such, while they might become proficient bricklayers, whose services would always be in demand at remunerative wages? But if these conceited young men must become doctors, let it be at their own expense. It should certainly not be at the expense of the bricklayers and all other classes of the taxpaying community.

OVERCROWDING THE PROFESSIONS.

THE question of the overcrowding of the professions is exciting considerable interest among professional men. It is not only discussed in the professional and educational journals, but the daily papers are interested in it also, and in this way it is to be hoped that some of the greater evils from which this result follows may become mitigated. It is evident the professions would not be as overcrowded and congested as they are if the facilities for the accomplishment of the evil were not as great as they are. There will always be a demand in the community for able and honorable men in the various professions, but it is but too painfully evident that the supply of professionals is far, very far, in excess of the demand, and that the production of them is carried to a ridiculous extent. In certain walks of life the idea is scouted that a young man should contemplate being anything else than a professional, and as there are but few variations in the occupations of professionals, it follows that these are overloaded and that the community must of necessity be unnecessarily taxed for their subsistence.

Discussing this question the *Globe* says :—

The remedy lies with the professional classes, and with those who associate with the professional classes. Let them cease to prate about the dignity of labor and the sweets of poverty; let them honestly try to improve the condition of the working classes; to raise their wages, to put them in better dwellings, to give them more holidays; let them observe in their own lives that simplicity which they profess to admire; let them show their own disregard for the world by freely associating with workingmen and their families; and we guarantee that the complaint of the overcrowding of the professions will not be much longer heard.

Of course this is shooting at the moon, and shows that the subject is not comprehended at all. It is folly to talk about reducing the output of professionals by improving the condition of the working classes. No matter how much the condition of the working classes may be improved the professional classes will maintain a social distinction from them, to which self-respecting workmen will never object; but the remedy for the complained-of overproduction does not lie in that direction.

Thc following item appeared in the *Empire* a few days ago :—

"I tell you what it is, young man," said a well-known and highly respected Toronto physician to an *Empire* reporter yesterday, "I got angry this morning when a man said to me, 'Notwithstanding the overcrowded state of the profession in Toronto you doctors must be making piles of money, because you live in the finest houses in the city.' I deny that doctors make too much money," he continued. "As a matter of fact, we have to starve ourselves and our families to keep our houses going, and you know the house is part of a doctor's stock-in-trade." The reporter moved on, evidently thinking that the assessor had paid the doctor in question a visit that morning.

If this is the condition with well-known and highly respected physicians, what must be the plight of the scores of young men recently graduated and entitled by law to practice their profession? If the well known and highly respected physicians and their families are starved, where do the others find food? Those who prefer this profession for their occupation do so with their eyes open—can it be that they would rather starve as physicians than earn competent livings in mechanical trades?

The *Mail* has this to say :—

Somebody said on the street the other day that there were four hundred more lawyers in Toronto this year than last. The exact truth or otherwise of this statement does not concern the present occasion of writing, which has to do with a method whereby lawyers find, to a great extent, their occupation gone. There is no doubt that the number of legal practitioners is on the increase, and it may be supposed that the newly-fledged ones ardently wish that there may be always a large number of cases to occupy our courts of justice. "Long live litigation" is the sentiment if not the uttered cry of the young limb of the law. It is unnecessary, in considering the subject of legal proceedings, to be guided by the popular prejudice which enjoyed in past days the old cartoon which represented the plaintiff holding a cow's head and the defendant her tail, while the lawyer assumed the milking stool and the possession of her yield of milk. The contending parties do sometimes get more than the shells of the oyster, and it is not always the representatives of the law who get the whole of the succulent body of the bivalve. Nevertheless nobody will venture to stand up for litigation as a distinct good. The older, the wealthier, and the more experienced the legal adviser, the more, as a rule, he advises his clients to come to an understanding and settle with their adversaries.

Overproduction exists in the clerical profession as well as in all the others, and the situation has become serious. What will we do with them? is the question. The solution of it, in our opinion, lies here; make the production of professionals more difficult. Let all property used for educational purposes to which the children of the poor do not have abundant access

be taxed just the same as all other property is taxed. This will relieve the burden of taxation upon the working classes and increase the inducement for young men to become mechanics instead of professionals. Withdraw the bonuses and gratuities paid by the State towards the support of these exclusive schools, and let them be supported by those who are benefited by them. This will make it impossible for such large numbers of young men to be educated at the public expense. No fear but what the demand for professionals will always be fully supplied. A more healthy sentiment would then grow up in the community, and physicians would not have to starve their families for the sake of keeping up fine residences and imposing appearances; there would be fewer shysters among lawyers; there would not be so many straggling clergymen looking for vacant pulpits; there would be fewer educated young men seeking positions as teachers in country schools at two hundred to four hundred dollars a year salary; and there would be more good mechanics and workingmen and farmers in the land.

This overcrowding of the professions and overproduction of professionals is a nuisance which ought to be abated.

IMMIGRATION.

SPEAKING of the assistance rendered by the Government to objectionable immigrants, the London, Ont., *Advertiser* says:—

Another branch of the assisted passage question to which the attention of the workingmen with families may well be directed is the bonusing of pauper children, collected and sent to Canada by such professional philanthropists as Dr. Barnardo. Over 1,000 of these waifs were sent into the Dominion last year, and a greater number are expected this season, as a result of the encouragement granted by the payment of a bonus for each child landed. The collectors of these unfortunate children, crime and disease-tainted as many of them are, can hardly point to the fact that Canada does not already have a large enough population of this description and to spare. Not only that, but thousands of the best class of our young men and women annually cross the border to look for employment, at remunerative rates, denied them here. Now, we have no objection to immigration. We have no objection to the Government at Ottawa expending a reasonable sum to set forth the merits of Canada, though we would have greater faith in a trade policy that rendered it easy for the people to earn a living, and thus make every newcomer an advertising agent. But we do protest against public money being taken to pay bonuses for the shipment to Canada of either pauper men and women or their offspring, collected from the slums of old world cities. We have a country good enough to command the best class of immigrants if it is rightly governed, and such a class, self-supporting, frugal, able to pay their own way, will always be welcome in any part of the Dominion where they may choose to cast their lot. Men and women of the description that require to be bonused and are so poverty-stricken that they need to have meals bought for them while *en route*, are not wanted here, and under no consideration should the professional philanthropists be subsidized, as is the habit at present, to send their collections of pauper and crime-tainted children into the country.

We are pleased to have the *Advertiser* at one with us in this matter. This journal has always combatted the policy that encouraged the immigration into Canada of paupers and those who are not likely to become valuable and wealth-producing citizens. A greater outrage never was perpetrated upon a community than that controlled by Dr. Barnardo, of London, whose great aim seems to be to gather up the waifs and offscourings of the slums of that great city and to dump as many of them upon this country as it can possibly receive. Without exception these waifs are tainted with either physical or moral leprosy, or both, which prevents their ever becoming valuable citizens; and it is high time that the professional philanthropists of the Barnardo stamp should be made to understand that Canada wants no more of such moral filth and degradation as they have been sending here for many years past.

The immigration policy of Canada should be modified so as to not only discourage the inflow of paupers and those of criminal antecedents, but to prohibit it absolutely; but to encourage the coming of those who can and intend to make good citizens. In carrying out this policy, the proposing immigrants should be made to undersand that those of them who are not skilled artizans were to go to the rural districts where their services would be in demand in agricultural pursuits at remunerative wages; and those charged with the matter should see to it that this understanding was carried out, and that the immigrants were not allowed to stop off in their journey in any of the cities through which they might pass. The farming sections of Canada are in great need of labor, and this need should be supplied as far as practicable from the immigrants arriving in the country. In the cities there is no demand for unskilled labor, and every addition to the number but adds to the distress of the unfortunates there assembled, and tends to the lowering of whatever wages may be there currently paid, as well as adding to the charge on the community for supporting the indigent poor. Therefore the authorities should see to it that no aid be given to unskilled immigrants except with the understanding that they be carried to the rural districts, there to engage in agricultural pursuits.

The *Advertiser* is decidedly wrong, however, in intimating that "thousands of the best class of our young men and women annually cross the border to look for employment at remunerative rates, denied them here"; or that such emigration, if it exists is due to any fault in the trade policy of the country. Census bulletins recently issued in the United States show that the trend of population there is constantly towards the cities, and that the proportion of population living in cities as compared with the population living outsides the cities is rapidly increasing; and we are all aware of the fact that in all the large American cities there are thousands of people out of employment. This is also true of Canada, for there is no disguising the fact that, while there is a large and constant demand for farm labor, and while there are unnumbered millions of acres of excellent farming lands in Canada now unused, the cities are overcrowded with idle people who find it impossible to obtain work therein. If this condition were peculiar to Canada or the United States, in which the peculiar trade policy the *Advertiser* alludes to prevails, and if it did not prevail in other countries, notably in Britain, where an entirely different trade policy obtains, then the fling at protection which the *Advertiser* makes might be justified. If protection induces emigration from a country, as the *Advertiser* intimates it does from Canada, will it kindly indicate the character and the destination of the emigration from the United States, if there is any. If protection induces emigration, does free trade induce immigration? Certainly neither of

these propositions are true, but this is just what the *Advertiser* would like to have its readers believe. The restlessness of nature in the young men and women of all countries induces them to roam. No matter how pleasant and advantageous their surroundings may be at home, they do not always appreciate them, and are led by a hope to better their condition to seek their fortune in other lands. It is this spirit of restlessness that has dispersed the human race over the whole world, and Canadians are none the less imbued with it than other people

It is to be regretted that so able a journal as the *Advertiser* finds it impossible to discuss so important a question as that of immigration into Canada without introducing innuendos and flings at the Government, who are doing their best, according to the lights before them, and at a trade policy that has been of wonderful benefit to the country. We are all agreed that Canada needs the immigration of good and desirable men and women, and that this is essential to the fuller development of our wonderful resources; we are also agreed that undesirable immigration should be prevented; and if it is desirable that harmony should prevail in discussing the question, it will be necessary to discuss it on its merits, and not drag in other questions upon which we are not all agreed.

DEMOCRACY IN THE SOUTH.

During the latter part of last month considerable interest was centred around the fact that an insurrection against the laws existed in the coal regon of East Tennesee, growing out of the efforts of the organized coal miners there to prevent the working of penitentiary convicts in the mines. Vast quantities of coal are taken from these mines to supply fuel to the iron works in Northern Georgia and Alabama and Central Tennesee, and the convicts have been used as miners in the business. The free miners are displaced from their business by the introduction of the convicts, and are very justly incensed thereat. We do not know what remuneration is paid to the State for the services of these convicts. In the 1886 report of Hon. Carroll D. Wright, United States Commissioner of Labor, referring to Tennesee, he states that the convicts of that State are leased to coal mining contractors who work them in the coal mines, paying the State for their services 24½ cents per day each; and that the average price per day for free labor in that occupation in the vicinity of the mines was $2.50. Free labor at $2.50 per day is not overpaid, and it is impossible that free men can compete with convict labor where the remuneration is only 24½ cents per day; and the issue now before the authorities of Tennesee is whether the free miners, being thrown out of their occupation, shall starve to the end that the convicts may be kept at work; and whether the contractors of this convict labor shall reap the difference in their coal-mining operations between the cost of convict and of free labor.

As society is now constituted in Tennesee and the other States in the South there is never any shortage in the supply of convict labor. Perhaps over ninety per cent. of Southern convicts are negroes, for it must be remembered that Southern Democrats, who are in power, consider that negroes have no rights that the whites are bound to respect; and as the negroes, when free, are disposed to vote other than the Democratic ticket, it is found easier and more convenient to restrain the negros of their freedom, and this is done generally by convicting them of any misdemeanor or crime with which they may be charged, and consigning them to servitude for long terms of years in the penitentiaries, or to the coal mine contractors which amounts to the same thing. Southern Democrats as a class are ultra aristocrats, and they view the poor whites and the negroes as being inferior beings who exist in their midst on sufferance. Therefore, as in Tennesee, the negro convicts are leased to contractors who are infinitely more cruel and exacting then the slave drivers were in the days of anti-bellum slavery; and, whenever these unfortunates can be profitably employed, as in coal mining, they are crowded in to the exclusion of the free miners of both colors. Civilization in the South does not permit any man, white or negro, to vote for legislators who does not vote the straight Democratic ticket, and no man can be a candidate on a Democratic ticket who can possibly consider the rights of the poor man when in conflict with the interests of the aristocrats. If this were not so there would never have been occasions for such occurences as have recently attracted the attention of the world to the Tennesee coal region. In justice to the laboring classes no law should ever have been made there which would have thrown free miners out of employment, replacing them with convicts for which the contractors pay less than twenty-five cents per day. As it is, under the reign of these aristocrats, the free miners are expected to submit to starvation and to see their families die of want before their eyes—not because there is no work for them to do, but because the contractors of prison labor can supply their places at a cost of one-tenth of what the labor of free men is worth.

Some may blame these Tennesee miners for taking up arms to redress their grievances instead of quietly submitting to them. But it may be said that between the evils which environ them, death from rebellion, if death it must be, is no worse than the starvation and misery that is killing them; and they know that appealing to the Government for a redress of their wrongs is equivalent to their filling their bellies with the east wind. The Government of the State will do nothing for them. The United States Government is helpless to do anything, and the alternatives left to these unhappy miners is to starve to death where they are, take up arms and rebel against the laws of the state, or expatriate themselves by emigration to more favored climes.

EDITORIAL NOTES.

In a former article we contended that, if the Government had preserved a duty of 40 or 50 cents per hundred pounds on raw sugar, and put the duty on refined at 80 cents, the country would have derived a revenue of over a million dollars, and consumers would have obtained their refined sugar as cheaply as they do now. The revenue so derived would have enabled the Government to aid many public works which it is now unable to assist; and a very small portion of it appropriated for the encouragement of the beet-sugar enterprize, would have secured its rapid and certain success. We believe an error

has been committed in this matter, which, in its results, will tend to cast discredit on the National Policy, which may suffer far more severely from this mistake of its leaders than it can from the assaults of its opponents.

Owing to the radical change in the sugar policy of the United States, we expected that a large reduction of the sugar duties in Canada was inevitable. We did not believe, however, that there was any political necessity for such a radical change as has been made, nor that the financial position of the country warranted the abandonment of over three million dollars of annual revenue; nor could we have imagined that nearly the half of this loss of revenue would be allowed to fall into the hands of three or four sugar-refining companies. The maintenance of the former policy would have been attended with less harm than the present one. Government has already been compelled to abandon some public works, and to refuse its accustomed assistance to others, whose utility it has acknowledged and whose claims it has admitted, for the sake of an empty cry of "free sugar"—and still, sugar is far from being "free."

Arrangements for the great exhibition to be held in Toronto from September 7th to 19th, under the auspices of the Industrial Exhibition Association, are now in full swing, and everything points to its being the most successful of the many successful exhibitions ever held: in fact, the number of entries have been so numerous that nearly all of the available space has been allotted. The new horticultural hall will be a prominent feature of the exhibition this year, and also a building which the C.P.R. is erecting, to be used exclusively for the exhibit of the products of Manitoba and the great North-West. A large staff is now at work painting and repairing the buildings. In the main building a new floor is being laid wherever required, and Mr. Chambers, the caretaker, has within the past few days opened a magnificent new greenhouse and conservatory. Arrangements have been made by which the C.P.R. will run a track along the road-bed of the old electric railway, thereby enabling exhibitors to unload their exhibits right on the fair grounds. Mr. Hill, the manager, is sparing no pains to add to the attractions, and many new features will be added this year.

The belief in alcohol as a source of inspiration has so declined of late years that people will receive, without surprise, Alphonse Daudet's declaration that drink makes him incapable of writing or conceiving a line. The general belief is that it creates a feeling of strength, physical and intellectual, which on trial is found to be delusive. Thus it is said that Wilkie Collins once drank wine pretty freely, and found himself in a splendid mood for work. He sat down and wrote for several hours, carefully put the precious manuscript away and went to bed. In the morning he read what he had written, found it pure rubbish, and threw it into the fire.—*Toronto Globe.*

This is an acceptable definition of the difference between Wilkie Collins and the Toronto *Globe*. Judging from the character of its editorials, one is led to the irresistable conclusion that, like Collins, it drinks pretty freely, and while under this seductive influence it thinks itself in splendid mood for work. This influence, we imagine, is long abiding, and under it very much of the *Globe's* work is done: but, alas! unlike Collins, it never discovers that what it has written is generally pure rubbish, and instead of throwing it into the fire, as Collins did, it fires it up the spout into the composing-room.

Sweden is going to take steps to prevent the emigration of her young men to America for a while. She is being stripped of her effective population, and realizes that something must be done to keep her people at home. It should be noted that the Swedes make good citizens in this country. Did anybody ever hear of England trying to keep her pauper element at home? —*St. Louis Miller.*

A constant stream of paupers is pouring into England, and a constant stream of emigrating Englishmen is pouring out of that country, and all because England believes in free trade in paupers as well as in everything else. The paupers who are pouring into England are the very dregs and offscourings of Europe, thousands of them Jews who have been expelled from Russia. This most objectionable class of immigrants elbow and crowd out the native English workman, and these, in turn, are forced to emigrate and seek in newer countries the living which has been denied them at home. If England erected a barrier to prevent this immigration of paupers, there would not be such an emigration of Englishmen. But then the traffic supplies business to English ships: and one of the chief objects of the free traders there is to keep these ships busy.

During the six months ending June 30, 1891, the imports of refined sugar into the United Kingdom from the United States aggregated 525,250 hundredweight or 58,828,000 pounds, valued at £441,342, or 16s. 9½d. per hundred-weight, or $3.70 per hundred pounds. At the same time American refined sugar cannot be bought by American consumers for less than $4.25 to 4.50 per hundred pounds in New York. It was announced in the Toronto papers last week that a wholesale grocery house in this city, unable to obtain full supplies of refined sugar from Canadian refiners, had imported a thousand barrels of such sugar from the United States. These importers are shrewd business men, and it is fair to suppose that the American refiners would not object to sell sugar for export to Canada at as cheap a price as they sell for export to England; and if this sugar was bought at even the price current in London—say $3.70 per hundred pounds—and the Canadian duty paid thereon—eighty cents per hundred pounds, it could be laid down here in Toronto quite as cheap or cheaper than Canadian ugar. It should cost no more to refine sugar in Canada than in the United States; and if American refiners can afford to sell sugar in London for $3.70 per hundred pounds, Canadian refiners should afford to sell their product to Canadian consumers at the same price. The difference indicates the profit greater than what the American refiners make.

The Finance Minister has given notice of a resolution to give effect to the Government's policy on the beet sugar question as mentioned in his budget speech. A few days ago in discussing the budget Mr. Foster asked that the beet sugar matter be passed over *ad interim*, until he was prepared to make an amendment thereto, and the resolution which he now proposes to submit in the place of the previous one is to the effect that the promised bounty on the manufacture of sugar, from beets grown in Canada, be extended for two years instead of for one year, as originally suggested. Only this and

nothing more. When Mr. Foster intimated last week that he would make a change in this beet sugar business his friends and those who advocated the substantial encouragement of the beet sugar industry, felt encouraged to hope that something that was not delusive and unsatisfactory would be offered, but we regret to say that in this they are painfully disappointed. This extending the life of the bonus from one year to two, instead of withholding it entirely, is like the method of killing the dog adopted by the kind-hearted man who, to save the dog's feelings, began to take his life by cutting off his tail piecemeal. If Mr. Foster intends encouraging the beet sugar industry let his promise of bounty extend over ten or fifteen years. If he does not intend to encourage it, why hold out delusive hopes?

TEACHING must be a fairly remunerative profession among our neighbors across the line. Were it otherwise, 20,000 teachers could not stand the expense of visiting Toronto and remaining here for a week. Many of them have come great distances, and though they had special rates, their travelling expenses must have been considerable. We doubt very much if a proportionately large number of Ontario teachers could stand any such outlay. Considering the importance of their work, the great majority of Canadian teachers are paid very small salaries In the payment of teachers, preachers, judges, missionaries, theological professors and several other kinds of useful people, Canadians are decided economists.—*The Week.*

It is a mistaken kindness for Canada to establish and maintain institutions of learning wherein teachers, preachers, judges, missionaries, theological professors, etc., can be, and are, turned out in numbers far exceeding the demand, and who are afterwards compelled to labor for pittances that an ordinary mechanic would decline. It is true Canadians point with pride to their universities and colleges, and tell how much money they cost; but they do not consider the other cost wherein, because of these very educational facilities maintained at public expense, so many young men are lured to them, in the hope that, by becoming professionals, they may escape the necessity of earning their livings by mechanical trades. The country schools in the back concessions are supplied with teachers, educated in these institutions, who are glad to obtain three hundred dollars a year, or less, for their services.

A CORRESPONDENT of the Montreal *Herald* says that "carefully collected reports show that during the three spring months last passed so many as, if not more than, 20,000 men, women and children passed over the Intercolonial, Grand Trunk, North Shore, Delaware and Hudson, Vermont Central, South-Eastern, Boston and Maine, and Atlantic and St. Lawrence (G.T.R.) railways from the seignorial parishes of the Province of Quebec to New England alone." Five per cent. or so of these, he says, may return next autumn to hibernate in Quebec, and others will, at a later date revisit their old homes to induce those who remain to join them, but few return to stay.—*Toronto Mail.*

The "carefully collected reports" of the United States Government show that the correspondent of the *Herald* is a monumental liar. According to the annual report of the Chief of the Bureau of Statistics on the foreign commerce of the United States for the year ending June 30, 1890, in a tabulated statement showing the number of immigrants arrived in that country during that year, after giving the number received from Great Britain and Ireland, Germany, Sweden and Norway, Italy, Austria-Hungary, Russia, Denmark, Netherlands, Switzerland, France, Belgium and China, the number received from "all other countries" which would include Canada is stated at 12,589. This term "all other countries" includes British, Spanish and the other West Indies, all British North American possessions including Canada, Mexico, all the States of Central America, all the States of South America, all the States of Asia except China, all of Australasia, all of Oceanica, and all the unenumerated islands of the seas. Admitting that one half of all the emigrants from these "all other countries" were from Canada, the number would be only a little over 6,000 persons. The *Herald* which at first gave currency to this ridiculous yarn, and the *Mail* which repeated it, both know that the "carefully collected reports" of the *Herald* correspondent were entirely false and misleading.

A CORRESPONDENT of the Toronto *Globe*, writing from French River, Ont., complains that lake navigation on Lake Huron has become dangerous because of the great number of saw logs and boom timber floating about thereon; that American tugs are towing Canadian saw logs to American ports, there to be cut into lumber, and carried by American schooners to Buffalo, Tonawanda and other American ports. The timber grown in Canada furnishes the American tug, the American saw mill and the American vessel with material to work on. The Canadian schooner has no cargo; the Canadian saw mill no work. A tree is cut down and manufactured into saw logs and towed across the lake free of duty. When the saw log is cut into lumber by the Canadian saw mill there is a tax on the buying and selling, and so it comes to pass that the lumber merchant cannot sell his lumber, nor the Canadian vessel get a cargo. To this the *Globe* answers by enquiring how matters would be helped by re-imposing the saw log export duty, and so augmenting the American tax on Canadian lumber: and declaring that unrestricted trade between the two countries would be the panacea for the evil complained of. The *Globe* has never yet explained what it means by "unrestricted reciprocity," for it knows such a thing to be utterly impossible. But its correspondent will no doubt perceive the shallowness of the *Globe's* suggestion regarding augmenting the American duty on Canadian lumber when it is seen, as the correspondent states, that no lumber is being manufactured in Canada for export to the United States. The saw logs, which are being cut in Canada for the American market are the property of the Americans, and all that Canada has to show for the transaction are the stumps upon which the logs grew. Canadian mills are idle at the demand of the McKinley tariff. This condition is a shame and a disgrace to Canada, and should be rectified by a re-imposition of the export duty upon saw logs. We could be no worse off, and, if the lumber were not cut in Canada, the trees would remain on the stump. Impose the duty.

CONTRAST the excessive protection granted to the few sugar refiners of Canada with the treatment accorded to the sugar industry, which, with proper consideration, might in a very few years be developed to an extent of ten times the importance and public advantage which the mere refining of sugar can ever attain. For every ton of refined sugar manufactured from home-grown beets, fully eighty dollars would be expended, as compared with ten or twelve dollars per ton in merely refining

In the production of 125,000 tons of beet sugar, employment would be given to over 20,000 people; farmers farm servants, factory operatives, coal and lime men, railway employees, etc.; the land sown to beets would be greatly benefited by the cultivation of the roots; nearly ten million dollars would be expended in the erection of factories, millions more in dwellings for the operatives; over 50,000 cattle would be fed on the pulp, and an increased demand created for hay, straw and coarse grains. The benefits to be derived from the success of this industry are so numerous and important, and would be so generally distributed, that they must commend themselves to every supporter of the National Policy who has even cursorily studied the history of this industry in other countries, and the conduct of other countries' Governments in encouraging and promoting it. There are two beet-sugar factories in the Province of Quebec, one of which was operated last season, and will be in operation this season. They have had to contend with many difficulties, the principal of which have been poor farming and unfavorable seasons for cultivating the beets. These they are striving to overcome. Mr. Mercier has stated, since his return, as the result of his investigation into the subject in different countries in Europe, that he has great confidence in the ultimate success of this industry in Quebec. In the Province of Ontario the season for growing sugar beets is much longer and more favorable than in Quebec, and farmers have much longer experience and greater skill in root culture. For three seasons a large number of experiments have been made in cultivation of sugar beets. The greater part of the expense has been very liberally assumed by the Government of this Province. The results have proved remarkably encouraging, as is shown by the reports of analysis by the Professors of Chemistry at the public laboratories at Guelph and Ottawa Before the adoption of Mr. Foster's new policy for sugar, all the preliminary steps had been taken for the organization of a strong company to prosecute this industry in Ontario. All these facts were known to the Government at Ottawa; and the announcement of the Government policy by Mr. Foster, in which reference to this new and important industry was of a rather unencouraging character, was a surprise to the promoters as it was to us. Speaking for the Government, Mr. Foster's attitude towards this enterprise, instead of being that of encouragement, as might have been expected from a National Policy administration, was one of indifference to say the least, and so far as the now existing establishments in Quebec are concerned, was that of decided injustice. So far the beet-sugar industry of Canada has received fair and liberal consideration from the Governments of the provinces of Ontario and Quebec, but it appears to be doomed to destruction by the Protectionist Government at Ottawa.

THE debate on the budget in the Dominion House of Commons closed on July 29th, the Government being sustained by a majority of twenty-six votes. It will be remembered that when the Minister of Finance introduced his budget Sir Richard Cartright offered the following resolution as an amendment thereto:

That the situation of the country requires that the Government should forthwith reduce all duties on all articles of prime necessity, and more particularly on those most generally consumed by artisans, miners, fishermen and farmers; and further, that the negotiations which the House has been informed are to open at Washington in October next should be conducted upon the basis of the most extended reciprocal freedom of trade between Canada and the United States in manufactured as well as in natural pruducts.

Of course this resolution, if carried, would have pledged the Government to a policy of unrestricted reciprocity with the United States. And now comes the London *Advertiser* with this silly twaddle:

A reasonable man unblinded by partisan zeal, could see no objection to this resolution. It was conceived in terms that could not be construed as offensive to either party, and its stipulations were laid down in the interests of the large majority of the people of Canada. If indorsed by Parliament, as it should have been, it would have been an intimation to the rulers that the time had gone by when taxation could be manipulated in the interests of the few, at the expense of the many, and that the representatives of the people were determined that the reciprocity negotiations of next October should be conducted on real, and not bogus premises. It would mean, as Mr. Hyman, M.P., so ably pointed out in his speech on the budget, that unfair discriminations in collecting the revenue should cease—that the taxes should no longer be collected in this unwarranted ratio: Cotton shirts, 50 per cent.; velveteens 20 per cent.; socks and stockings, over 40 per cent.; linen damask, 25 per cent; winceys, 40 per cent.; feathers, 25 per cent.; hoes and scythes, 50 per cent.; mineral waters, 20 per cens.; spades, 43 per cent.; precious stones, free, 3 and 10 per cent.; coal oil, over 70 per cent.; cheap wall paper, 60 per cent.; blankets, 50 per cent.; cheap tweeds, 50 per cent.; while doeskins are 30 per cent., and finer tweeds, 30 per cent.

It was only a few months ago that this question of unrestricted reciprocity was settled at the polls by the people of Canada declaring in a most emphatic manner against this fad of the Grit party, and still in the face of this fact the *Advertiser* stigmatizes a large majority of the people of this country as unreasonable, blinded partisans, who really do not know what their true interests are. "Mr. Hyman M.P.," whom the *Advertiser* quotes so unctiously, and the *Advertiser* itself fail to confine themselves to a correct statement of facts when they say that unrestricted reciprocity with the United States would lower the cost to Canadians of the articles mentioned, to the extent mentioned, or to any extent whatever. In fact not one article named with the exception, possibly, of coal oil, but what is now cheaper in Canada than in the United States, and these presuming Grits know it. Further, if the figures paraded are intended to indicate the Canadian tariff upon the articles to which they are appended, it should have been shown that the American tariff upon them is much higher, and that under unrestricted reciprocity many of these items, particularly those which are textiles—cotton shirts, velveteens, socks and stockings, linen damask, woolens, blankets, etc.—which, when imported, are brought from England at comparatively low cost, would of necessity have to be brought from the United States, and for which we would have to pay the higher prices caused by the McKinley tariff. The *Advertiser* should not attempt to deceive its readers. It is naughty to deceive.

SPECIAL ADVERTISEMENTS.

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THE HEESON IMPROVED SHAKING FURNACE GRATE has no equal for all kinds of furnaces, round or square, boilers heating furnaces, ovens and stoves. It is the only grate that will clean fires without opening fire doors. It is the strongest bar known, having the most air space, thus securing better combustion. These bars are saving more fuel and generating more steam and will last longer than any other bars on the market. Ten per cent. saving in fuel guaranteed or no sale. References on application. HEESON GRATE BAR CO., 38 King St. East, Toronto.

FOR SALE, A VALUABLE CANADIAN PATENT.—The Trenholm Improved Perpetual Hay Press, patented 1882, has been manufactured in New Brunswick for nine years, and stands without a rival in the Maritime Provinces. As it has not been introduced in the Upper Provinces, the purchaser can, if he manufactures there, get practically a complete control of the business in Canada, as this machine is cheaper, stronger, easier running and more durable than any other Press of its class, and is well protected by patent. Full investigation invited. Terms easy. Write for particulars to A. J. TRENHOLM, Sussex, N.B.

A RISING TOWN.—The Town of West Toronto Junction possesses exceptional residential and business advantages, and promises to speedily become the chief manufacturing centre of the Dominion. This town has the following railways, viz: Grand Trunk Main line (Carlton West Station); Northern Division of the Grand Trunk (Davenport Station); The Toronto, Grey and Bruce, and Credit Valley, and Ontario and Quebec Divisions of C.P.R., and Belt Line Railway (now in progress). The town offers to large manufacturers free sites, water at cost and exemption from taxation. Any information regarding the same will be given upon application to ROBT. J. LEIGH, Town Clerk, or D. W. CLENDENAN, Mayor.

WEST TORONTO JUNCTION ENTERPRISES.—The ten large factories which have located at West Toronto Junction during the past three years are all doing large trades. The "Barnum Iron and Wire Works," the "Toronto Rolling Mills and Forging Company," and others about to locate will swell the paying industries of the town and augment its population. A large number of fine residences and business blocks have added to its appearance and to its facilities for supplying the peoples' wants. A perfect fire alarm system (the "Gaynor"), and an efficient system of water-works, both now in operation, with sewers, electric lights and improved streets now contemplated, will add to the protection and the comfort of the people and their houses. Free sites, free water and exemption from taxes are inducements offered to first-class manufacturers, and it is now acknowledged by all that Toronto's western suburb, with its great continental railway connections, is destined to be among the most prosperous cities of Canada. Dr. Carleton is Chairman of the Factory Committee.

Good Housekeeping is an original magazine—not alone in the articles which grace its columns, but in the editor's conception of the field to be filled and the manner of filling it. Having a clear and well-defined purpose, this able publication moves steadily forward, improving with age and experience, and affording an excellent illustration of what a household journal, designed especially for mothers and housewives, but catering to all the members of the home circle, should be. It is never sensational, but always reliable. *Good Housekeeping* for August recognizes the vacation season, not by suspending publication, or devoting its pages largely to the details of sports and outings; but, with a just recognition of the necessities of outdoor festivities and recreation, aims to make the indoor life as free from tax as possible for the many housewives who scarcely know what vacation means, save as it brings to them an added care and heavier labor. This model magazine, regularly received and carefully read in any household, will do more than can be estimated to aid the mistress of the home, and to lighten her burdens, by bringing to her assistance the wisdom of others in all parts of the country. The publication was never more interesting or valuable than at present. Clark W. Bryan & Co., Springfield, Mass.

A PAGE of the last issue of *The Dominion Illustrated* presents a complete group of portraits of the Canadian Bisley team of 1891, with a brief sketch of the shooting record of each member. It is timely and interesting. Another page shows the Canadian exhibit at the Royal Agricultural Fair, Doncaster, Eng., and the Prince and Princess of Wales and suite arriving and departing from the same. There are portraits and biographical sketches of the late J. Beaufort Hurlbert, LL.D., widely remembered in connection with the Jesuit Estates Bill controversy, and of F. Blake Crofton, the well-known Nova Scotia *litterateur*. A full page engraving shows that prince of gothic structures, the famed cathedral at Rheims, which is made the subject of a fine description by Miss A. M. McLeod. Of Canadian churches, there are exterior and interior views of St. George's Cathedral, Kingston, with a most interesting historical article on early Anglicanism in Upper Canada. Other engravings include Windsor, N.S., in 1840; ruins of the old house near Montreal, where, it is said, Amherst and Vaudreuil signed the articles of capitulation in 1760; on the Lower St. Lawrence, showing Cacouna Beach and Tadousac Bay; interior of Fort Henry, Kingston; the Studley Quoit Club, of Halifax, with a sketch of the history of this club, beloved of English army and navy officers, and a reproduction of F. D. Millet's "Michaelmas Daisies." "Among the Bluenoses," by Sidney Owen, is a bright contribution, and Mrs. Curzon's description of a trip to Bobcaygeon breathes upon us the breath of the fields and streams "beyond the railway." This number is a particularly good one throughout.

Outing for August is as fresh and wholesome as a lake breeze. Where the publishers manage to find such a wealth of delightful information about travel, sports and pastimes is a mystery; but they do find it month after month, and that it can be found is a great credit to our people. The love of nature and the intimate acquaintance with every gentlemanly amusement displayed by the contributors to *Outing's* pages is an encouraging indication of a national leaning toward a healthier style of literature and toward those beneficial exercises which tend to build up a stalwart nation and assure for Americans a proud position among the great powers of the world. The contents are: "Big Game in Colorado," by Ernest Ingersoll; "Canoeing on the Miramichi," by Rev. Wm. C. Gaynor; "Four Days' Swordfishing," by John Z. Rogers; "Down Hill with a 'Star,'" by Dr. Alfred C. Stokes; "Running High Jumping," by Malcolm W. Ford; "A Day with the Woodcock," by Ed. W. Sandys; "Yacht Clubs of the East," by Capt. A. J. Kenealy; "Photographing in the White Mountains," by Ellerslie

Wallace ; "A Beggar on Horseback," by Gip Sey ; "The Mystery of University Oval," by Howard Keeler ; "Grouse Shooting in Ireland," by Capt. T. S. Blackwell ; "The Theory and Introduction of Curve Pitching," by O. P. Caylor ; "The Massachusetts Volunteer Militia," by Capt. D. M. Taylor ; "American Polo," by Lawrence Timpson ; "Camping in the Woods," by Helen S. Clark ; "Harry's Career at Yale," by John Seymour Wood ; "A Chapter in Lacrosse," by L. Moses, Jr.; "Scientific Tennis Strokes," by J. Parmly Paret, and the usual editorials, poems, records by the standard writers on sport, etc.

LADY MACDONALD, the widow of the late Premier of Canada, opens the August *Ladies' Home Journal* with her first contribution to literature, in the opening article of a series which she has written for that magazine, descriptive of "An Unconventional Holiday," which, with a party of friends, and in her private car, she enjoyed last summer through the most picturesque portions of Canada. Lady Macdonald's article is written in that delightfully fresh and unconventional manner of which we see so little in our modern literature, and yet which possesses such a charm. Annie R. Ramsey has some very timely "Hints on Mountain Climbing" ; Kate Tannatt Woods treats a new subject in telling what "The Girl Off to Boarding-school" should take with her ; the poet Tennyson's wife is sketched in the series of "Unknown Wives of Well-Known Men" ; a very helpful handful of articles are those which treat of all the "Summer Ills and Summer Dangers" ; our different "Types of American Girls" are treated by four able writers ; Jeanette L. Gilder has a clever character-sketch in "Pepper Hash" ; Ellen LeGarde shows the benefits of "Swimming for Girls" ; Mrs. A. D. T. Whitney's and Jessie O'Donnell's serials are continued ; Dr. Talmage writes this month from his seashore home ; Hezekiah Butterworth and Robert J. Burdette tell some "Bright Things for Boys" ; Mrs. Mallon has the best Fashion articles supported by any magazine ; Maria Parloa and Julia Corson give some "Dainties for the Summer Table" ; little Elsie Leslie writes of "Children on the Stage" ; and all through this number there is the breath of summer and the strength of merit. The *Journal* shows in this issue how well it is conducted. One dollar per year. Published in Philadelphia by the Curtis Publishing Company.

THE romance of the torpedo is set forth by John M. Ellicott, U.S.N., in the *Illustrated American* for the week ending July 25th, and the strange fact is brought out that while more than two thousand war-ships have been fitted to use torpedoes at a cost of millions upon millions of dollars, the torpedo remains practically an untried weapon. The article affords a curious illustration of the modern tendency to conduct war on theory. Among other timely subjects treated are Mr. Gladstone's life at Hawarden, with a full-page illustration showing the statesman resting after having cut down a tree ; the row in Paris over the proposition to erect a statue to Danton , the misfortunes of M. de Lesseps ; the death of Hannibal Hamlin, and the various manifestations in American society. "A Chance Encounter" is the title of a short story. With the number comes a beautiful portrait of Miss Emma Eames, the American prima donna, printed in colors. In the issue of the same magazine for the week ending August 1st the eye is attracted by the beautiful portrait, printed in colors, of the Princess von Hatzfeldt, the adopted daughter of the American railway king, C. P. Huntington. The contents of this number are very summer-like, and include a description of a day at Narragansett Pier, with illustrations by Arthur Jule Goodman, and an account of the Larchmont Yacht Club and the delights of yachting on Long Island Sound. Two pages with illustrations are devoted to the "Soo" Canal. Among portraits published are those of the late Edward Burgess, the yacht designer, from the latest photograph ; Chauncey M. Depew as a possible candidate for President ; and Marie Jansen. "Sister Ruth" is the title of a short story. The second of a series of studies of flowers relates to the azalea, and social matters, the department concerning women and that of games make up the remainder of an attractive number.

SARAH O. JEWETT contributes the leading story of the August *Wide Awake*, a delightful reminiscence of Lafayette's last visit to America ; it is entitled, "Peg's Little Chair," and has a full-page illustration by Garrett. "The Bride's Bouquet," a charming story of a good deed, is by Grace W. Soper, of the *Boston Journal*. "The Silent Lie," an admirable school story for young folk, is by Francis E. Leupp, of the *Washington Star*. "Pokeberry Juice and Mullein," by Kate Upson Clark, is a little tale that reveals some of the funny toilet secrets of country girls a generation ago. "Mr. Brown's Playfellow," by J. Loxley Rhees ; "Shells of Sea and Land," by Will M. Clemens ; "The Poppy Bee," by Mrs. Hall, and "How to Dry Starfishes," by Louise Lyndon, are good short articles for the lovers of natural history. "How the Cossacks Play Polo" is a terrible and dramatic story of a Russian field-sport indulged in by officers of the Imperial Guard ; it is by Madame de Meissner, of the Russian legation. "Charlemagne's Housetop Gardens," by Miss Harris, is a curious bit of mediæval history. "Very Old Toys," by Emma B. Day, relates to "finds" in old Eastern lands. "What Seven Indian Boys Did" is a true account of some knowledge-loving Alaska boys, by Frances C. Sparhawk. Miss Rimmer's art-paper for children is excellent. Margaret Sidney's "Peppers" serial in this number has all the interest of a good novel. "Miss Matilda Archambeau Van Dorn," the serial by Miss Cumings, is full of amusing developments. "Marietta's Good Times" are really good times. "Men and Things" abound with original anecdote. The poems are by Kate Putnam Osgood, Maria Johns Hammond, Eli Shepperd, Jane Ellis Joy and Richard Burton. Three especially good things for veranda reading are the Margaret-Patty letter, by Mrs. William Claflin, and "An Unanimous Opinion," and the fine ballad by Mrs. Harriet Prescott Spofford, "Pope's Mother at Twickenham." *Wide Awake* is $2.40 a year. D. Lothrop Company, Boston.

SOCIALISM.—By John Stuart Mill.—Being a Collection of His Writings on Socialism, with Chapters on Democracy, the Right of Property in Land, and the Enfranchisement of Women.—No. 2 of the Social Science Library.—The Humboldt Publishing Company, 19 Astor Place, New York. The publication of a special volume showing John Stuart Mill's attitude upon the question of Socialism should be matter of congratulation, both to Individualists and Socialists. By his position in society, which was one of easy independence, rendered healthy by very moderate official toil, he was most fortunately placed for the literary work to which he devoted his life ; his writings mark exactly the beginning of the transition period from the *laissez faire* theories that had so long dominated English thought, and by the natural repose of his character he was singularly fitted to fill the office which he regarded as the crying necessity of the hour, viz.: that of "an unprejudiced legislator, absolutely impartial between the possessors of property and the non-possessors." John Stuart Mill was more than a mere student of the closet. Throughout his life he mixed on terms of the closest intimacy with the most distinguished men of his day, and he himself served in Parliament. As a student he followed closely the speculative thought of Europe, though his ignorance of German, at a time when there were few translations, handicapped him heavily. As a man of action he took part in all the progressive movements of the time ; battled bravely for women suffrage ; insisted strenuously on the right of the poorest to a voice in the councils of the nation, since their very existence was jeopardized by misgovernment ; and anticipated the whole Irish and general agrarian movement by the keenness of his criticism on the sins of landlords. All these subjects are treated, with a peculiar lucidity that John Stuart Mill had invariably at command, in this second volume of the Social Science Library. They make 214 pages of excellent reading matter, and, at the modest price of 25 cents, should be read by many.

THE August *Popular Science Monthly* deserves special notice. It opens with one of Dr. Andrew D. White's able Chapters in the Warfare of Science entitled "From Fetich to Hygiene," which gives a terrible picture of the ravages of epidemics when prayers and saintly relics were relied upon to check them. "The Value of Statistics" is discussed by Hon. Carroll D. Wright, who tells how census returns should be used, and shows how they are sometimes made to give false evidence. Mr. S. N. Dexter North closes his interesting account of "The Evolution of the Woolen Industry" in the illustrated series on American industries. Another illustrated series, which promises to be very popular, is begun in this number by Prof. Frederick Starr. It is on "Dress and Adornment," and the first paper, dealing with Deformations, describes various modes of cutting the flesh, tattooing and painting the skin, filing the teeth and flattening the skull. Somewhat similar is Dr. W. Shufeldt's paper on "Head-Flattening Among the Navajo Indians," also well illustrated. Two further instalments of the discussion about the devils and the herd of swine are printed ; one by Mr. Gladstone, entitled "Prof. Huxley and the Swine Miracle," the other being "Illustrations of Mr. Gladstone's Controversial Method," by Prof. Huxley. Another controversial article is "Hypocrisy as a Social Debater," by Dr. R. W. Conant. In "The Practical Outcome of Science," by Dr. W. H. Smith, some striking instances are given of apparently useless researches which have conferred great material benefits. This idea is further confirmed by the article on "The Relations of Abstract Research to Practical Invention," contributed by F. W. Clarke, the chemist of the United States Geological Survey. J. Jones Bell writes of "Ginseng in Commerce,

and there is a sketch of the Prussian astronomer Argelander, with a portrait. The editor writes on "Science and Wealth," urging that some of the wealth which science has produced should be bequeathed to aid scientific research. New York: D. Appleton & Company. Fifty cents a number, $5 a year.

THE PRODUCTION OF ALUMINUM.

THE following is from a bulletin recently issued from the United States Census Office concerning the output of aluminum in that country:

In the last decade electro-metallurgical processes for obtaining aluminum have become favorite subjects for patents with inventors. It is sufficient to describe briefly the two which have been commercially successful in this country, and they will serve as types of all. The earlier of these, the Cowles process, was established in 1885, and is carried on by the Cowles Electric Smelting and Aluminum Company, at Lockport, New York. It is at present (1890) confined to the production of aluminum alloys, viz., aluminum bronze (and brass) and ferro-aluminum. This was the pioneer of such processes in the United States, and created an industry which has since been developed and extended. This process, which is now well known to persons interested in metallurgy, consists in passing the current from a powerful dynamo through a mixture of alumina (in the form of corundum, bauxite, etc.), carbon, and pieces of copper contained in a suitable vessel lined with carbon, through the ends of which vessel the large terminals of the dynamo are inserted. The mixture is arranged so as to prevent short circuiting. On passing the current the alumina is reduced in the presence of carbon and unites with the molten copper to form an alloy rich in aluminum. This alloy is afterward remelted, and enough copper added to it to reduce the aluminum contents to the proportions desired for aluminum alloys of the required grades.

The Cowles Company has produced aluminum bronze as follows:

PRODUCT OF ALUMINUM BRONZE.

Years.	Pounds.	Value.
1885.....	4,000 to 5,000	$1,600 to $ 2,000
1886.....	50,000	20,000
1887.....	144,764	57,000

Besides aluminum bronze the Cowles Company makes ferro-aluminum by the same process by which the bronze is made, substituting iron for copper. The alloy, containing from five to ten per cent. of aluminum, is used as a vehicle for introducing aluminum into molten iron to increase its tensile strength and solidity. An idea of the growing demand for ferro-aluminum for this metallurgical use is obtained from the statement of the Cowles Company that they made in 1886 from 2,000 to 3,000 pounds, valued at from $780 to $1,170, and in 1887, 42,617 pounds, valued at $16,621. The total aluminum alloys produced in 1889 was 171,759 pounds.

Many proposals have been made and many patents obtained for making alloys of aluminum with iron and sometimes with copper by reducing alumina with carbon in the presence of fluxes and the metals. Clay, kaolin and other compounds of alumina, it is asserted, may be used for this purpose. Sometimes the iron or copper is added to the melted mixture used as a "bath," sometimes the mixture is added as a flux to iron in a cupola or similar furnace, and sometimes it is used as a paste on iron, which is then heated. The object in most cases is to make an iron aluminum alloy for "beneficiating" iron. The announcement of the good effect produced on iron by adding minute quantities of aluminum to it while melted and Mr. Keep's experiments on this subject have probably led inventors to patent processes of the above kind. It is to be regretted that these processes do not yet offer clear and certain evidence that they are distinct and decided improvements like the electrical processes, or, indeed, that they are operative in the manner described.

The Herault process, which, like the Cowles, makes aluminum alloys, has not been put into commercial operation in this country up to the close of the census year.

In the United States the extraction of aluminum itself is also effected by dynamo electricity, and is a new industry carried on by the Pittsburgh Reduction Company, at Pittsburgh, Pa., operating under the patents of Mr. C. M. Hall. The process consists in forming a fused bath of the fluorides of aluminum, calcium and sodium, to which calcium chloride is subsequently added, by melting a mixture of cryolite, aluminum fluoride, and fluorspar in a suitable vessel lined with carbon, adding aluminum thereto, and then separating the aluminum by the current from a dynamo, the carbon electrodes of which dip into the bath. The process is continuous, because the alumina is renewed as it becomes exhausted. One merit of the process is that the fused bath is of less specific gravity than the aluminum set free, which therefore sinks to the bottom of the vessel. If alloys are desired, the negative electrode is formed of the metal which it is desired to alloy with aluminum. Variations in the composition of the bath are described in the different patent specifications, but that above given is believed to be the one used in practice. This company produced 19,200 pounds of aluminum in 1889, which was sold at $2 per pound in quantity. The total production of aluminum in the United States during 1889, including that contained in alloys, was 47,468 pounds, with a total value of $97,335.

TWO IMPORTANT SHIP-RAILWAY PROJECTS.

FROM the manner in which engineering societies in this country and Canada are becoming interested in the proposed ship-railways across the lower Michigan peninsula and across the peninsula between Owen Sound and Lake Ontario, it would seem that something definite in the way of legislation regarding these projects may soon be expected. The people of Toronto, and in fact all Canada, are especially interested in the Owen Sound—Lake Ontario—connection. The paper recently prepared by E. L. Corthell, C.E., of Chicago, entitled "An Enlarged Waterway Between the Great Lakes and the Atlantic Seaboard," is being discussed in all of the lake cities. At a meeting of engineers and capitalists recently held in Toronto great enthusiasm was caused by a consideration of the data presented by Mr. Corthell. Toronto would derive a large increase in shipping from such an improvement.

Gen. F. L. Hagadorn, an army engineer of some prominence who has given a great deal of attention to ship-railways, takes up the subject in a recent issue in one of the Detroit papers. He also refers particularly to that part of Mr. Corthell's paper relating to ship-railways from Owen Sound to Lake Ontario and across the lower Michigan peninsula from Michigan City, Ind., to Toledo, Ohio, this latter making a direct line for lake propellors from Chicago to Buffalo. He says: "As early as 1837 the project of building a ship-canal around the falls of St. Mary's river was discussed in the legislature of the state of Michigan, and the matter was brought before congress in 1840, but was earnestly opposed, one of its opponents—the distinguished Henry Clay—speaking of it as "a work beyond the remotest settlement in the United States, if not in the moon." This, of course, produced a laugh, and it was not until twelve years after the general government donated 750,000 acres of public lands, and a right of way 400 feet wide, to enable the State of Michigan to undertake the work. (Henry Clay had laughed the proposition out of twelve years growth.) And everyone will remember the opinion of the naval experts who were called upon to report upon the model of Ericsson's Monitor. "Take it home with you," said one of them, "and worship it. You may do so without breaking any of the commandments: for it is not in the likeness of anything that is in the heavens above, or in the earth beneath, or in the waters beneath the earth." It has been said that no ship-railway is at present in operation; but it should be added that a very important one is now under construction, and will probably before long be carrying ships weighing 2,000 tons 17 miles overland across the isthmus of Chignecto between Nova Scotia and New Brunswick. For the last sixty years the necessity of a ship canal across the lower Michigan peninsula has been repeatedly urged, and a survey and estimate has been made for the route from Benton Harbor, Lake Michigan, to a point near Monroe, on Lake Erie, a distance of about 160 miles. This would require sixty-five locks and the crossing of nineteen railroads, at a cost of $138,405,432. A ship-railway over the same peninsula fully equipped for service, will not cost over $39,000,000.

"In 1867 Congress directed a survey to be made for a ship canal around the Falls of Niagara. The work was performed by Col. E. C. Blunt, U.S. engineer, his project being for a canal of fourteen feet deep; and twenty-one years after (1888) Congress ordered another survey for a channel sufficient for ships drawing twenty feet. The route was twenty-five miles long, and the estimate $23,617,900. This was again revised with a large canal prism and an increase of rock excavation, the total estimate being $35,000,000. The estimate for a ship-railway over the same route, less six and a half miles, to accommodate vessels of twenty feet draught and 5,000 tons displacement, is $10,731,613, fully equipped. These figures are given to show the comparative cost of railways and canals over familiar routes, but the comparison will hold good in all cases, and under all circumstances, the variations, if any, always in favor of the railway. The comparative rate of speed is also a matter to be taken into account. On a ship-railway the speed can never be less than ten or fifteen miles per hour. On the Suez Canal it is limited to five miles, and on the Welland to four, but it scarcely ever attains to these on either."—Cleveland, Ohio, *Marine Review*.

HEATING BY STEAM.

It has been sufficiently well established by experience that the running cost of a steam or of a hot-water plant, where the heating is done by the *direct* plan (that is, with radiators inside the rooms to be warmed) is much cheaper than that of a furnace in the same house heating the same rooms. It may safely be put at fifteen per cent. less, and in favorable conditions even a larger saving could be made. With *indirect* steam heating, where the steam is used to heat chambers of air in the cellar, supplied from the cold air outside and conducted, after warming, by flues and through registers, after the plan of the hot air furnace, there is very little, if any, saving of expense. Some people prefer this method, because they dislike radiators; but it should always be remembered that the direct method is the cheaper. Steam heating by either method has manifest advantages over furnace heating, especially in the entire absence of dust, the plague of a furnace-heated house, which the best made apparatus cannot keep from the rooms. A steam plant is more durable than a furnace and requires little care, the important points being to keep the grate clear and the boiler clean. Keeping the grate clear is important in all fires, as fuel is wasted where the under draft is choked. Steam heating apparatus is supplied with automatic dampers, which regulate the draft. The cost of a plant is not so great proportionately for a large house as for a small one. One adapted to heating 15,000 cubic feet, which is about the amount of space in an average-sized eight-room house, will cost, all complete, from $375 to $425.

A hot-water plant costs about ten per cent. more than a steam plant for the same space to be warmed. The running cost the season through, is less than with steam, though during very severe weather the consumption of fuel will be somewhat greater. This is more than offset by the much less expense during the milder periods, when the fire in a hot-water boiler can be run very low. There is about the same difference between the cost of direct and indirect heating as with steam. In indirect heating, the hot air flows through the room and passes off, it being necessary to provide for its escape in order to keep up the flow of cold air into the heating chambers. But in direct heating, the air of the room is warmed over and over and a less degree of heat in the radiator is needed to keep up the temperature of the room. In steam heating, whatever the weather, the fire in the boiler must always be kept up hot enough to make steam, otherwise there will be no heat. In a hot water plant the circulation of the water in the pipes can be maintained with a fire that would not make steam. This is the principal reason why hot water is cheaper than steam. Another advantage is that in starting a new fire in a hot-water plant, the water begins to circulate in the pipes the moment the fire begins to raise its temperature, and very soon gives off heat; whereas in a steam boiler no heat can be had till the fire has burned long enough to raise all the water in the boiler to the steam point. Again, in case of the fire going out, through neglect, if it is at once renewed the water in the pipes will not cool sufficiently to cool the rooms.—*Good Housekeeping.*

An association of women is about to start in business to undertake by contract, the care of London conservatories, window-boxes, balconies, and small gardens, by the year, season or month. The members of the association will themselves attend to all orders, employing men for the digging and rough work only. Plants will be received and tended at the premises of the association during the absence of the owner from town. The title of the new business is the Women's London Gardening Association.—*Vick's Magazine.*

Never before in all the history of mankind, says Professor Flammarion, have we had in hand the power to penetrate so deeply in the abysses of the infinite. Photography, with its recent improvements, takes a fair picture of every star, no matter what its distance, and sets it down on a document which can be studied at leisure. A star of the fifteenth, sixteenth, or even the seventeenth magnitude, or a sun may be separated from us by so great a distance that its light requires thousands, perhaps millions, of years to reach us, notwithstanding its incredible velocity. The unaided eye of man would never have seen it, but the camera collects this feeble light, and after a prolonged exposure reveals its image.—*Outing.*

For the sake of illustrating the difference between the practical man and theorist, let us suppose two persons to visit the northern peninsula of Michigan seeking for iron. The one runs along blindly, takes up with every good show, and mines. The result is, he either makes a happy strike by mere accident, or spends thousands of dollars in useless search. The other has studied the laws of electricity, and knows that certain ores of iron are magnetic. He understands also that these ores will exert their influence through any amount of superincumbent earth. Consequently he provides himself with a dipping-needle and compass, and by the operation of these tells where a bed is located, its approximate depth, and probable amount of material. To prevent being deceived by the magnetic schists in that region, by means of his dipping-needle and compass he traces up the bed until he finds an outcrop. Thus have been located, at little expense, many of the mining regions of that locality. What an achievement is this, and how much better than the blind guesses of the so-called practical man?—*Popular Science Monthly.*

We have now completed our tour of the woolen mill and our hasty examination of the machines which have superseded the earlier inventions in these establishments. Not less striking than their wonderful ingenuity is their multiplicity. We find not only a separate machine for each of the twenty-three different operations enumerated by Ure in 1834, but we also find, in the larger mills, great numbers of these separate machines. A modern factory is, therefore, something almost entirely different from anything which existed a century ago. It contains vast rooms, each devoted to separate branches of the industry. In one we find the scouring machines; in another, the carding machines; in another, if it be a worsted mill, the combs and gilling machines; in another, long rows of whirling spindles tire the eye, and in another the clatter of hundreds of looms suggests pandemonium. Everything is systematized, and the surroundings of the operatives, with abundance of light, with perfect ventilation, with steam heat, with convenient retiring rooms, justify the statement that the gain of the manufacture through improved machinery is no greater than the gain of the operative, which has come through the accompanying improvement in the construction and arrangement of the buildings in which these operations are conducted.—*Popular Science Monthly.*

Here are some figures which, by comparison, will show the importance of the "Soo" Canal to commerce—an importance little suspected by the public generally. The traffic of the Suez Canal for 1890 was 3,389 vessels, registering 6,890,014 net tons, as against 3,425 vessels and 6,783,187 tons for 1889. The traffic of the Sault Ste. Marie Canal, during 234 days navigation was open in 1889, was 9,576 vessels and 7,221,935 net tons, and in 1890 it was 10,557 vessels and 8,454,435 net tons—that is to say, in 1889 the lock at the "Soo" passed 11 per cent. more tonnage than the Suez Canal, and in the 228 days that the canal was open last year, 22.8 per cent. more tonnage passed through it than through the Suez Canal. This commercially great but little known strip of water has been the direct cause of the railroads losing freight amounting to more than 200,000 000 bushels of wheat, 5,000,000 tons of coal, iron ore and copper, and many thousands of tons of North-Western products during the last few years. It is easily to be surmised that when the great work now in course of construction is completed, which will be in about two years, the railroads will suffer from keener competition in proportion with the increased depth and capacity of the canal, which will permit through lake shipments at cheaper rates of freight, and with greater convenience to those who live and produce in the great lake districts.—*The Illustrated American.*

An extremely interesting experiment has been proceeding at the Bon Accord Salmon Cannery during the past week, namely, the packing of salmon in glass jars. The glass jars were manufactured in England, and are of the capacity of an ordinary one-pound can. They are rendered airtight by an appliance similar to that used in fruit preserving jars, a zinc screw cap fitting over a rim of rubber in such a manner that the zinc and rubber do not come in contact with the fish. The cooking process is performed in precisely similar manner to that employed in an ordinary canning, a puncture or "blow hole" being left in the glass cap. After the cooking is finished this puncture is closed with sealing wax. The experiment is regarded as highly successful, the only drawback being the cracking of some of the jars occasioned by the sudden change of temperature upon being removed from the oven. It is believed, however, that this will be wholly obviated by the use of another description of glass. In all, some fifteen or twenty cases were put up, and these will be shipped to the Old Country. Fish packed in this manner would cost about 50 per cent. more than the ordinary canned article to the consumer, but they would command a ready sale among a class of people to whom the extra cost would be no obstacle in purchasing. There has always been a more or less pronounced antipathy in England to canned goods of all kinds, and although it is perhaps felt less now than at any time heretofore, owing probably to the uniform excellence and wholesomeness of the Fraser River pack, still there is a considerable section of the more wealthy class of people who would always give the preference to fish preserved in glass.—*Westminister, B.C., Ledger.*

Manufacturing.

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. Subscription $1.

MR. JAMES TRETHEWAY will erect a saw and grist mill at Chilliwhack, B.C.

MESSRS. WARING & WHITE are starting a new nail factory at St. John, N.B.

The Lake of the Woods Milling Company will build a stave factory at Rainy River, Man.

THE Melita Milling Company is being formed at Melita, Man., and will erect a flour mill there.

MR. H. PARADIS has started a match factory at Levis, Quebec, giving employment to sixty hands.

MR. T. MCEWAN'S saw mill at Bannockburn, Ont., was destroyed by fire July 27th, loss about $2,000.

FIRE in the Dominion Cotton Mills, at Montreal, on August 1st, caused damage to the extent of about $7,000.

MR. GEORGE WORKMAN has started a factory at Streetsville, Ont., for the manufacture of knitted cardigan jackets.

MESSRS. CHALMERS BROS., & BETHUNE, Pilot Mound, Man., will build a 25,000 bushel grain elevator at that place.

MESSRS. PARISH & LINDSAY, Brandon, Man., are enlarging their grain elevator at that place to a capacity of 60,000 bushels.

THE authorities of the town of Killarny, Man., have voted a bonus of $4000 for the erection of a grist mill at that place.

THE Cookshire Machine Works Company has been incorporated at Cookshire, Que., and will manufacture machinery, castings, etc.

THE Jenckes Machine Company, Sherbrooke, Quebec, are manufacturing $50,000 worth of mining machinery for parties at Sudbury, Ont.

FIRE in the piano factory of Messrs. R. S. Williams & Son, Oshawa, Ont., July 24th, did damage to the extent of about $15,000.

THE extensive biscuit factory of the Lang Manufacturing Company, at Montreal, was destroyed by fire July 31st. Loss about $65,000.

THE Royal Pulp and Paper Company, who are erecting paper mills at East Angus, Que., expect to have them in operation in November.

THE Farmers' Elevator Company, Neepawa, Man., are building a large grain elevator which they expect to have completed at an early day.

MESSRS. MCCULLOCH & HARRIOT, Plum Creek, Man., are about erecting a grain elevator to be used in connection with their flouring mill at that place.

MR. BUCK, of Farnham, is starting a knitting factory at St. John's, Que. The factory when running will employ twenty-five machines on hosiery, mitts, etc.

THE Montreal Paper Mills Company has been incorporated with a capital stock of $50,000, with headquarters at Montreal; for the purpose of manufacturing paper.

MESSRS. JOHN INGLIS & SONS, Toronto, have been awarded the contract for the construction of the engines and boilers for the new electric light works at New Westminster, B.C.

LA COMPAGNIE INDUSTRIELLE DE ST. JEROME has been incorporated at St. Jerome, Que., with a capital stock of $30,000 and will erect a factory for the manufacture of furniture.

THE Worth Plumbago Company are building a large factory at Donaldson's Lake, Que., for the manufacture of plumbago for lubricating purposes, lead pencils, stove polish, etc.

works. The building will be of stone, 105x75 feet, five stories high.

THE Paton Manufacturing Company, Sherbrooke, Quebec, are about erecting a large worsted mill in connection with their other

MR. H. H. SPICER, who owns and operates the saw and shingle mill at Vancouver, B.C., formerly owned by Mr. G. F. Slater, is adding new machinery to his plant and otherwise enlarging his business.

THE Waterloo Knitting Company has been incorporated with a total capital stock of $30,000, with headquarters at Waterloo, Quebec; for the purpose of manufacturing all kinds of knitted and woven goods.

MESSRS. H. BEAUCHEMIN & Co., paper manufacturers at Sorel, Quebec, have merged their business into a stock company with a capital stock of $50,000, under the name of the Montreal Paper Mills Company.

THE Moncton *Times* says of the cotton mills there, that under the new management the works have been running steadily, and about $12,000 worth of additional machinery has been set to work. The new owners are well pleased with the facilities for manufacturing there.

THE Montreal Metal Works has been incorporated at Montreal with a capital stock of $50,000, and will manufacture and deal in wires, rods, cables and every description of apparatus and metals used in connection with the business of telephone, telegraph, electric light, electric railway, cable companies, etc.

THE new saw mill at Chemainus, Vancouver Island, the property of Victoria Lumber and Manufacturing Co., has started work. The machinery used is of the latest and most improved pattern and capable of cutting 250,000 feet per diem when running full blast.

THE car manufacturing business at Cobourg, Ont., founded many years ago by the late Mr. James Crossen, and subsequently carried on by his son, Mr. Wm. J. Crossen, has now been transferred to, and will in future be carried on by, the Crossen Car Manufacturing Co. (Limited), with Mr. Wm. J. Crossen as general manager.

A TORPEDO boat, 150 feet long by 14½ beam, has recently been built for Brazil by the English firm of Thorneycroft & Co. On her trial for speed she steamed for two hours at the rate, for still water, of 25,387 knots, or 29·2 statute miles per hour, which is said to be the highest speed ever maintained for this length of time by any vessel.

THE Toronto Rubber Company of Canada, (Limited), has been incorporated with a capital stock of $100,000. The manufacturing operations of the company will be carried on at Port Dalhousie, and the head office and place of business will be at Toronto. The objects of the company are to carry on the business of manufacturing all kinds of rubber and gutta percha goods.

THE New Dominion Paper Bag Co., St. John, N.B., of which Messrs. D. F. Brown & Co. are proprietors, is said to be the only steam paper bag factory in the Maritime Provinces. It is fully equipped with the latest and most improved machinery, there having been added during the past year two new machines, a large power cutter and an end setting machine. They employ seventeen hands.

MESSRS. W. BOULTER & SON, Picton, Ont., who are among the largest canners of fruits, vegetables, etc., in Canada, are now employing over 100 hands in their works. This year he has already put up 72,000 quarts of strawberries, one farmer realizing $1,000 from three acres. The produce of sixty acres of peas, 160 acres of sweet corn, and 125 acres of tomatoes will be put up, as well as many other fruits and vegetables. About 500,000 cans will be put up altogether.

MESSRS. HIRAM WALKER & SON, of Walkerville, Ont, are going extensively into the cultivation of cranberries. They have a suitable marsh, 200 acres in extent, at Marshfield, near Walkerville, which is being prepared for the purpose. A portion of their plant consists of a steam pump with capacity to throw 15,000 gallons of water per minute, constructed for them by the Kerr Engine Company of Walkerville. There are at this time more than 1000 acres of cranberry vines planted.

THE Chatham Manufacturing Company, Chatham, Ont., are calling special attention to the "Chatham Giant" wagon, manufactured by them, which is equipped with their "Chautauqua" patent front gearing, which makes it, they say, the best, the strongest, the most durable, and the easiest running wagon made in

Canada. The improvements embodied in this wagon are covered by both Canadian and American patents. Mr. Wm. Hewett, 39 McGill street, Toronto, is agent for these wagons in this city.

THE Kingston Hosiery Company, Kingston, Ont., own the sole right in Canada for building and operating a machine for making full-fashioned hosiery, that will conform perfectly to all parts of the foot and leg. It is claimed for this machine that it is the only one that can accomplish it. The machine, the right of which cost the company $50,000, is quite complicated, but all the attention required is tying on the bobbin and putting on the belt. One operator can attend thirty of the machines. The company build the machine themselves.

ONE of the latest applications of electricity is that of a machine for drilling holes in boilers, in the sides of iron vessels, and in other places where iron or steel is the material to be worked upon. The machine has its own holding-on magnets, and it may be swung over the side of a ship or placed on the surface of a boiler, where it will stick without the necessity of clamping. The convenience of such a device, adjustable, as it is, by the mere switching off or on of a current, is great; while, it is claimed, the saving of labor resulting from its use is considerable.

MESSRS. C. C. RICHARDS & Co., of Yarmouth, inform us that they now keep three double teams on the road, the year round, selling and advertising their Minard's Liniment and other preparations. Their establishment extends from Main to Hawthorne streets, and they employ twelve hands continuously in preparing their medicines for the market. Their sales for 1890 were in excess of expectations, and amounted to 262,000 bottles of Minard's Liniment alone, which is the largest by far of any patent medicine in the Dominion of Canada.—Halifax, N.S., *Critic.*

AN invention in the shape of endless chains, alternated with stationery timbers sloping to the lower part of the mill, for the safe transference of trimmed lumber is working very satisfactorily in the Brunette saw mill, at Westminister, B.C. The lumber is pushed on to a system of books attached to the chains after coming from the saws, and is gently and continuously deposited to where it is transferred to the waiting trucks by the men in attendance. The Brunette Mills, it is understood, were the first in the Province to take advantage of this way of carefully handling the lighter classes of lumber from the upper floors of the mill to the ground.

MESSRS. DESBARATS & Co., Montreal, publishers of the *Dominion Illustrated*, have sent us a sample book of the photo-gravure and fine printing done by them; and they inform us that owing to the large number of applications they are constantly receiving for copies of this sample book from amateurs and art collectors, they have printed an extra edition which will enable them to supply copies to all making application for them, a small charge of only ten cents being made for them to cover expenses. Every picture shown in this book is a gem and well worthy of being placed in the portiolio of those who are preserving the most beautiful specimens of art that come into their possession.

THE Standard Electric Company, of Ottawa, are erecting an extensive electric plant for lighting purposes and for furnishing driving power throughout that city. The plant will be driven by three 66-inch turbine water wheels, which are to develop 100 horse power. The shafts from the water wheels are of steel 7⅝ inches in diameter, each fitted with a mortise bevel gear wheel, 8 feet in diameter, with teeth 20 inches long. The iron pinions which work in these wheels are nearly 4 feet in diameter. The three main shafts are also of steel, 7 inches in diameter, and have on them the three main driving pulleys, which are 10 feet in diameter, and 52 inches wide. The shafting, gearing and pulleys are carried on nine massive iron bridge-trees, so as to do away, as much as possible, with wood planing.

FOLLOWING is the estimated cut of the Lake of the Woods mills for the present season in feet:

Keewatin Lumber Company	12,000,000
Minnesota and Ontario Company	12,000,000
Cameron and Kennedy	10,000,000
Dick, Banning & Co	10,000,000
Western Lumber Company	8,000,000
Ross, Hall & Brown	8,000,000

These are given as close figures, and may be exceeded before the season is over. The mills are all running briskly, and the demand is large. Cameron & Kennedy operate the Bulmer mill, in addition to their own, the cut of the two mills being included in the figures for this firm. This accounts for the total seven mills on the lake.—*Commercial.*

R. A. PETERS, JR., church and parlor pipe organ builder, St. John, N.B., employs some twelve hands in his business which is extending through the Dominion. One instrument has been sold to Bermuda and lately erected there. Three organs of his build are now in Halifax, and the re-building of another is now progressing in his factory, while the contract for the fourth has just been taken. All metal and wood pipes are made in the factory as well as every other portion of the instruments, except the key boards, which are being made to order. The metal is cast into sheets, then into pipe shape, planed, rolled up, soldered, etc., and lastly voiced and turned. The output is increasing, and business better known and more favorable every year. There is no other pipe organ factory in the Maritime Provinces, these works being exclusively confined to the manufacture of pipe organs.—*Critic.*

THE Metallic Roofing Company of Canada, of Toronto, of which Mr. J. O. Thorn is managing director, have sent us a copy of a new catalogue just issued by them, having reference to the Hayes' patent plasmatic metallic lathing, Eastlake and other fire-proof steel shingles and other fire-proof building materials. The book is profusely illustrated, giving comprehensive descriptions of the different articles alluded to, what they are, how they are applied and the great variety of uses to which they can be put; and there are a large number of testimonials from prominent and well-known gentlemen who speak in unqualified praise of these articles. A large number of pages are required to give only a partial list of customers in Canada who have these goods in use, and these purposes includes residences, churches, school houses, stores, warehouses, barns, stables, elevators, saw mills, factories, club houses, railway passenger and freight stations, etc.

THE prices of farming machinery in 1878 and 1890 have been listed, and show a most astonishing reduction in cost as between the two periods. The figures given are as follows, and that they are nearly accurate is capable of proof by almost every farmer in this section:—

	1878.	1890.
Mowers	$ 85	$ 45
Self-binders	225 to 250	100 to 120
Reapers	100	65
Horse rakes	30 to 35	22 to 27
Seed drills	90	65
Top buggies	100 to 125	60 to 75
Farm waggons	60 to 75	45 to 55

—*Galt Reporter.*

In the following table will be found the shipments from Petrolea, Ont., of crude and refined oil in barrels and in bulk, for the first six months of 1890 and 1891, respectively:

	Crude.	Refined.	Crude Eq'v.
January, 1890	22,191	15,803	61,698
January, 1891	19,910	20,974	70,749
February 1890	19,977	11,586	48,942
February 1891	14,577	18,073	59,759
March, 1890	17,314	11,666	46,479
March, 1891	15,517	16,227	56,084
April, 1890	15,451	12,588	46,921
April, 1891	16,615	15,665	52,850
May, 1890	12,599	18,774	59,534
May, 1891	17,077	15,071	56,754
June, 1890	16,955	13,467	50,622
June,* 1891	15,017	15,547	53,885

MESSRS. G. GATES, SON & Co., patent medicine manufacturers of Middleton, N.S., have lately enlarged their premises and now occupy the whole of the building as a factory, for the manufacture of their medicines. It has a floor space of about 3,000 feet.

IN the annual reports of Sir Charles Tupper of the Canadian emigration agents in Ireland, Mr. Merrick, the Belfast agent, agrees with Mr. Connolly, the Dublin agent, in the desirability of cultivating flax in Canada for the Irish market. Mr. Merrick believes that a most important industry could easily be made most successful and profitable if energetically taken in hand. No doubt there are many settlers now in the North-West, who fully understand the cultivation and scutching of flax, and if means were taken to provide a way to export it to Ireland so that settlers could dispose of their product, many would, no doubt, grow it, as it is a most profitable crop, and with the rich land to be found in many parts of the North-West, a system of rotating crops could be maintained and the land kept up in fertility. Sir John Lister-Kaye has demonstrated that flax of good quality and suitable to the Irish and English market can be grown in the North-West. England imports about 2¾ million tons of flax, principally from Riga, and the aver-

age price per ton last year (the lowest price for some years) was £20 to £23, while in some of the previous years it reached as high as £28 per ton. In the hope of promoting Canadian interest it the subject, Mr. Merrick gives a full description of how to cultivate the fibre.

THE Oxford Manufacturing Co., manufacturers of woollen goods, report as follows :—There is very little change in cur establishment during the past year. We have run full time and found sale for all our products. A marked improvement is noticeable in the demand from the Upper Provinces. A good trade has been started on the Pacific Coast, both sides of the line, and the goods are much sought after. We also notice an increase in the receipts of wool from the western part of Nova Scotia. The farmers find it to their advantage to send it direct to us in exchange for cloth, yarn, etc. There seems to be a general depression in the woollen business all over Canada and Nova Scotia, and, in view of this fact, we cannot complain as to the condition in which we find our trade. The main thing in the line of improvement about the mill is the addition of a 100 h.p. boiler from the shops of A. McPherson & Co., this place. Our manager is now in the United States, studying the latest improvements in machinery and designs, with a view to making such additions to our plant as will keep it abreast with the times, and enable us to produce the finest class of goods possible from domestic wools at the very lowest cost consistent with quality and general excellence. The number of men and women employed is about fifty.—Halifax, N.S., *Critic*.

MESSRS. BOOTH & SON, coppersmiths and brass founders, Toronto, have sent us a copy of their new illustrated catalogue and price list having reference to goods manufactured by them. Prominence is given to sanitary goods for the plumbing trade, and especial attention is called to the "Booth's Improved Steel Clad Bath," which they have recently perfected, and for which letters patent have been granted them in Canada, Great Britain and United States. This bath is made of an outside shell of steel and an inside lining of planished copper, and stands on ornamental feet without enclosure. It is unique and handsome in appearance, faultless in construction, and unsurpassed for strength and durability. On sanitary grounds it possesses all the advantages that can be claimed for a bath tub not encased, and being constructed entirely of metal is impervious to decay. It is made in all the desirable sizes as to length, width and depth. The catalogue also makes reference to all the other desirable styles of bath tubs, some of which have combined with them Booth's patent wash basins. A full line of sanitary closets is shown, which includes every style made and every appliance which has commended itself for its intrinsic value. In connection with these lines of goods is shown an almost endless variety of plumbers' brass fittings, brewers' supplies, brass work for fire departments, etc. This concern has been in active business life in Toronto for forty years.

MESSRS. E. LEONARD & SONS, London, Ont., have sent us an illustrated circular, having reference to the steam engines, boilers, etc., manufactured by them. Among the machinery alluded to, are the Leonard-Ball automatic cut-off engine, made in sizes from 10 to 100 horse-power ; plain slide valve self-contained Leonard engines, from 4 to 30 horse-power ; Leonard automatic cut-off farm engines ; Leonard-Tangye engines, from 30 to 100 horse power ; standard stationary boilers with half arch and flush front, from 4 to 100 horse-power and larger ; independent semi-portable engines and boilers on skids and wheels ; engines on locomotive boilers ; engines with stationary and upright boilers ; Standard boiler pressure heaters ; adjustable force pumps, saw mills, etc., also all goods incidental to the engine and boiler business. Allusion is made to the fact that since steel has come into extensive use in the manufacture of boilers, and that steel for boiler making is being made in much larger dimensions than iron, this firm have placed in their new boiler shop an immense set of rollers, eighteen feet wide and weighing thirty-five tons, capable of rolling plates as large as any mill can produce, so that for the lower portion of boilers which they make they can make the bottoms entirely of one sheet, where it is subject to the action of the fire. There are no seams over the fire, the bottom presenting a smooth, even surface. Regarding the Leonard-Ball compound engines, manufactured by this concern, a very long list is given of the names of parties who have this engine in use, the horse-power of the engine and of the boiler, the purpose for which it is used, and the post office address of the users ; and an inspection of this list shows that this engine is in general use from Halifax to Vancouver. Those who may desire further information should apply to Messrs. Leonard & Sons.

NEW ANILINES.

Victoria Black B. (Patented). This new one dip Black promises to be of great value in wool dyeing, and will eventually, when the manufacturers are able to reduce the price a little, replace logwood altogether. The color is dyed in one bath with sulphuric acid and glauber salts, and is very fast to air, light, scouring. sulphur, alkali and acid ; all goods dyed with this color can therefore be carbonized. Victoria Black B. penetrates the fibre thoroughly, and dyes even without difficulty. It produces alone, a fine blue-black, which can be easily turned to a full jet-black by the addition of a little fast acid yellow in the dye bath.

Half-wool. In dyeing goods containing cotton, the wool alone takes the color, the cotton will not be tinged in the dye-bath and can be topped with any bright color going on direct or requiring tannin as a mordant, and dye such coloras magenta, methyl-violet, saffranine and brilliant green, etc. Feathers are dyed same as wool.

Leather can be dyed at 104 F. a full navy-blue with the aid of sulphuric acid, and black is obtained with the addition of yellow Y. or croceine orange G. Victoria Black can be dyed in tin, copper or wooden dye vessels.

It is patented and manufactured only by the Farbenfabriken, Vor mals, Friedr, Bayer & Co., Elberfeld. For samples, particulars and prices apply to the Dominion Dyewood and Chemical Co., Toronto.

Benzo-Indigo-Blue. (Patented). This color, which has just been placed on the market, dyed cotton without a mordant, a full shade of blue without a reddish tinge in an alkali bath, and even keeps its greenish blue tinge when looked at by gas light. The shades produced by benzo-indigo-blue are very resistent to light, air, scouring, and are not changed by either acid or alkali. Warm emperature does not alter the shade, which is the fault with some analogus dyestuffs (benzidine color), which turns reddish on being exposed to heat. This new color is especially recommended for obtaining full saturated indigo shades on cotton when either dyed as a self color or for bottoming purposes and subsequent topping in the indigo bath.

As the color is equal, if not faster than indigo, and is dyed at one dip at a less cost, producing better and cleaner results, it is certain, before long, to take the place of the dye that has been used for centuries to dye dark blues on cotton.

For further particulars apply to the Dominion Dyewood and Chemical Co., Toronto, sole agents for the manufacturers and patentees, the Farbenfabriken, vorm Friede, Bayer & Co., Elberfeld, Germany

THE E. B. EDDY COMPANY.

In their new venture the E. B. Eddy Company, of Hull, Que., near Ottawa, are surpassing themselves. Mr. Eddy's success in indurated fibre ware, sulphite, matches, etc., is so well known that it needs no repetition, but the latest success, the manufacture of woodboard, surpasses all, and promises to result in an industry of incalculable good to Ottawa.

The company have moved the smithy to a new building, and raised the roof of the vacated building and of the wood-pulp mill a storey. All the machinery from the sash, door and blind factory has been removed, and what was formerly three buildings will now become one, and will be known as "The Eddy Company Hull Paper Mill, No. 2." In these buildings two Eiler grinders, from the Rochester Paper Company, have been put in, with a capacity of five tons per day, and also one large Eiler screen. The wet machine is made by the Bagley and Sewell Company, and the Black & Clawson Company furnish the dryers and calenders for the wood-board, which will be used by the Eddys chiefly for the manufacture of heavy pasteboard quarter-gross boxes, to be used for packing their matches and to supersede the present more cumbersome wooden slide boxes. The cutting and scoring machines, and the press for printing these boxes, is furnished by the Galley Press Company, of New York. J. L. Morrison & Company furnish the machines for stitching these boxes. There is also in this room one of Sheridan's best "Auto" cutters. The Union Machine Company, of Fitchburg, Mass., furnish a six-cylinder tissue machine, with the Pusey & Jones screen. The machine is seventy-five feet in length, and will turn out no less than six tons of paper per day. It is capable of producing first quality tissue manilla, and also manilla wrapping and white wrapping papers.

In No. 2 mill the upper storey will be used for packing and sorting the papers.

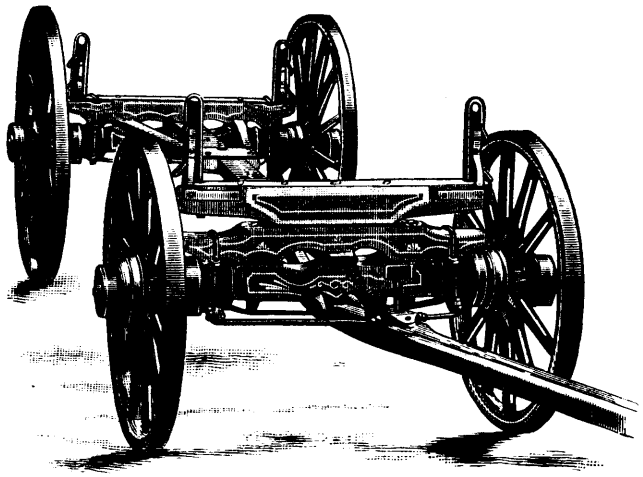
The Eddy Company here show their enterprise, as on the premises they make the beating engines and pumps, also a good deal of the necessary machinery usually brought from outside, this work necessitating the employment of a good deal of skilled labor. The company are able to do this, as they have their own planing mills, blacksmith and machine shops on the premises in full running order.

The extensive sawing machinery of the large saw mill has also been removed, and the roof raised from end to end twenty-seven feet, the whole 158 feet long. By an ingenious arrangement of the sheathing on the inside of this building, the light is thrown directly down. In this mill will be placed sixteen Rodney Hunt's new turbine water wheels, which are found to be the best and cheapest for the full and economical utilization of water power, and are also less liable to choke with bark and anchor ice than any other wheel. Here will also be placed six Scott & Roberts' New England grinders, with a capacity of fifteen tons of pulp daily. The company themselves will make twelve or fourteen 1,200-lb. beating engines. The Union Machine Company are now building a 96-inch Fourdrinier machine, 138 feet long, with eighteen dryers and a double set of calenders and super-calenders for finishing the finer stock. It is expected that manilla paper will be turned out in about a month, and that before Christmas newspaper will also be manufactured. Machinists and experts, who have so far had an opportunity of seeing the works, say that the situation is one of the finest possible for the industry.

In the indurated fibre-ware factory so heavy have the orders been that the company are now seven car loads behind their orders, and from the first week in February have been running day and night gangs. As soon as these orders are caught up to, this industry will be shut down for the purpose of putting in more extensive machinery, doubling or trebling the capacity.

The pulp and paper march of this company to its present state has been a rapid one, as following the indurated fibre ware they made ground wood pulp, and, feeling confident of success, they then started the sulphite works, and now have probably the most successful plant in existence, turning out from their four large digestors thirteen tons every working day. They are now combining the manufacture of chemical and mechanical pulp, and a little cloud looms in the distance, when the manufacture of all classes of paper will be an established, and, needless to say, a successful fact in Hull.

All three industries are of the utmost importance to Ottawa, employing, as they will, many skilled workmen in the several branches The proposed bridge across the Ottawa will strike the north-east corner of the company's yard, whence a short siding will connect with their private line in direct communication from their mills, giving excellent shipping facilities.



THE ABOVE CUT ILLUSTRATES THE

CHATHAM GIANT

With Chautauqua patent front gearing, which, with the patented improvement seen at the shoulders of the arms in above cut, we assert without fear of successful contradiction, makes the best, the strongest the most durable, and the easiest running wagon made in Canada. The two improvements in wagon building embodied in the wagon illustrated above, are covered by two Canadian and American patents. These wagons are sold by Mr. Wm. Hewitt, 39 McGill St. Toronto, and all other dealers in Chatham Wagons throughout the Dominion. Made exclusively by the

CHATHAM M'F'G CO. L'td., - - Chatham, Ont.

Millers' and Manufacturers'
INSURANCE COMPANY.

STOCK AND MUTUAL.

OBJECTS.

1. To prevent by all possible means the occurrence of avoidable fires.
2. To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories.
3. To reduce the cost of insurance to the lowest point consistent with the safe conduct of the business.

METHODS.

All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fires, as may be for the mutual interests of all concerned.

Much dependence will be placed upon the obligation of members to keep up such a system of discipline, order, and cleanliness in the premises insured as will conduce to safety.

As no agents are employed and the company deals only with the principals of the establishments insured by it, conditions and exceptions which are so apt to mislead the insured and promote controversy and litigation in the settlement of losses will thus be avoided.

The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of this company.

W. H. HOWLAND, Vice-President. **JAMES GOLDIE, President.**

HUGH SCOTT, Managing Director.

Applicants for Insurance and other information desired, please address MILLERS' AND MANUFACTURERS' INSURANCE COMPANY No. 24 Church Street, Toronto.

THE MANUFACTURERS'
Life Insurance Company

HEAD OFFICES:

COR. YONGE & COLBORNE STS., - TORONTO.

PRESIDENT
GEORGE GOODERHAM, ESQ.

VICE-PRESIDENTS:

WM. BELL, (Bell Organ and Piano Co., Ltd., Guelph).

S. F. MCKINNON, (S. F. McKinnon & Co. Toronto.

CONSULTING ACTUARY:
D. PARKS FACKLER, New York.

The ten-twenty plan of insurance operated by this Company provides the cheapest life insurance in the world, the premium rates being one-third lower than any other form of whole life policy issued. A business or professional man may thus carry five, ten, fifteen or twenty thousand on this plan without inconvenience.

In no other way can a man obtain so much insurance for so long a time at so small an outlay.

JOHN F. ELLIS,
Managing Director.

Industrial and Trade DIRECTORY.

Acids and Aniline Dyes.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Importers of every Description **Pure Aniline Dyes** for Cotton and Woolen Manufacturers. **Dyed Samples** furnished on application. Address all correspondence to Head Office, Detroit, Mich.

DOMINION DYEWOOD & CHEMICAL CO., sole agents in Canada for Farbenfabriken, vormals Friedr Bayer & Co., Elberfeld, Germany and Read Halliday & Sons, Huddersfield, England.—All shades for woolen, cotton, leather and paper manufacturers. Latest information on dyeing as well as dyed samples on application.

McARTHUR CORNEILLE & CO., Montreal.—Supply of best quality at closest prices, every description of coloring materials required by manufacturers of woolens, cottons, silks, paper, leather, etc. Are sole agents in Canada for the celebrated aniline dyes of A. Porrier, Paris.

MIDDLETON & MEREDITH, Montreal.—Aniline Dyes, Benzidine Colors, Dyewoods, Extracts, Chemicals.

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

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

Bridge Builders.

DOMINION BRIDGE CO. (Limited), Shops at Toronto, Ontario, and Lachine, Quebec.—Builders of Steel and Iron Railway and Highway Bridges.

Chemicals and Dye Stuffs.

McARTHUR CORNEILLE & CO., Montreal.—Offer at closest figures chemicals required by soap-boilers, oil refiners, paper-makers and manufacturers of woolens, cottons, leather, etc. Sole agents for British Alizarine Co., London.

THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Carry full line of Pure Dyeing Drugs, Dyewoods and Extracts adapted for the requirements of Woolen and Cotton Manufacturers.

DOMINION DYEWOOD & CHEMICAL CO., sole agents in Canada for Mucklow & Co's celebrated English Dyewoods and Dyewood Extracts, Indigo Extract, Cudbear and all chemicals used in dyeing. Stocks kept in Montreal and Toronto.

MIDDLETON & MEREDITH, Montreal.—Agents for the Berlin Aniline Co., Berlin. Pure Aniline Dyes. The Stamford Manufacturing Co., New York, Dyewoods and Dyewood Extracts. James Musprat & Sons, Liverpool, Soda Ash, Bleaching Powders, etc. Specialties for Cotton, Woolen and Leather Colors.

Edge Tools, Saws and Hardware.

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

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LEITCH & TURNBULL, Canada Elevator Works, cor. Queen and Peter Streets, Hamilton, Ont.—Patent safety Hydraulic, Hand and Power Elevators. Telephone connection.

Hubs, Spokes, Handles, etc.

F. W. HORE & SON, Hamilton, Ont.—Manufacturers of wheels, wheel material, shafts, poles, etc.

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

Knit Goods.

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

Machine Tools.

JOHN BERTRAM & SONS, Dundas.—Machine tools and wood-working machinery, Toronto wareroom 58 Yonge St. Agents—The Polson Iron Works Co. Montreal wareroom, Craig St. Agents for Quebec—The Machinery Supply Association, Montreal.

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THE CANT BROS CO. of Galt, Ltd., Galt, Ont.—Wood-working machinery for builders, planers, furniture, sash and door and wagon works. Toronto wareroom, 141-145 Front St. west. Agent, H. W. Petrie, Front St. west.

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THE OSHAWA MALLEABLE IRON CO., Oshawa, Ont.—Manufacturers of Malleable Iron Castings, to order, for all kinds of Agricultura Implements and miscellaneous purposes.

SMITH'S FALLS MALLEABLE IRON WORKS, Smith's Falls, Ont.—Manufacturers to order of **refined** malleable iron castings, Agricultural and other castings a specialty. Carriage castings in stock.

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McARTHUR, CORNEILLE & CO., Montreal.—Afford best value in pure olive and lard oils, also in all other leading lines of vegetable, animal and mineral oils for factory use.

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

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THEO. H. EATON & SON, Windsor, Ont.; Detroit, U.S.A.—Supply at lowest prices all chemicals used by Tanners and Wool Pullers. Special Aniline for Sheep Skin Dyers, Wool Mat Manufacturers, etc., etc. Address correspondence to Head Office, Detroit, Mich.

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McARTHUR CORNEILLE & CO., furnish at closest prices extracts for tanning and coloring. Sumac, Gambier, etc, Sulphide of Sodium, and other chemicals, Aniline colors, etc.; also Pure Cod Oil and other oils for Curriers. Degras, etc. Sole agents in Canada for Miller Tannin Extract Co., Hemlock Extract, and Gondolo Extract Co.'s Oak Extracts.

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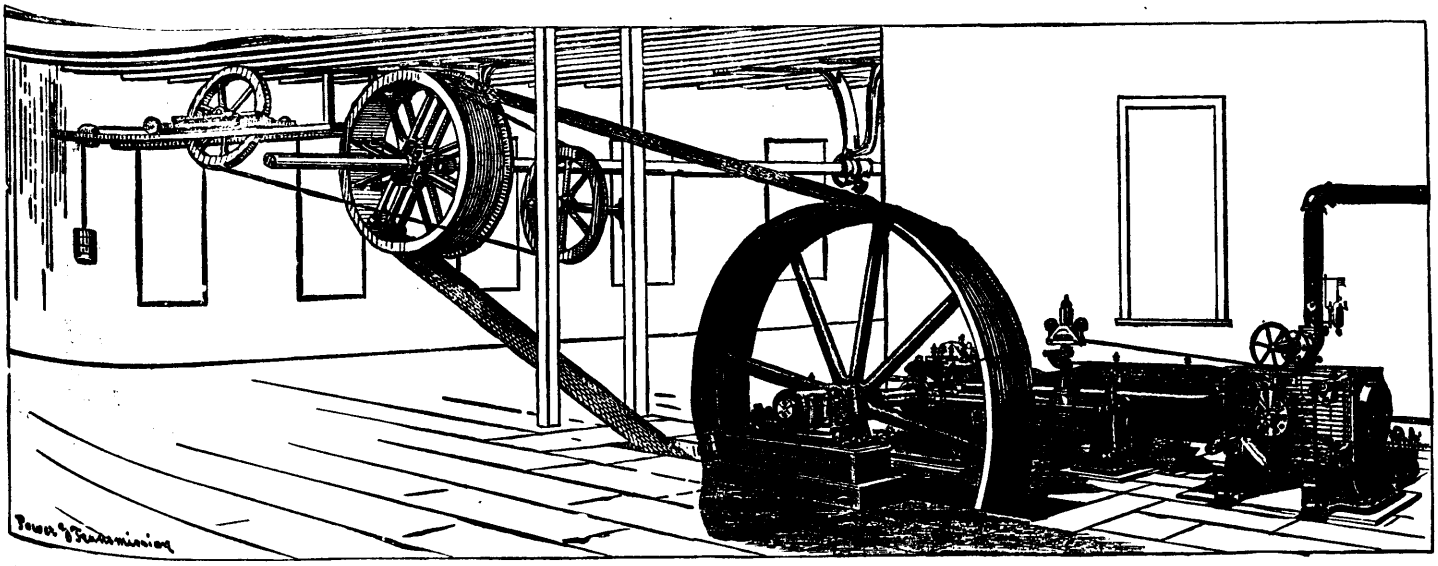
THE B. GREENING WIRE CO. Ltd., Hamilton, Ont.—Perforators of zinc, iron and steel; manufacturers of wire cloth, all grades, wire ropes, bank and office railings, etc.

TIMOTHY GREENING & SONS, Dundas, Ont.—Wire manufacturers and metal perforators, wire cloth, all grades, perforated sheet metals of every description, all kinds of special perforating and indenting done to order.



ROPE TRANSMISSION OF POWER

The above cut shows our patent system of Rope Drive from Engine Wheel to Main Line Shaft. This system is now adopted in many of the leading steam power plants in Canada, and from all of them we have letters of highest praise. The experience in its use has proved

THE ROPE DRIVE

TO BE THE MOST

ECONOMICAL AND POSITIVE

means of transmission of power yet tried.

Where the engine is placed at a distance from the Line Shaft, for insurance regulations, or where it is from necessity situate very close to Line Shaft, a Rope Drive is practically indispensable.

We invite all manufacturers who are contemplating a change in their power plant, to see us and investigate the desirabilty of adopting our system before closing plans.

FOR ALL INFORMATION APPLY TO

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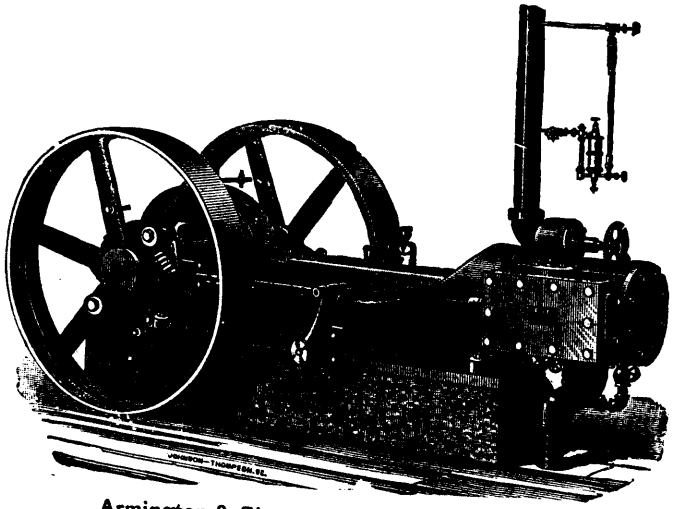
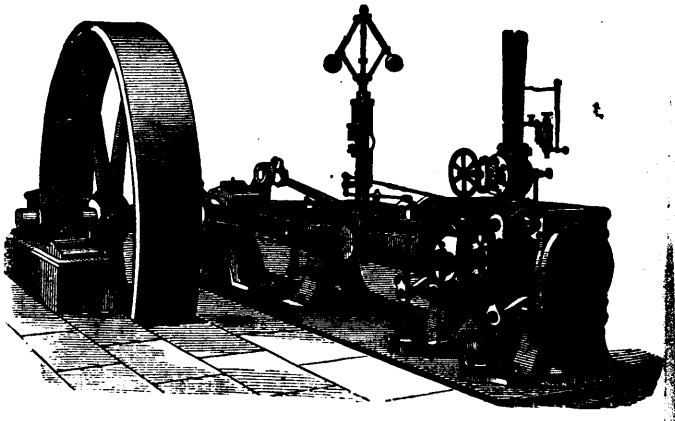
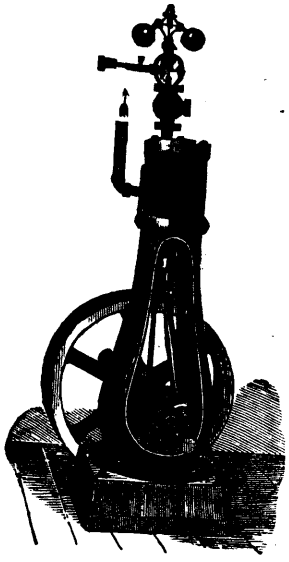
83 King St. West, - Toronto, Ont.



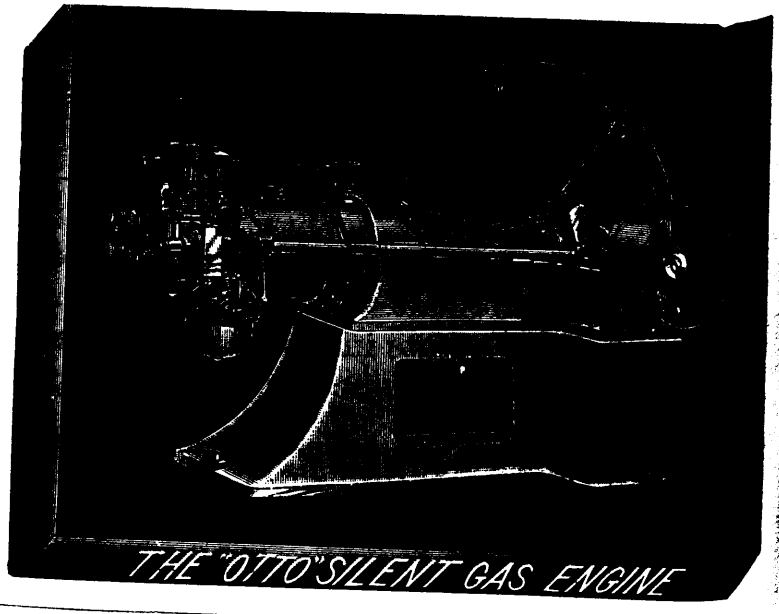
Armington & Sims Electric Light Engines.

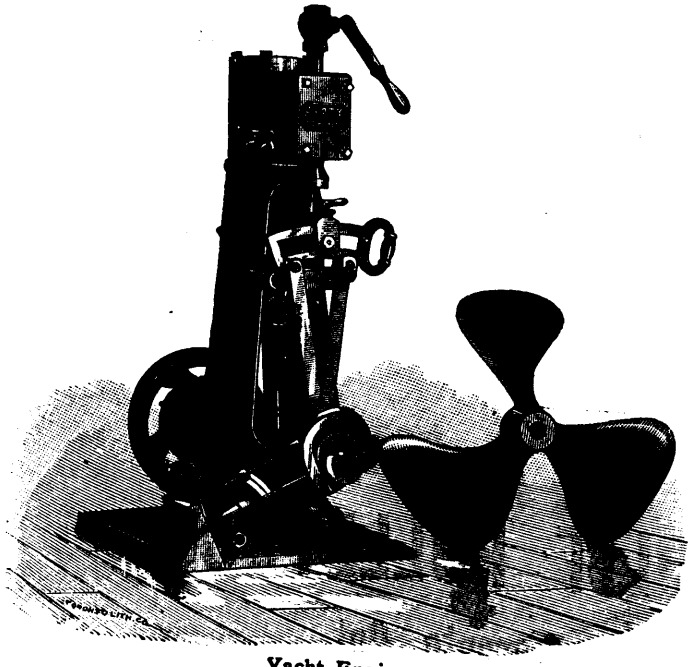


Reynolds-Corliss Engine.



Vertical Engines.

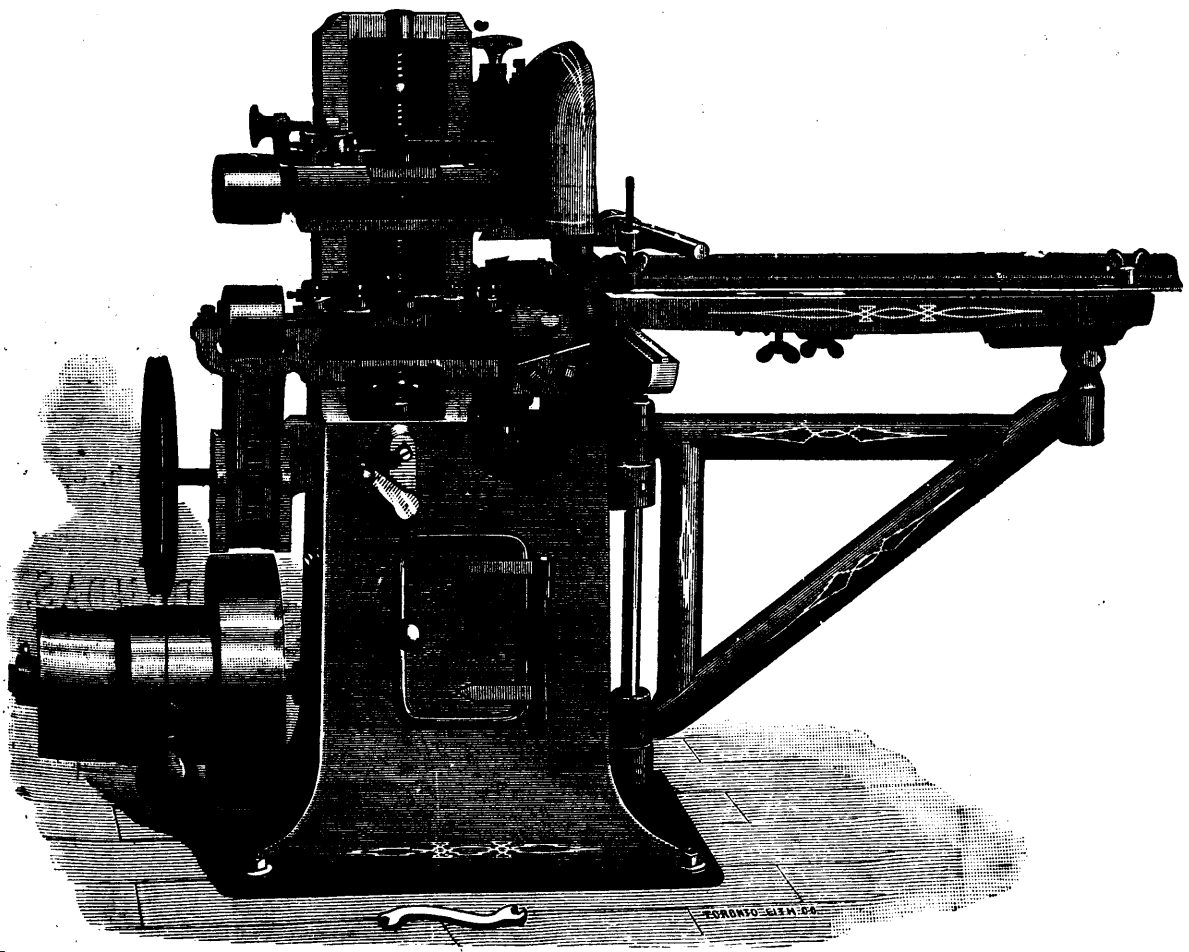




Yacht Engines.

NEW AND IMPROVED

Pedestal Tenon Machine.



This is an entirely new style of Tenon Machine. The frame is cast in one piece, and the working parts stand solidly on a pedestal, avoiding all vibration.

The Cutter and Cope Heads are connected and are moved all together or separately, as required. The Upper Head and Boxes also adjust horizontally to suit shoulder of tenon, the Cope Knives moving with the Heads to prevent re-adjustment.

A special feature in this machine is the Bed, or Carriage, which is at once light and strong. The outer end works on rollers and is moved very easily.

In cutting the tenon the Bed and Carriage move entirely past the Heads and Cutters, the operator having full control of the work. It has also the advantage of leaving the Heads and Cope Knives clear, and of ready access by the operator.

The Carriage is so arranged that it cannot tip over the Slides nor be thrown into the Cutters, and is also supplied with extension bar for long stuff, as in all Tenoning Machines.

This Machine is supplied with single or double Copes, as ordered, and for furniture work it is without Copes, and with an adjustable cut-off Saw.

COWAN & CO.

"Galt Foundry" Engine and Machine Works, GALT, ONTARIO, CANADA.

Corliss and Slide Valve Engines, Boilers, and Wood-Working Machinery, all kinds, New Patterns, Highly Finished.

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