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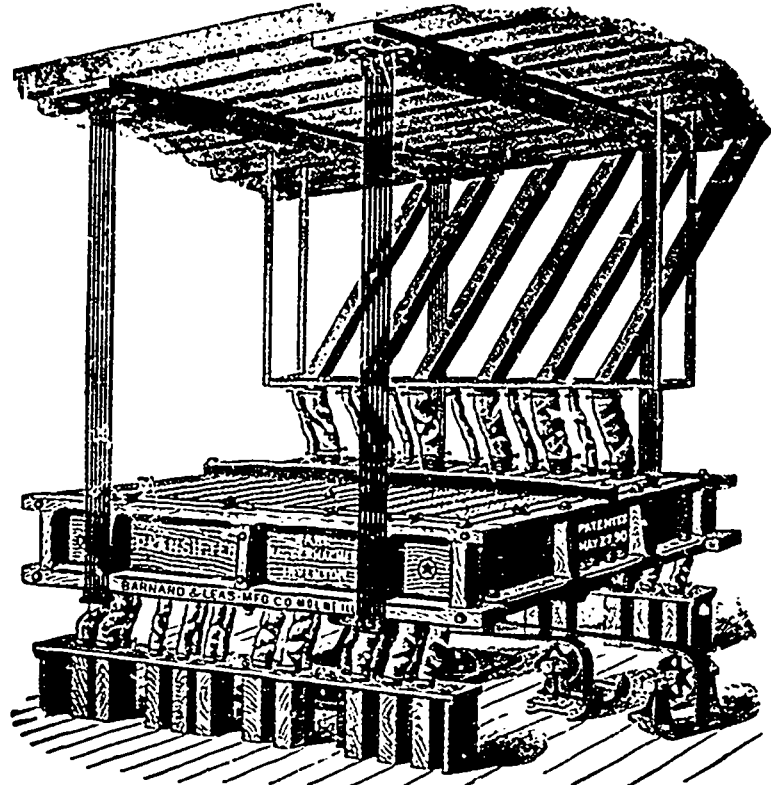
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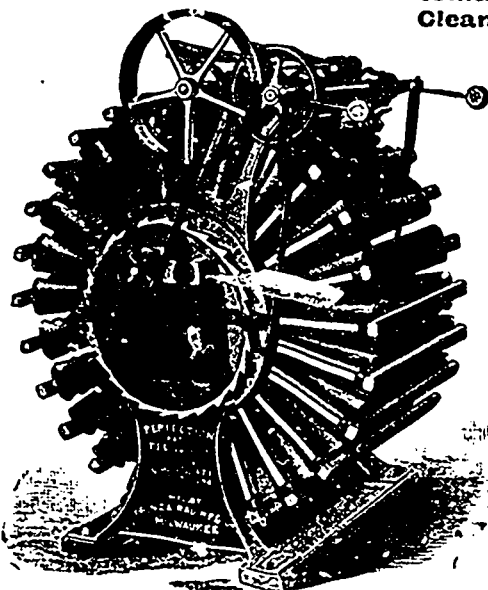
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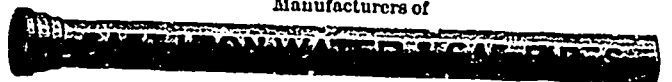
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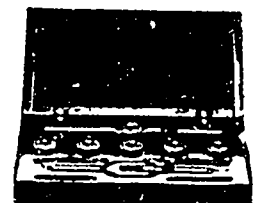
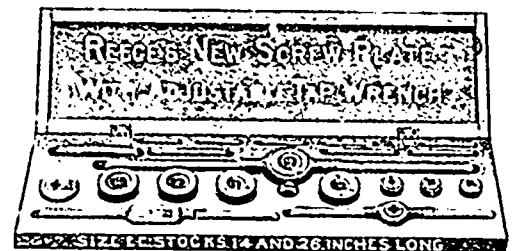
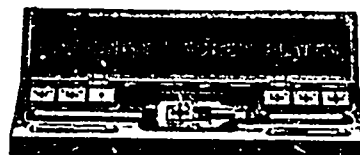
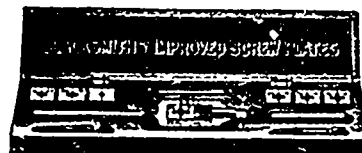
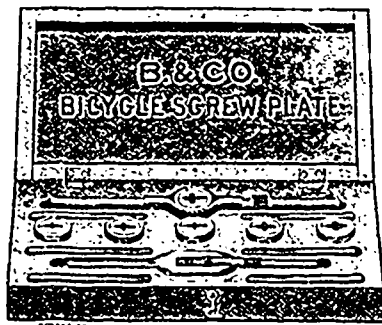
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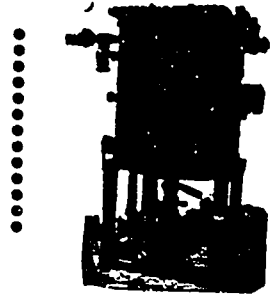
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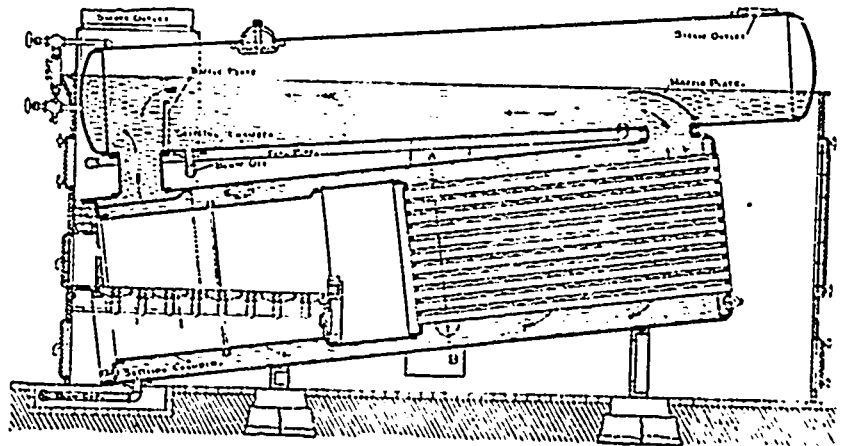
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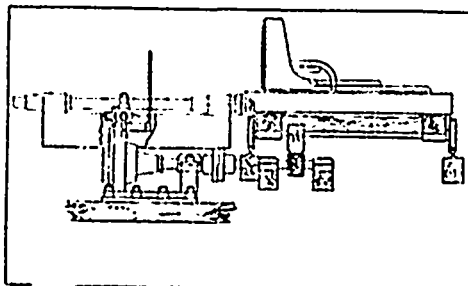
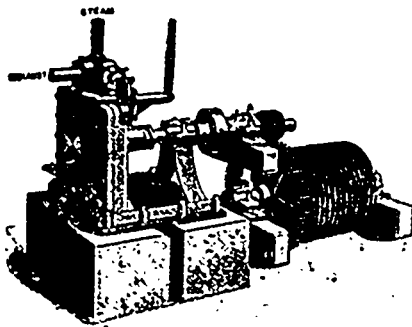
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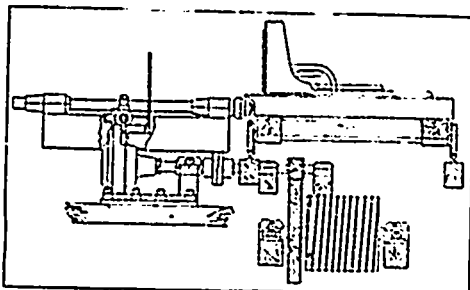
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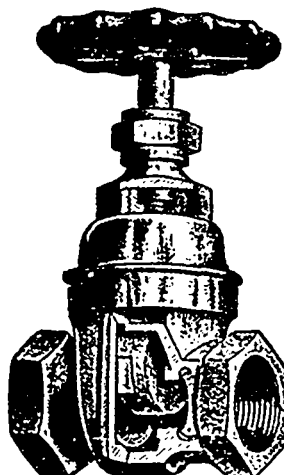
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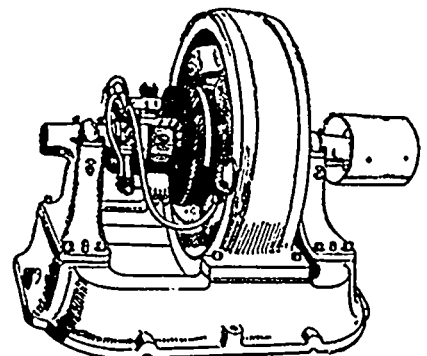
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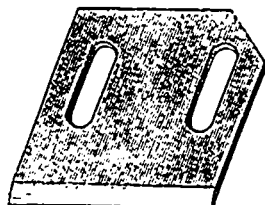
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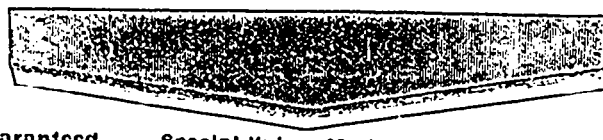
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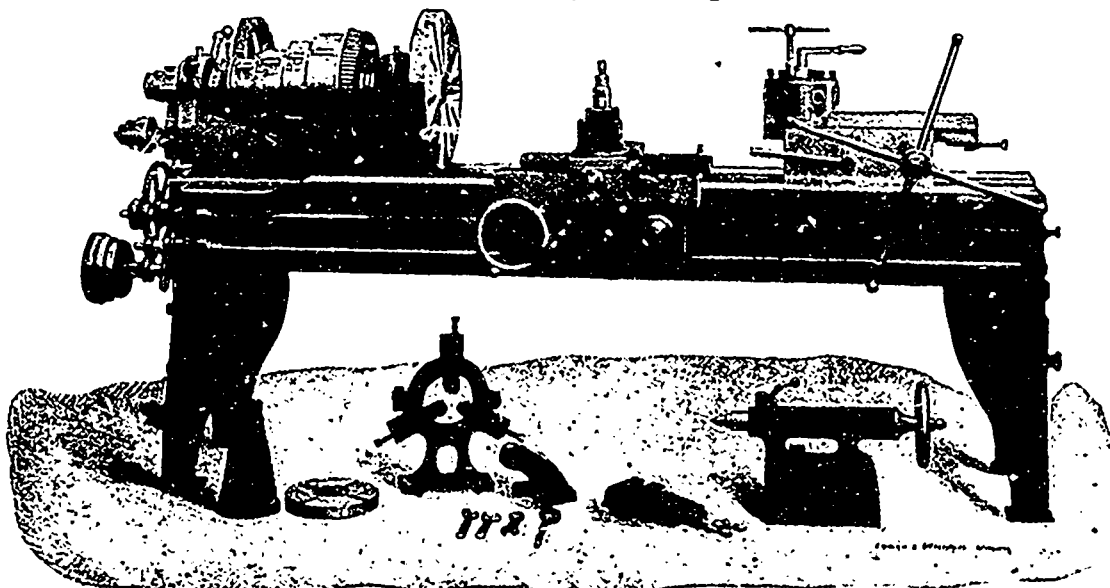
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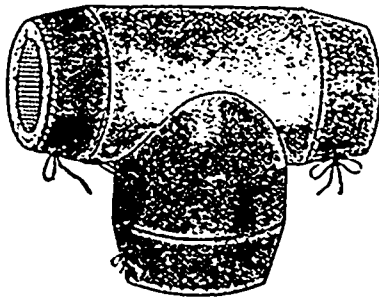
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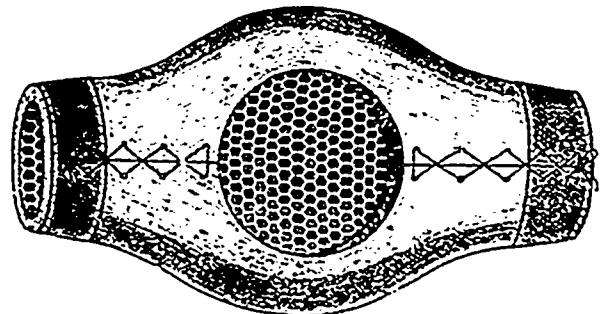
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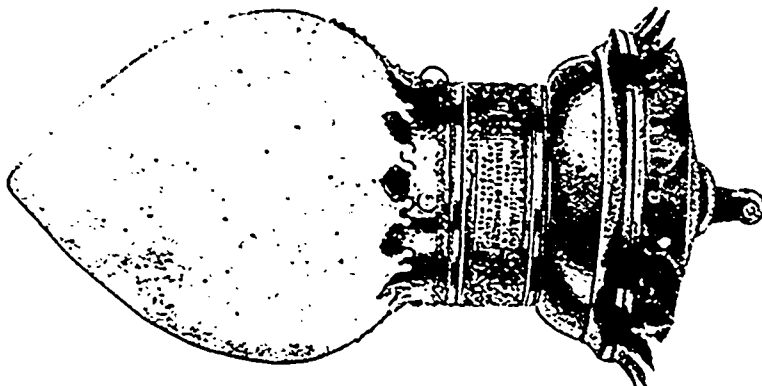
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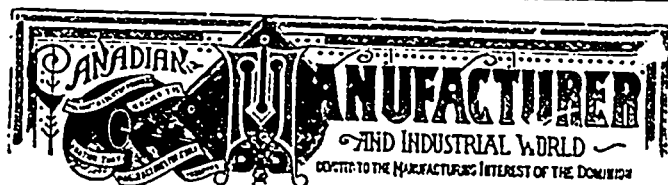
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J. J. CASSIDY,	- - - - -	Editor.
J. C. GARDNER,	- - - - -	Business Manager.

THE WORLD'S WHEAT SUPPLY, 1897-'98.

According to the Corn Trade Year Book for 1896, the average annual production of wheat throughout the world, for the eight years 1888-89 to 1895-96 inclusive, was 2,402,000,000 bushels. For the three consecutive years 1893-94, 1894-95, and 1895-96, the average was 2,515,000,000 bushels, being considerably above the average of the eight years. The crop of 1896-97 was estimated 2,384,000,000 bushels, a little under either of the above averages. The world's wheat consumption increases a little over one per cent. per annum. It is evident that the consumption during 1896-97 necessitated a large draft upon the reserves which had accumulated during the three preceding years of large crops. The world's visible supply of wheat on August 1, 1896, was 124 million bushels; on August 1, 1897, it had declined to 77,500,000 bushels, a decrease of 46,500,000 bushels, and was 33,000,000 bushels less than on August 1st in any of the preceding six years. Further, it was universally held that the reserves, not included in the visible supply, were smaller on August 1, 1897, than they had been at harvest time for many years. The world's wheat crop in 1897 was admittedly very deficient, this deficiency being variously estimated, but the general estimate of the yield was somewhere around 2,250,000 bushels. This was 131,000,000 bushels less than in 1896. Taking the crop of 1896, and adding thereto the drafts which were drawn on visible and other reserves during the crop year, the wheat consumption of the world during 1896-97 was seen to have been fully 2,475,000,000 bushels. The reserves held at harvest of 1897 were almost at a irreducible minimum, so that the wheat crop of that year appeared to be 225,000,000 bushels short of the supply required for the world's consumption in 1897-98.

The great proportion of the deficiency in the season's crop was found in Russia and South-eastern Europe, Austria-Hungary, which had always hitherto proved an exporting country, was this season to become an importer of wheat. Buda Pesth millers were among the first to display excitement. The price of wheat there, which on August 25, 1896, was 24s. 3d. per quarter of 480 lbs. had been rapidly advanced to 43s. 11d. on August 24, 1897, (an advance of

19s. 8d.) as compared with the advance in Liverpool for same dates of 14s. 11d. on the No. 2 red winter. In Paris, the advance over previous year's price on same date was 18s. per quarter.

It soon became evident that the high prices paying for wheat all over the world were bringing out such free deliveries, that for the earlier six months of the season at any rate, there would be an ample supply; and by the middle of September, prices in all markets had declined a little, the greatest decline being at Buda Pesth, which a few weeks previously had shown the greatest excitement. During the seven months from middle of September to nearly middle of April, prices for cash wheat remained very uniform, the averages for each month being much the same; the difference, taking English, French, Belgium, Hungarian, and United States markets being hardly one shilling per quarter. During these months holders of wheat found a constant but slow sale at current prices, while millers and dealers pursued a hand-to-hand policy in purchasing at such high prices. As the season advanced, it became evident that what had been considered an alarming deficiency was more apparent than real. The United States wheat crop, originally estimated by its government at 470,000,000 bushels, was later on estimated by same authority at 530,000,000 bushels, and has proved to be nearly, if not quite, 600,000,000. Russia, from its deficient crop, had exported considerably more wheat than from the larger crop of 1896, the high prices for wheat having evidently curtailed its consumption in that country. The future of the wheat market became entirely dependent upon the outturn of the crops to be harvested, between January 1st and April 1st in South America, British India and Australia. With abundant crops there, the supply would be ample for all requirements and prices would decline; with deficient crops, the supply would be precarious and in the competition for purchasers prices must advance. The reports from Argentina were very conflicting, the opinions as to the extent of the damage sustained from locusts, frosts and wet harvest varying very much. Early estimates generally claimed a surplus for export of 40,000,000 to 50,000,000 bushels, as compared with 59,000,000 to 61,000,000 bushels in calendar year 1894. Later estimates and actual exports appear to indicate that the exports from this season's crop due to arrive in Europe up to July 31st will not exceed 27,000,000 or 28,000,000 bushels, of which 18,000,000 bushels had been shipped up to May 1st. The crop reports from British India have been conflicting: in the Punjab, Northwest provinces, Oudh and Sind, the crop was large; in Bombay, and central provinces, deficient both as to area and yield. Taking the returns as to average and yield for the different provinces, the aggregate yield appears to work out about the same as in the crops of 1894 and 1895, when India exported from former crop 13,200,000 bushels, and from latter crop, 10,800,000 bushels. India's largest wheat exports were in the crop year April 1, 1891 to March 31, 1892, when they reached a little over 56,000,000 bushels from a crop estimated 275,000,000. Any estimate of this season's exports must be largely guess work. On the one hand, India started on April 1st, entirely bare of reserves, after a famine year, 1896-97; on the other hand, the high prices offering for wheat this season must induce growers there to sell freely, and others of the population to substitute the use of other cereals for wheat.

It may be safe to calculate upon an export of 25,000,000 bushels, of which nearly 3,000,000 were shipped in April, and 15,000,000 bushels may be shipped in May, June, and July. With respect to Australia, the wheat crop of the five colonies. South Australia, Victoria, New South Wales, Queensland and New Zealand in 1898 is estimated 32,400,000 bushels as compared with 25,300,000 bushels last year. This season may afford a surplus for export 3,000,000 to 4,000,000 bushels instead of the deficiency last year, when Australia had to import wheat and flour.

When opinions came to settle down as to probable total supply to be obtained from the southern hemisphere, it was found that although much larger than in preceding seasons, it still left the question of needed supply in a very doubtful position. France, Italy, Germany, Belgium and other importing countries on the continent of Europe began to purchase on a much larger scale than formerly. Prices commenced to advance rapidly. This advance was greatly stimulated by the outbreak of war between the United States and Spain, which although not actually effecting the supply of wheat, created that sentiment of apprehension as to possible results which has always in case of war tended to advance the price of this article. In six weeks, the price of July wheat in Liverpool advanced from 7s. per cental to 11s. 8d. on 10th May. On 5th April wheat was 38s. 4d. per quarter, in Paris, on 10th May 55s. 2d. On 5th April, River Platte wheat in Antwerp was 37s. per quarter; on 10th May, 50s. 6d. In New York on 5th April, 33s. 3d.; on 10th May, 61s. 10d. per quarter. In Chicago on 5th April, 31s. 7d.; on 10th May, 58s. 4d. per quarter. These quotations are given from tables of Corn Trade News, and are in sterling money per quarter of 480 lbs. While it must be admitted that a large part of the advance was due to manipulation in United States markets, it is evident that the trade in Europe must have been very sensitive as to necessity for immediate supplies, otherwise such large shipments from the United States would not have been experienced. As might have been expected, there has been a considerable reaction from the extreme high prices, and the prospects for next two months are being discussed with great interest.

As returns of stocks in the different countries of Europe, and of imports for the season are only available up to 1st May, an estimate of future supplies and requirements may be made for the three months, 1st May to 31st July:—

WHEAT SUPPLY AND REQUIREMENTS FOR EUROPE.

1st May to 31st July, 1898.

	Supply. Bushels.
Quantity afloat for Europe, 1st May	41,000,000
Shipments due to arrive before 31st July:—	
From United States and Canada.....	28,000,000
" Argentina and other South American ports..	5,000,000
" India.....	10,000,000
" Russia and the Danube	20,000,000
" other countries, allowed to balance ex-European requirements.....	.....
	105,000,000
Less, included in above quantity afloat, Pacific coast shipments from California and Oregon, shipped since middle of March, not due in Europe until after 31st July.....	7,000,000
Supply due in Europe before 31st July.....	98,000,000

REQUIREMENTS OF FOREIGN WHEAT.

United Kingdom.....	45,000,000
France	30,000,000
Germany, Belgium and Holland..	30,000,000
Italy, Austria and Greece	15,000,000
Spain and Portugal, Switzerland, Denmark, Norway and Sweden.....	5,000,000
	125,000,000

In confirmation of the estimate of requirements, the state of stocks on 1st May must be taken into account. They were:—

	1st May, 1898. Bushels.	1st May, 1897. Bushels.
In United Kingdom	8,900,000	15,800,000
In France, Germany, Belgium, Holland, Italy, Austria, Hungary, Russia and Danubian ports.....	11,664,000	26,164,000
	20,564,000	41,964,000

It is difficult to see where the required supply is to be obtained, especially in view of the fact that good authorities on the position in Russia are of opinion that the exports from that country during June and July will be of a very limited character.

THE CANADIAN PAPER INDUSTRY.

We are indebted to the Minister of Trade and Commerce for a copy of the reports of Mr. Anderson and Mr. Sheppard, who were sent abroad to study the possibilities of Canadian trade in American countries south of the United States, in Japan and other places.

These reports contain some points of interest to paper manufacturers and those engaged in allied industries. In his report on Japan, Mr. Anderson says that paper making machinery is among the articles of machinery imported from Great Britain, Germany and the United States. In printing paper alone, he further says, Japan imported over 9,000,000 pounds last year, while of other descriptions of paper it imported to the value of 800,000 yen, equal to \$400,000 in gold.

The requirements in "news" are met by the cheap, common varieties, running 500 sheets to the ream. The principal sizes needed he describes as follows: 31 by 43, 25 by 37 and 27½ by 39½, the last size being most in demand. Brown wrapping, blue match box, tissue, imitation parchment, ledger and colored poster papers are in demand. Native newspapers being established all over the country and the Japanese being an intelligent people, he looks for a great development of the demand for printing paper. He adds: "With our natural advantages in paper stock, Canadian manufacturers should be able to secure a good share of the trade."

In regard to pulp he makes the following statement: "Paper making is a large industry in Japan, and wood pulp has already been received from Germany and Sweden. If satisfactory freight rates can be obtained, Canada can readily command this trade with the magnificent resources she possesses in this valuable product."

Of the outlook for an export paper trade to the Latin American republics, Mr. Sheppard writes as follows: "Every city is well supplied with newspapers, each nationality having its own daily paper in the large places, and every leading politician having an organ of his own with which to appeal

to the people. That Canada does not do a greater export trade in paper, possessing, as she does, all the articles for its manufacture contiguous to each other, and cheap water transportation as well, is one of the most discouraging features to be met with in any attempt to assist in working up an export trade for the Dominion. To all the countries visited this article is found to be exported in very large quantities, yet Canada does nothing.

The Montreal Star has been interviewing some of our large paper manufacturers regarding the outlook of their industry, and Mr. Hardisty, of the E. B. Eddy Company, who considers that Canada's spruce limits are a resource more valuable than the wealth of the Klondike. As to selling newspaper in England, he thinks we shall have to wait until the supply of spruce in Europe is farther reduced. But he adds: "The supply of spruce in Europe is even now becoming exhausted, and Canada will succeed to the position of paper producer for the world. There is now a demand in England for our ground wood pulp, and it will grow rapidly. Parties here are continually corresponding with English concerns with a view to supplying mechanical or chemical pulp."

Mr. John Macfarlane, manager of the Canada Paper Company, stated that the raising of the American duty on Canadian pulp by the last change in the tariff turned Canadians to the utilizing of their own spruce wood and water-power for supplying the export. Certainly the Canada Paper Company has increased its capacity both for pulp making and for paper making since the passage of the Dingley Act. Mr. Macfarlane also expressed the belief that an export duty would hasten the expansion of the pulp and paper industries in Canada and the volume of exports very greatly. "In a word," says Mr. Macfarlane, "the Americans will not buy our pulp. They strip our forests of pulp wood, and they sell paper made from it so cheaply in England that we get less for the pulp we manufacture."

TRANSCONTINENTAL TRAFFIC.

Speaking of the benefits that the transcontinental railway lines of Canada and the United States are likely to receive growing out of the transfer of the Philippine Islands from Spain to the United States, The New York Financial News says that the Pacific coast States, especially Oregon and Washington, and British Columbia, are attracting great attention, not only in the United States but in Great Britain and other countries across the Atlantic, because of the fact of the great natural wealth of the region in rich soil, a temperate climate, great forests and a wealth of mineral deposits which embraces pretty much all the more useful metals as well as gold and silver. The extent and variety of this wealth make the region the great undeveloped section of North America, and must draw to it a vast population from the older States of the Union and from Europe. The British lines to Japan and China, and the United States trans-Pacific lines have been opening up new and very important markets in Asia, and they are markets which will grow rapidly and bring about vast interchange of commodities. These forces in themselves are sufficient to give to these transcontinental lines a greatly increased passenger traffic and will build up a good local traffic on large portions of the lines.

But, says our contemporary, a new feature has been added to the situation, the magnitude of which it would be hard to estimate, but it will be great, and that is, the capture of the Philippines.

It is difficult to see any way in which the United States can safely get rid of the Philippines. They cannot, under any circumstances be turned over to Spain. If left to the natives they will become a region of intrigue, disorder and piracy, brought about by underhand attempts of European nations to get virtual possession without responsibility, because no nation could undertake to annex them without probably bringing on war. The United States will have the only title recognized by international law and indisputable—the title of acquisition by conquest in war. And because of this that country will probably be compelled to hold them for a long time, certainly until it is demonstrated that they can have a stable government of their own, the sanctity of which will be recognized by the great commercial nations of the world.

The trade of the Philippines is a great one, and it will grow. It is divided up between commercial nations generally, but with the Pacific coast States and British Columbia, there will naturally grow up a very large commerce and all this is calculated to enlarge and to greatly vary the development of them. The transcontinental lines are coming in for a great and a long-pull boom.

AS TO BONUSING.

Speaking of the tendency of manufacturers to gravitate their works towards towns that offer them bonuses for going there, and away from towns that do not offer inducements for staying, The Monetary Times alludes to the appeal of the Dominion Cotton Mills Company, who have a large factory at Kingston, Ont., to the authorities of that city to bonus them to the extent of \$50,000 as an inducement to remain, with the alternative of the abandonment of that factory, and the erection of another in another place where greater inducements are offered.

It is said that a similar alternative has been offered by this company to the city of Brantford, where they have another factory, the explanation in both cases being that the inducement offered at another location, in this instance in the Province of Quebec, being large water power offered on exceedingly reasonable terms.

In our opinion it is not good policy for municipalities to offer extraordinary inducements to manufacturers to abandon another location where they may have been established for a long time, or to offer such inducements to retain an industry that seems inclined to migrate; nor is it good policy for manufacturers to engage in any such transactions; and the principle is, without doubt, contrary to the ethics of what is known as the National Policy. In this respect the principle of the National Policy is to encourage the establishment in the country of enterprises that otherwise would not come to the country, the inducement being the benefit the enterprise would derive by reason of the protection afforded by the tariff.

It might be argued that the inducement offered by the tariff for the establishment of an industry in the country is identical with the inducement offered by a municipality for

the establishment of an industry already existing in another municipality. This is not our view. The National Policy induces the establishment of industries that do not exist in the country, or the multiplying of such industries, perhaps including the transference of them from another country; and this means that whatever industries are brought into existence in this country are a positive and distinct acquisition to it, and, wherever they may be located, good to the whole country, and no evil whatever to any particular locality of the country is the result.

Not so in the other instance where an industry is already established, and where another locality is endeavoring to acquire it. It is of no benefit whatever to rob Peter to pay Paul, if both are of the same family, and it cannot be of any benefit to Canada as a whole that a long-established industry in one Canadian locality should remove its scene of operations to another Canadian locality.

Reverting to the incident alluded to, if the Dominion Cotton Mills Company find that they have a factory at Kingston equipped with old and obsolete machinery, and another at Brantford similarly equipped, they are confronted with the fact that to operate these or any other factories with the success they should expect, they must discard the obsolete machinery and introduce that which is modern and entirely up-to-date. If it is claimed that the bonus they ask from the towns in question is required only to enable the substitution of new machinery, then the other question presents itself, whether the peculiar condition surrounding these localities render it possible to carry on operations there, even with the improved machinery, as successfully as they might be conducted elsewhere. Up-to-date machinery is an essential element in conducting an enterprise successfully, but it is not the only element. Other elements are to be considered, such as cost of power, cost of labor, railway facilities, etc.; and no amount of bonusing can ever compensate a manufacturer, even if his factory is up-to-date in all particulars, if he is handicapped in these other directions.

Without doubt the tendency not only of manufacturing, but many other industries is towards concentration; and this concentration is naturally and properly to localities that offer the greatest facilities for business, and it is a waste of money and a delusion to endeavor to restrain an industrial concern from leaving an undesirable location and going to one possessing the maximum of advantages.

CHEAP LABOR AND THE TYRANNY OF LABOR.

One of the reasons advanced for the proposed abandonment by the Dominion Cotton Mills Company of their Kingston and Brantford factories, and the concentration of their energies at another place, is because cheaper power is available there; another reason given being cheaper labor. One of the most important questions a manufacturer has to consider is the cost of power, and the selection of a location where power can be obtained at a minimum cost is often decided by the answer to the question. Unlike the question of power, that of labor may not be so easily decided; and as far as economy is concerned, it does not follow, as a matter of course, that it is cheaper to employ labor that costs but a dollar a day in preference to that which costs a dollar and fifty cents. It is not so much the physical strength of the employe that regulates the

demand for his services as the intelligence and technical knowledge, the skill and ability that he is possessed of, and which he can bring to bear in the performance of the duties required of him. The advantages of cheap power would not count for much in the absence of skilled labor to use it; and it is a question whether there should be an abandonment of the hundreds of highly skilled and well-trained workers at Kingston and Brantford for the unskilled and unintelligent workers even at greatly reduced wages, that must of necessity be used in another place. Of course it is a question that the company alluded to must decide, but it forces itself upon the general attention, that possibly if the company were to equip their Kingston and Brantford mills with the best and most approved machinery, employing the well educated, skilled and intelligent workers they have for so many years had in their employ there, it would be more to their advantage than removing to another place where so called cheaper labor could be had. Would the deprivation of skilled labor be fully compensated for by cheaper power?

There is a still unsettled dispute here in Toronto between the J. D. King Company and their employes regarding wages and the employment of non-union labor, the possible, we might say the probable result, of which will be to drive the company to another locality, where so-called cheaper labor may be had, and where these unfortunate labor troubles are not of such frequent occurrence. If the J. D. King Company are driven out of Toronto in this manner, it will only be a repetition frequently repeated, of such transactions. This driving business away from Toronto has come to be exceedingly monotonous, and indicates a condition that ought not to prevail. This journal has never objected to the undoubted right of the working classes to form and maintain their organizations for the promotion of their own interests, but it has combatted and will continue to combat the efforts of organized labor to bring undue pressure to bear upon employers of labor in the management of their business. Undoubtedly, labor is entitled to much consideration, but surely capital should be entitled to much consideration also. What boots it, then, if labor, disregarding the rights of capital to control its affairs, drives capital away and deprives labor of its employment?

It is a remarkable condition observable here in Canada, that every effort to encourage the influx and investment of capital in manufacturing enterprises is looked upon with distrust and suspicion, and antagonized upon all occasions; and this feeling has been carried out to the extent of most unjust and harsh laws regarding combinations in trade, even going so far as to place it in the power of an official of the Government to absolutely remove the duty upon certain articles of merchandise whenever he shall imagine that two or more manufacturers of such articles have combined to raise or to maintain prices. On the other hand, laws are constantly being enacted exclusively for the so-called protection of the laboring classes — laws that do not always protect, but which, frequently, operate to the detriment of employers of labor. We raise no objection to such laws, but to the existence of them is due much of the spirit of antagonism displayed to manufacturers by their employes. The argument of the J. D. King Company is, that even if they are forced to remove their factory to another place, and leave behind them the competent and skilled workers they employe here, and have to put up with the inferior labor

they would have to employ elsewhere, it would be better for their interests than to have to submit to the constant annoyance now inflicted upon them. Such an event, in the view of labor, might be considered a victory. It would undoubtedly be a vexation to the employer, but what earthly benefit would accrue from it to the employe?

EDITORIAL NOTES.

Large quantities of English, German and Belgium cement are now being imported into Canada, but why this should be we are unable to tell. It is well known that as good cement as can be produced in the world is made in Canada, as is testified to in the masonry work of the old Welland Canal, which after fifty years service is as sound and perfect to-day as when first used, and where is there a better or more enduring specimen of masonry than the Grand Trunk tunnel under the Detroit river, constructed with Canadian cement?

The proposed Montreal, Ottawa and Georgian Bay Ship Canal will, if constructed, shorten the distance between Chicago and Liverpool about 1,100 miles. This would make several days reduction in the length of a voyage, and give considerable advantage to the export trade of the Windy City. It is said that \$20,000,000 are at the disposal of the promoters of this short cut from the lakes to the sea. A subsidy of \$300,000 per annum for twenty years is proposed, the payment not to be made until five years after the completion of the waterway. Whether this proposed scheme will be carried out is of course a matter of conjecture, but it certainly suggests a commercial advantage not only to Canada and tributary territory in the United States, that is not likely to be overlooked some time in the future.—The Age of Steel.

According to the Ottawa Citizen important evidence regarding the practicability and probability of constructing this canal was given before the Senate Committee a few days ago by Mr. James Meldrum, M. Inst., C.E., of Great Britain, connected with the firm of Messrs. S. Pearson & Son, of London, who are probably the largest contractors of public works in the world. This firm have just completed the celebrated Blackwall tunnel in London; a Mexican drainage canal, twenty-five miles long, and who are now constructing Dover Harbor for the British Admiralty, and Vera Cruz harbor for the Mexican government; besides other important public works elsewhere, having works on hand to the extent of over ten millions sterling. Mr. Meldrum considered the Georgian Bay Canal scheme perfectly feasible and said his company would do the work and assist in raising the capital if the Government would guarantee interest on the bonds for twenty years. He thought the work could be completed in three or four years, as it presents no engineering difficulties. Mr. Ormond Higman, an electrical expert of the Inland Revenue Department, gave testimony as to the electrical advantages which the route would afford in the way of water power. He considered them more important than those of Niagara Falls.

The annual miles-ton report of the canals at Sault Ste. Marie, Michigan and Ontario, for 1897, shows an enormous increase in the amount and value of freight which passed to and from Lake Superior last year, over any previous season. In 1896 the value of all articles was given at \$159,575,129.42. In 1897 it amounted to the stupendous sum of \$218,235,927.77, an increase of \$58,660,798.34. With an increase of 2,743,694 net tons, or 11 per cent. in freight carried in comparison with the season of 1896, the rate per mile-ton was materially lowered, it being .83 mill in 1897, while it was .99 mill in 1896.—Marine Record.

Speaking of a very important event in Canadian history the Stouffville, Ont., Herald says:—

Forty-five years ago Monday, May 16th, the first railway train ever seen in Ontario started on its initial journey from the city of Toronto to Aurora. The train consisted of the locomotive Lady Elgin, which had been built Toronto by James Good, the baggage and smoking car, flat roofed passenger coach (the entire passenger rolling stock of the province) not much larger than a modern trolley car but built substantially with long sills of Norway pine with sides of white Canadian timber, trimmed and decorated within with ash, cherry and chestnut, and containing cushioned seats, and two box cars completed the train. Carlos McColl, a native of New York State, was the engine driver, Joseph Lopez, a Spaniard, was fireman; George Wallace was baggage-man; Tom Boucher, John Meek, Tom Wilmot and John Mosier, brakemen. Mr. John Harvie, Ontario's first conductor, had charge of the train. He was then only twenty years old but had gained some knowledge of railroading in the United States. It fell to his lot to sell the first railway ticket ever sold in the province. It was purchased by a retired shoemaker who was coming from Toronto to Aurora, but whose name is now forgotten. There were some fifty passengers on this historic trip, among them were Hon. J. C. Morrison, who afterwards was appointed a judge but who at this time was president of the Ontario, Simcoe and Huron Railway Company, the builders of the line; Superintendent Alfred Brunel, William Hackett, mechanical superintendent and many of the directors.

Manitoulin Island, Ont., has a population of 15,000, and according to The Expositor they are doing exceedingly well. The island is well wooded with cedar and hardwood. It is well suited for stock-raising. Large areas of pasture land covered with the richest grass lie in open commons awaiting a purchaser. Ranches of from 1,000 to 3,000 acres are fenced and stocked with cattle and sheep. In the winter beef, pork and fowl are teamed across the ice to the lumber camps and elsewhere. The wool-growing industry is increasing, and at Little Current and Shenandoah alone some 30,000 pounds of wool were marketed and shipped. Among the exports from the island last year were 6,645,301 feet of lumber, 345,657 ties, 2,306,000 shingles, 29,500 dressed hogs, 60,090 pounds of wool, 17,000 pounds of hides, 7,272 sheep, 2,999 cattle; eggs, butter, berries and fish.

Charles H. Cramp is back from Russia with contracts for a battle ship of 12,500 tons, with a working speed of 18 knots and a steaming radius sufficient to take her from St. Petersburg to Port Arthur in China without recoaling. And a 6,000 ton cruiser with a 23 knot gait. The war, and preparation for more ships by our own Government, still leaves room for foreign construction. But the orders are the beginning of foreign appreciation of the fact that, aside from having facilities for making iron and steel cheaper than elsewhere in the world, we are getting in shape to work it up in every form known to war or peace.—New York Financial News.

Canada has gone about the work of seeking markets for her products in business-like fashion. Commissioners have recently visited Japan and various South American countries, and the reports of their investigations have just been made public. It is quite apparent that these commissioners have been fully alive to the possibilities of an export trade in paper, for their reports indicate that Canada has a great opportunity in this line. We may have to face Canada as a competitor in every part of the world before many years.—The Paper Mill.

The appeal of the Dominion Cotton Mills Company to the municipality of Kingston, where one of their mills is situated, for a bonus of \$50,000, as a condition of their replacing by new machinery a plant that has been eighteen years in use and has become unprofitable to run, and to increase the force of hands employed from two hundred to three hundred and fifty, comes as a surprise to the Kingston public. The alternative is to pull up stakes and go to the Province of Quebec, where valuable water power is available on reasonable terms. A somewhat similar proposal was made by the company to the town of Brantford, where they own another mill which they do not operate. If bonuses are not granted the company threatens to sell "most of the mills for what they will bring and concentrate the business at one point."—Monetary Times.

At a recent meeting of the Railway Committee of the House of Commons a bill to authorize the construction of a canal from the St. Lawrence to Lake Champlain met considerable opposition on the ground that such a matter should be a national work; a private charter might get under foreign control. Finally, the bill was recommended by forty-four to twenty-nine, but with a proviso that it should go into force only by special proclamation after the Government looked into the matter. This opposition to the bill is well founded. Such a canal would be of great benefit to all the people of Canada and should not be allowed to come into the control of any corporation. If it is worth building it should be built by the Government. So also regarding the canal between Ottawa and Georgian Bay, that has, unfortunately, fallen into the hands of speculators.

Quite a number of American sawmill men who have been obtaining their logs from Canada, and who now find themselves hit by the requirement of the Ontario Government that the logs shall be sawn in this country, held a meeting in Detroit a few days ago to consider what steps they will take to get their logs out of Canada. Last winter the legislature of Ontario passed a law providing that after the close of the current season all logs cut in the province should be manufactured in the province. The Delta Lumber Company, of Detroit, is one of the companies hit by the law, and Mr. John T. Rich, the trustee of the company, attended the conference and was active in the discussion. It was a secret affair, and Mr. Rich refused to give out even the names of the others in attendance, or the companies represented. "Whatever we do," Mr. Rich said, "will have to be done in Canada. The conference was for the purpose of considering plans for getting relief at the hands of the Canadian Government, and it would not be advisable for our interests to have much said about the discussion in the papers for Canadians to read. They are very sensitive on the subject just at this time." It is known, however, that these lumbermen intend to wage a campaign for relief either by contesting the law in the courts or by working to secure remedial legislation.

During the past year a company has been making a series of experiments at Los Angeles, Cal., using the force of the waves of the ocean to generate electric power for light and other purposes. A wharf made of metal was built extending 350 feet out into the ocean, and at the end was placed the generating plant, which included three floats connected with vertical, hydraulic compressors, which in turn are connected

with a storage-pressure tank. The movement of the waves alternately raises and lowers the floats, pumping fresh water from a reservoir into the storage-pressure tank, where the water is subjected to sufficient pressure to drive it out with great force through a water-wheel. This water motor operates the dynamo, and the water which has passed from the motor flows into the reservoir to be used again. The machinery is almost self-governing, as in case of storm or heavy sea the accumulated pressure in the storage tank exerts itself against the pump pistons and offsets the action of the floats. A thorough test of the apparatus was made during the winter, when all kinds of weather were experienced, and the plant is now to be enlarged to a capacity of 200 horse power.

LITERARY NOTES.

Outing for June is a delightful number, filled with the breezy freshness of fair June days. The bicycle is very prominent, and yachting has more than the usual space. All other departments are generously treated, and the illustrations are up to the usual high standard.

As its opening feature the June Ladies' Home Journal presents a series of characteristic anecdotes of Mrs. Cleveland, illustrated with photographs made for the article. With the concluding letters of the series giving "The Inner Experiences of a Cabinet Member's Wife" in Washington the authorship is disclosed and much curious interest gratified. "The Graves in the Old Breast-work" narrates an Alabama Memorial Day incident. Four pages are devoted to women's gowns, and there are articles on needle-work, and nearly every feature of home life is touched upon. The Curtis Publishing Company, Philadelphia.

Vick's Magazine for June is very largely devoted to the rose, and those seeking the most correct and latest information in relation to roses and rose culture should read this number. The best of the new varieties are reviewed and some of them illustrated. There is also an illustrated article entitled "How to Train the Ramblers," showing various ways of training climbing roses. Other garden subjects, and appropriate poetry, enrich its pages. Vick Publishing Co., Rochester, N. Y.

In these days of close competition there is nothing so important to the manufacturer, no matter in what line engaged, as to know the actual cost of the goods he is producing. Modern manufacturing is, for the most part, a complicated undertaking, and the costs of production are correspondingly intricate. Nothing short of an adequate plan, thoroughly enforced, will give the manufacturer the information that he requires—namely, the exact cost of each lot of goods turned out, labor, materials, general expense and everything else included. Few accountants, unless specially trained to the work, have the ability to so organize a set of factory books as to show costs in proper detail as well as in the aggregate. The problems to be met and solved are different from those of ordinary bookkeeping. For the benefit of manufacturers and of bookkeepers employed in manufacturing lines, a series of articles treating upon "Cost Accounting in Manufactures" is being published in *Accountants*, "The Office Magazine," (260 West Broadway, New York). These articles proceed from the pens of eminent accountants and practical business men, and have been written to afford manufacturers and their bookkeepers the very help that they require. The magazine goes so far as to promise answers to the questions of its subscribers and even to solicit problems for solution. The first of the series appeared in the April number of the magazine, and the second in the May issue. These articles define and explain principles, and abound in examples of practical application. They are fully illustrated. The other articles of the series will be no less valuable. *Accountants* is published at \$1 a year.

Richard Harding Davis, who was present at the bombardments of Matanzas and near Cabanas Harbor, and at the most important prize captures, is Scribner's Magazine's chief war contributor, being under agreement to write for no other magazine upon this subject. His first article "The First Shot of the War" will appear in the July number, to be followed by "The First Bombardment" and a rapid succession of other articles, all to be written from his personal observation on the flagship and despatch boats, and later accompanying the land forces. As is well known, Mr. Davis is also war correspondent for the London Times. The articles are to be illustrated by photographs.

CANADIAN MANUFACTURERS' ASSOCIATION.

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*The Executive Committee meet on the
 Second Tuesday of each month.*

OFFICES
McKinnon Building,
TORONTO.
 Tel. 1274.

J. J. CASSIDEY, - SECRETARY.

THE OBJECTS OF THIS ASSOCIATION ARE:

To secure by all legitimate means the aid of both Public Opinion and Governmental Policy in favor of the development of home industry and the promotion of Canadian manufacturing enterprises.

To enable those in all branches of manufacturing enterprises to act in concert, as a united body, whenever action in behalf of any particular industry, or of the whole body, is necessary.

To maintain Canada for Canadians.

Any person directly interested in any Canadian manufacturing industry is eligible for membership.

CANADIAN INDUSTRIAL LEAGUE,
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R. W. ELLIOT. **GEORGE BOOTH.**
W. K. McNAUGHT. **A. E. KEMP.**
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WHAT THE ASSOCIATION ADVOCATES.

The following resolutions were passed at the Twenty-Third Annual Meeting of the Canadian Manufacturers' Association held in Toronto, April 12, 1898.

THE NATIONAL POLICY.

Whereas, from its geographical position and commercial environment the prosperity of the Dominion of Canada depends largely upon the maintenance of a fiscal policy which will foster our agricultural, mining, commercial and industrial enterprises, and which will make the interests of Canadians paramount to those of foreigners, by preventing this from being made a slaughter market for the surplus products of foreign countries; and Whereas, the observance of such policy gives confidence and stability to capital and enables our artisans to obtain wages far in excess of those which prevail in European countries, and which keeps them in the country by the payment of wages which enable them to live in comfort; and which provides a home market for many lines of agricultural products, which cannot be exported; a policy which also attracts foreign capital and inaugurates industries by inducing those who desire to participate in the benefits of our market to manufacture their products here; a policy which encourages and develops inter-provincial trade, and produces amongst the people a feeling of security, of national pride, and commercial and industrial independence, highly conducive to the welfare of the whole people, without which we can never attain to the zenith of national prosperity; and Whereas, the revival of the mining industry in this country has given an impetus, not only to agricultural, but to many other industrial enterprises, as nearly everything used or consumed in the mining regions has to be brought from outside sources;

Therefore, be it resolved, that this Association desire to again place itself upon record, that in its opinion the prosperity of this country imperatively demands the continuance of a fixed and definite policy of protection, from the general principle of which there shall be no deviation, in order that our agricultural, mining, commercial and other industrial enterprises may participate in its general prosperity.

PREFERENTIAL TRADE.

While heartily commending the Dominion Government for their desire to confine the scope of the Preferential Tariff exclusively to the Mother Country and the British Colonies, this Association is strongly of the opinion:

1. That our Preferential Tariff should not be extended to any colony, unless such colony accords to us a tariff preference in their market, equivalent to the discrimination allowed by us in its favor.
2. Where our minimum Preferential Tariff is applied, the minimum rate of duty thereunder should be high enough to protect existing Canadian industries from the competition of countries having lower priced labor, cheaper raw materials and capital, and whose long-established industries give them great advantages over those of Canada.
3. That although the minimum Preferential Tariff has already been extended to Great Britain without any corresponding preference to Canada, we would strongly impress upon the Dominion Government the necessity of obtaining reciprocal concessions from the Mother Country as speedily as possible.

CANADA'S COMMERCIAL AGENTS.

Following is the correct official list of Canada's Commercial Agents in Great Britain, British Possessions and foreign countries.

- J. S. Larko,** Sydney, N.S.W., agent for Australasia.
- G. Eustaco Burko,** Kingston, Jamaica, agent for Jamaica.
- Robert Bryson,** St. John, Antigua, agent for Antigua, Montserrat and Dominica.
- S. L. Horsford,** St. Kitts, agent for St. Kitts, Nevis and Virgin Islands.
- Edgar Tripp,** Port of Spain, Trinidad, agent for Trinidad and Tobago.
- C. E. Sontum,** Christiania, Norway, agent for Sweden and Denmark.
- D. M. Ronnic,** Buenos Ayres, Argentine Republic, agent for Argentine Republic and Uruguay.

In addition to their other duties, the undermentioned will answer inquiries relative to trade matters, and their services are available in furthering the interests of Canadian traders.

- J. G. Colmer,** 17 Victoria Street, London, S.W., England.
- Thomas Moffat,** 16 Church Street; Cape Town, South Africa.
- G. H. Mitchell,** 15 Water Street, Liverpool, England.
- H. M. Murray,** 10 St. Enoch Square, Glasgow, Scotland.
- Harrison Watson,** Curator Imperial Institute, London, England.

SULPHUR IN CANADA.

A diplomatic protest has been entered by Spain against the action of Canadian merchants in supplying sulphur to customers of the United States since the opening of the war. Senor Bonilla, the Spanish Consul-General at Montreal, moved in the matter, and the Spanish Ambassador at the court of St. James, in London, pressed it upon the attention of the British authorities, who are answerable for Canada's conduct in international affairs. Sulphur, the Ambassador points out, is contraband of war, and on the list of articles whose sale to combatants is prohibited by Great Britain's declaration of neutrality. No action has been taken, so far as is yet known, by the British Government, but it is expected to defer to the Spanish protest, and warn the Canadian Government to keep an eye on the sulphur trade.

A Canadian correspondent of the New York Paper Mill, alludes to the fact that sulphur is admitted into Canada

free of duty, and this circumstance makes it exceedingly convenient for Americans to draw their supplies through this country. A Canadian importer can bring in a shipment directly from Sicily, or by way of London, and the customs officials have no means of finding out whether he intends to dispose of it to Canadian or to American customers. He may be nothing more than an agent or a broker, acting at Montreal for an American client. As there is no duty to be paid on entering Canada, it is not necessary to enter the goods for exportation to the United States in bond. Of late the demand from the United States for sulphur has taken a very sharp turn toward Canada. Bellhouse, Dillon & Co., of Montreal, bought up all that was obtainable on the Montreal market, and sold it in the United States. A member of the same firm says that 10,000 tons are en route to Montreal in British bottoms, and that all of it is to be forwarded to American buyers. It is assumed, of course, that this sulphur is intended, as the American buyers represent, for the manufacture of sulphite fibre, though there are some who seem to think it more delightfully piquant to imagine that it is to be used in making gunpowder.

The Royal Electric Company has declared a dividend for the quarter ending 31st May instant, at the rate of eight per cent per annum.

The Dominion Cotton Mills Company, have declared a dividend of 1½ per cent. for the current quarter, being at the rate of six per cent per annum.

Great Britain is called a free trade nation, yet out of her revenue of £108,000,000, she raises £22,000,000 by customs duties.—Hamilton Spectator.

A few days ago a shipment of bacon, valued at \$42,000, left Toronto for export. A train load of bicycles and agricultural implements also left the same day.

Large quantities of rock elm and other hard woods are being shipped from Owen Sound, Ont., to Great Britain and foreign countries. The supply is large and the quality first rate.

Trouble nearly everywhere but in Canada. In no part of the Dominion is there any marked friction among the people, while the season's promise is that of unsurpassed abundance. As regards all material reckonings, Canada should at present be the happiest land under the sun.—London Free Press.

The dealers in vehicles and agricultural implements continue to report a good business outlook. The season's trade in vehicles has been large, and at times it has been difficult to keep up stocks. The manufacturers are enjoying a large trade and have been more or less behind in their orders all the season in these lines.

There are now only two cities in the world whose exports of pig iron exceed those of Birmingham, Ala. These are Middleboro, England, and Glasgow, Scotland. The exports of pig iron from Birmingham for the last year have averaged 16,333 tons a month. Basic pig iron is being shipped to steel works in England, Germany and Italy.

A movement has been started by the American Wool Growers' Association to secure the passage of a law requiring that all shoddy goods shall have a government stamp so that the purchaser will know the character of the goods he is buying. The president of the association favors the movement, owing, it is said, to the extensive use of shoddy in the manufacture of woollens.

A few days ago the Beaver Line steamer Lake Huron took out of the port of Montreal a general cargo for Liverpool, including 61,000 bushels of grain, 30 cars box meats; 300 standards of lumber, 17 cars of flour, 428 head of cattle and 20 horses. The steamer Montezuma of the Dominion Line took out a full general cargo, including 230,000 bushels of grain, 500 head of cattle and 150 horses.

The H. A. Lozier Mfg. Company of Toledo, Ohio, manufacturers of bicycles, which last year employed girls to displace men in operating machining tools in making bicycle parts, have agreed with the American Federation of Labor to employ no girls in their factories after this season. The agreement affects factories in Toledo, O., Toronto, Can., Weyfield, Mass. and Thomasville, Conn.

Long hours seem to be the order of the day—or, rather, the night—in some of the cotton mills of Brazil. Writing from Pernambuco, the British Vice Consul there states that in the factories labor is plentiful and cheap, while the hours are excessively long, work being carried on in several of the cotton mills for 14 and up to 17 hours per day. Electric

light is used, and it is said women and even children are content to earn extra wages for night work.

An Anglo-American Chamber of Commerce has just been formed in Brussels, for all Belgium, by the British and American communities. The objects aimed at are "the promotion of measures calculated to benefit and protect the mercantile interests of its members, to represent their sentiments, to make known their requirements, and to give them the advantages of a reading room, library, etc., where they may meet to transact their affairs in Brussels."

While the German bicycle manufacturers are meeting with sharper competition than ever from the American bicycle it is reported that they in turn are receiving unusually large orders from foreign countries. Japan, it is stated, has practically abandoned the English market, and is now buying its wheels in Germany. The Germans have also many orders from South America, especially from Buenos Ayres and Columbia. It is stated that the German bicycle industry now employs directly about 60,000 workmen, against 35,000 in 1896.

The commerce of the United States with Japan has grown more rapidly during the past year than that of any other nation. The annual returns of the foreign trade of the Empire of Japan, just received by the United States Bureau of Statistics, shows that the imports into Japan from the United States increased from 16,373,410 yen in 1896, to 27,030,537 yen in 1897, while her exports to the United States increased from 31,532,341 yen in 1896, to 52,436,404 yen in 1897. Only three countries, viz.: Great Britain, China and British India, made as large sales to Japan as did the United States in 1897, and in no case was the increase in imports as large as that from the United States. This is a trade of which Canada should enjoy a large share.

Attention is drawn to the fact at Berlin that an American bombardment in Manila would do more damage to German and English commercial interests than to the Spaniards. There are thirty-three large firms in Manila, fourteen of which are German and twelve English. Between February 16th and March 11th, of the twenty ships anchored in the port of Manila, only four were Spanish. On March 11th eleven neutral and two American ships were at anchor there, but not a single Spanish ship.

The news that the C.P.R. have gone vigorously to work to make the Trail smelter, acquired from Mr. Heinze, one that will effectually serve the needs of the district, should be well received in all parts of Canada. Heretofore it has been necessary to send the rich silver-lead ores of the Slocan to distant smelters in the United States for treatment, and the heavy freight charges made considerable inroads upon the profits. It has always been claimed that there were not the materials at hand for mixing with the ore to enable the work to be done as cheaply as elsewhere, but it was to be expected that as soon as the work was taken up in earnest these difficulties would disappear. It is now reported that the C.P.R. are putting up blast furnaces that will be able to treat all the ore the Slocan district can send, and that the authorities of the railway are determined no ore shall go past them if they can prevent it. This, it seems to us, is the proper spirit in which to attack the problem of how best to develop British Columbia. That province has gold, silver and copper and the coarse rocks needed for fluxing, in untold abundance. It has the coal that is an essential to cheap treatment. There is no sufficient reason for sending any ore out of the country for treatment, and the energetic movements of the C.P.R. will probably put a stop to its going out in the very near future.—Montreal Herald.

Indignation prevails at Halifax, N.S., over the action of the Jamaica Government in increasing her tariff so as to injuriously affect the commerce of Canada with that island. The Canadian Government recently gave the British West Indies the same preferential customs treatment that was extended to Great Britain. This amounted to an advantage of 25 per cent on imports from Jamaica over the foreign West India Islands. Jamaica now returns the compliment in an objectionable manner. The new customs tariff increases the duty on Canadian herrings 60 per cent over the old, and on many articles the duty is doubled.

At the recent meeting of the Chartered Accountants Association, of Toronto, alluded to in our last issue, Mr. W. E. Eddis read a careful paper upon the necessity for having proper agreements or partnership articles, and also on the proper steps to be taken upon the death or withdrawal of any partner. He considered the subject under three heads: (1) The opening of partnership accounts; (2) transactions and regular adjustments of profits between partners, and (3) the adjustment of partnership losses. The chair was occupied by Mr. Harry Vigeon, the President. After the paper was read considerable discussion took place upon the subjects suggested by Mr. Eddis.

A deputation representing the Dominion Cigar Manufacturers' Association had an interview a few days ago with Sir Henri Joly, Minister of Inland Revenue, Hon. W. Paterson, Minister of Customs, and Hon. W. S. Fielding, Minister of Finance, urging that a rebate should be allowed them on cigar cuttings. The deputation urged that since the imposition of a customs duty on raw leaf tobacco, manufacturers of cigars had to pay on large quantities of cuttings, that is, the edges and little bits of the leaf which were cut off when the leaf was shaped for rolling, which was not the case when they paid excise duty on the tobacco after it was manufactured. Mr. Paterson admitted the justness of the claim, and promised that the matter should receive the consideration of his colleagues.

A Saginaw, Mich., special says:—"The Saginaw Lumber & Silt Company has purchased a stock of fifteen million feet of logs of parties in Canada, which the buyers will carry over till next year in order to keep the mill here in operation regardless of the result of the act of the Ontario Legislature prohibiting the exportation of logs cut there after May 1, 1898. Some firms believe that the act will be enforced, and that it will work disaster to the Eastern Michigan lumbering industry, while others do not believe that it will be enforced, claiming that to do so will cause more injury to the Canadian lumber interest in the decline of stumpage values and paralysis in trade than will be the injury imposed upon Americans. It is the general opinion in Ontario that the Michigan lumbermen received a pledge that the law would not be enforced; yet they have taken measures to secure full supplies against such contingency.

Canadian trade with the West Indies is receiving considerable impetus since the outbreak of the war between the United States and Spain, and promises to develop to very considerable proportions. Recent reports from Port of Spain, Trinidad, show the arrival there, per steamer, Duart Castle, of over one thousand barrels of Canadian flour. Six hundred barrels of these were from Lake of the Woods Milling Company, and the shipment has been followed by others since then. In this connection, a letter received by the secretary of the Montreal Board of Trade from Trinidad refers to recent shipments from Canada, and says the war has led West Indian merchants and importers to look to Canada for their supply of foodstuffs. "We believe that Canada can and will supply all our foodstuffs," said the letter. The prices received for Canadian flour so far exported to the West Indies has been

all that could be expected, leaving quite a handsome margin of profit to the exporters.

The Dominion Government have closed a contract with Messrs. Peterson, Tait & Co., for the establishment of the long talked of fast steamship service between Canada and Great Britain, the vessels to be built by Messrs. R. & W. Hawthorne, Leslie & Co., of Helburn-on-the-Tyne. The ships will be of improved turret design, with a dead-weight capacity of 10,000 tons, a speed of 21 knots, and accommodations for first and second-class and steerage passengers. When completed these will be the largest and fastest passenger vessels ever built on the Tyne. The contractors have, on account of the delay caused by the engineers' dispute, been allowed an extension of time by the Ottawa Government. Instead of supplying two 10,000 ton ships of 21 knots speed and commence fortnightly service on May 31, 1899, and the remaining two a year later, the contractors now undertake to have the whole of the boats ready to commence a weekly service on May 1st, 1900. The amount of capital of the company is £1,420,000.

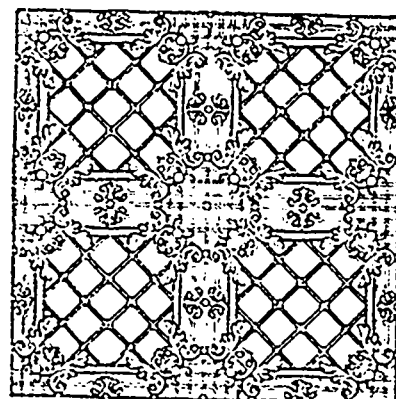
The National Association of Manufacturers in the United States, are applying to Congress for incorporation, and the Senate Committee on Manufacturers has made the following report thereon: "The object of this bill is to form a corporation, not for profit, but simply to promote the manufacturing industries of the United States and to give proper direction to the efforts looking to that end, and also to extend the facilities of transportation, both at home and abroad, and generally to take all proper methods for advancing the manufacturing interests and promoting the commerce of the whole country. The officers selected and provided for in the bill are the present officers of the National Association of Manufacturers, and consist of well-known citizens interested in

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manufacturing in more than half the States of the Union; and it is believed the adoption of this bill will give a National character to the association that will aid it in its laudable and proper undertakings, and for that reason your committee recommend that the bill do pass."

Mr. Robert C. Davidson, of Toronto, left a few days ago with his family to take up his residence in Melbourne, Australia, where he will establish a branch office of the Dodds Medicine Company, of Toronto.

Now that the future ownership of the Philippine Islands is giving the nations of the earth so much thought, their commerce is a noteworthy topic. Last year, it was distributed as follows:

	Imports.	Exports.
Great Britain.....	\$2,467,090	\$7,467,500
Germany.....	744,928	223,700
Franco.....	1,794,900	1,987,900
Belgium.....	272,240	45,660
United States.....	162,446	4,982,857
China.....	103,680	13,770
Japan.....	98,782	1,387,909

Great Britain, it will be seen, has the bulk of the business with the islands. If they fall into other hands than those of Spain, which seems now to be the conclusion, will the British maintain their prestige in the islands? That is a live question. But it is overshadowed by the further question of whether or not the United States will remain masters of the islands, or sell them to the highest bidder. If they fall to Great Britain, Canada would find a large and profitable market there for large quantities of her produce.

Mr. John S. Larke, Canadian Commercial Agent at Sydney, N.S.W., writing to the Ottawa Government regarding certain Canadian manufactured products in Australia, referring to bent wood furniture, says.—The North American Bent Chair Company, of Owen Sound, Canada, has displayed a good deal of enterprise in opening a branch here. They have done a little trade in the Colonies for some time, but the extension was slow. From the result so far, there is a probability that they will do a larger share of the trade of the colonies. They have specialized this industry, and are certainly turning out goods to compete in price with the German, though freight charges on the Canadian goods are higher than those on the German. I hesitated to advise the company to take the step it has done, owing to the limited market for chairs, but it is probable that the trade secured will be sufficient to make the venture profitable. There is no reason why an equally good trade could not be done in other lines of furniture, though in most articles it will be necessary to ship them knockdown, to be put together and finished here. And this is what Mr. Larke has to say regarding Canadian carriage work:—A house which has always shipped via New York, has lately received considerable orders for wheels and other woodwork. Arrangements were made for the sale of carriage bodies in white, but the agency was not satisfactorily worked. Some changes have been made which it is to be hoped will produce better results. Some orders have gone forward for carriage iron work, axles, springs, bolts, and nuts, and for carriage paints and varnishes. Leading business houses have forwarded sample orders that ought to produce good results. They have all been tried here for twelve months past, and the carriage trade has expressed its approval of these goods.

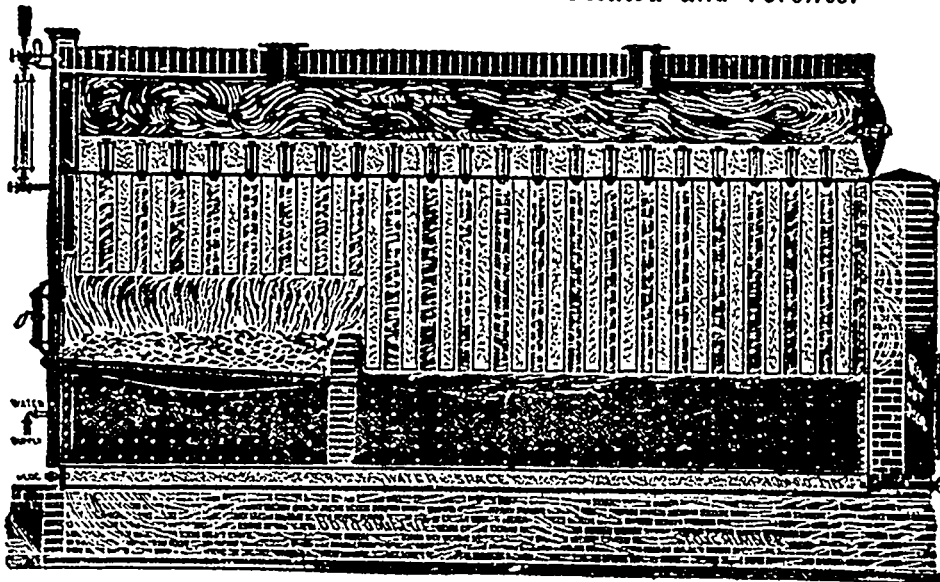
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CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser on these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephone, or a telegraph line is being constructed; or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, bolting, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

Sheldon & Son, Aylmer Ont., are at work on a large order for windmills to go to Australia.

The Vankloek Hill (Ont.) Electric Co., has been incorporated.

J. E. Smith and H. B. Murphy, are starting a factory at Falmouth, N.S., to make rattan goods.

Donoghue Bros., Kingston, Ont., are erecting an 80,000 bushel grain elevator.

The Jacques Cartier Pulp Co., has been incorporated to manufacture wood pulp at Jacques Cartier River, Que.

The Niagara Falls Metallic Furniture Co., Niagara Falls, Ont., has been incorporated with a capital stock of \$24,000. Wm. Hess is manager.

A 100x40 feet brick addition is to be made to the factory of the Ontario Silver Co., at Humberstone, Ont.

Mr. Thomas Southworth, Clerk of Forestry for Ontario, reports a boom at Duport Harbor, the western terminus of the O.A. & P.S. railway, where three hundred men are busy working for the railway, building warehouses, an electric light plant, elevators and other buildings. Last week the steamer "Lynn," landed at Duport Harbor with 214,000 bushels of grain, the biggest shipment ever landed at a Canadian port.

The C.P.R., land sales in the Pipestone and Waskada N.W. districts are increasing rapidly.

The C.P.R. car shops at Perth, Ont. are turning out 8 to 10 cars per day. Seventy sleeping cars are being built.

During the year 1897, 34,376,599 feet of lumber were manufactured from timber cut under license in Manitoba, the Northwest Territories and within the railway belt in British Columbia, and 32,894,251 feet were sold. The quantity of lumber disposed of in Manitoba, and at points as far west as Regina in the Territories, was as follows. Canadian pine from the Lake of the Woods, 45,000,000 feet; Canadian pine from points between the Lake of the Woods and Port Arthur 10,500,000 feet; Canadian spruce, manufactured in Manitoba, 14,241,909 feet. The cut of logs on the St. Croix river last winter was about 20,000,000 feet.

H. E. Casslens, of Winnipeg, sent a sample of emery from northeastern Manitoba, to a German emery firm and has received very favorable replies as to its quality. The deposits extend over an area of 25 square miles.

The city council of Belleville, Ont., who have been negotiating for the removal of the Thames Iron Works from Norwich, Connecticut, to Belleville, have, on the report of a deputation who visited Norwich, unanimously resolved to submit to the electors a by-law granting a bonus of \$50,000, a site of ten acres, free water, exemption from taxation for ten years, and to pay the duty on the plant, which will be removed from Norwich. The company, the chief member of which is Frank Mitchell, will first erect a merchant rolling mill, and subsequently, if profitable opening be found, a smelting furnace, nail and spike factory, and other kindred industries, such as car irons and fish-plates.

The British American Corporation of Rossland, B.C., are pushing the development of their properties to the fullest possible extent, and the Jenckes Machine Co., of Sherbrooke, Que., through their Rossland, B.C., branch, have supplied them with special pumping apparatus for their Nickel Plate and Columbia and Kootenay Mines.

The Jenckes Machine Co., of Sherbrooke, Que., have equipped the Athabasca mine, Nelson, B.C., with complete hoisting outfit and boiler. This mine is sure to become a producer of prominence.

M. S. Blackburn, Dresden, Ont., invited tenders up to Tuesday last for the construction of an iron bridge, 125 feet long, to span the Sydenham River, and for the necessary masonry. Mr. Jas. B. Crafts, Dawn Mills, Ont., is the architect.

The Monte Cristo Mine continue sinking in their main pit, and have lately added a No. 6 Cameron Vertical Pump, purchased through their Rossland, B.C., branch, from the Jenckes Machine Co., of Sherbrooke, Que.

The London and British Columbia Gold Fields, Limited, of Rossland, B.C., are developing their property, and have recently added to their equipment a 6x8 inch Special Hoisting Engine and forty h.p. locomotive type boiler, from the Jenckes Machine Co., of Sherbrooke, Que.

The St. Hyacinthe, Que., hospital farm buildings were burned a few days ago. Loss about \$20,000.

The Jenckes Machine Co., of Sherbrooke, Que., recently supplied the Sydney Mine at North Sydney, Cape Breton, with one of their special coal hoisting engines to be operated by compressed air. The compressor was supplied by the Canadian Rand Drill Co., of Sherbrooke, Que.

The McEachren Heating and Ventilating Co., of Galt, Ont., has placed an order with the Jenckes Machine Co., of Sherbrooke, Que., for one of their patent Dake Engines.

Mr. O. E. Young, of Magog, Que., is building a small steam pleasure boat for Mr. L. B. Ward, of Brooklyn, N.Y., to be used on Lake Memphremagog, and an order has been placed with the Jenckes Machine Co., of Sherbrooke, Que., for one of their seven h.p. Dake Marine engines, with boiler to run the same.

Messrs. Gillies Bros., Carleton Place, Ont., are erecting between Arnprior and Braside, Ont., a shingle mill which is said will be the second largest in Canada.

INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

PISTON INLET **Air Compressors** STRAIGHT LINE
 DUPLEX and
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The largest shipment of live lobsters ever sent from Halifax, N.S., went forward by steamer to Boston a few days ago. The shipment consisted of 1,300 crates and weighed ninety-one tons.

N. P. Tanguay, of Weedon, Que., has placed an order with the Jenckes Machine Co., Sherbrooke, Que., for one of their Patent Cocker Turbines, complete with gate, draft tub and gearing.

The Eugene F Phillips Electrical Works, Montreal, have been given the contract to supply all the trolley, bond and feed wire required in the construction of twenty-five miles of electric railway at Jamaica, West Indies.

Messrs. King Bros., the enterprising lumbermen of Quebec, closed a contract with the Jenckes Machine Co., of Sherbrooke, Que., for a complete sawmill, consisting of—Two 60 h.p. boilers, one 100 h.p. engine, one Rotary sawmill with Duke Steam Feed, one double edger, one re-sawing machine, and entire shafting and pulleys. It is the intention of Messrs. King Bros. to erect this mill on the Lower St. Lawrence the coming summer.

The Dominion Coal Co. are improving their facilities for unloading from their steamers at Levis, Que., and have purchased for this purpose, four 8½x10 double cylinder special coal hoisting engines, from the Jenckes Machine Co., of Sherbrooke, Que., with a powerful 100 h.p. locomotive boiler to supply steam for the same.

The Smuggler Gold Mining Co., with headquarters at Toronto, have decided to put a twenty Stamp Mill on their property at Fairview, B.C., this summer, and an order for the same has been placed with the Jenckes Machine Co., of Sherbrooke, Que., for Corliss engine, boiler, twenty Stamps, vanners and four miles of aerial tramway.

The Diamond Machine & Tool Co., Toronto, have added a number of new automatic screw making machines of the most improved pattern, and are manufacturing machine screws, cups, cones, hubs and other varieties of automatic machine work.

Messrs. Geo. M. Webster & Co., of Quebec, Que., coal handlers, are improving their facilities for unloading steamers, and for this purpose have placed an order with the Jenckes Machine Co., of Sherbrooke, Que., for four of their double cylinder rapid coal hoisting engines with boilers.

The Canadian Copper Co., of Copper Cliff, Ont., are fitting a new shaft, and have placed an order with the Jenckes Machine Co., of Sherbrooke, Que., for two 100 h.p. special steel boilers, one 12x15 double cylinder double drum winding engine, three large steam pumps, and rock breaker, and necessary gear for operating same.

The McCormick Mfg. Company, London, Ont., on Saturday, May 21st, distributed nearly \$3,000 among their employes. Once a year the company has been in the habit of dividing up the years profits with their employes in this way.

The White Star is the name of a steamer recently turned out from the shipyards of Mr. W. C. White, Montreal. She is constructed of steel, is 166 feet long, and 42 feet beam. During the summer she will run as an excursion boat between Grimsby Park, Lorne Park and Toronto.

The McGregor-Gourlay Company, Galt, Ont., have purchased the London Machine Tool Company's plant at London, Ont., and will at once remove it to the company's buildings at Galt.

The Branston Woolen factory at May's Mills, Que., burned some time ago, has been rebuilt, fitted up with new machinery, and is at work.

There are 300 men at work upon the addition to the Montreal Cotton Company's mills at Valleyfield, Que.

James Skene, Pennfield, N.B., whose woollen mill was burned some time ago, will rebuild without delay.

The English Bay Canning Company, Vancouver, B.C., has been incorporated with a capital stock of \$50,000.

The Jenckes Machine Company, Sherbrooke, Que., has been licensed in British Columbia to carry on the manufacture of machinery, and to do a general foundry business. The head office is at Rossland.

The Montreal and Southern Counties Railway Company will construct a line of electric railway from Laprairie to Montreal.

Messrs. Gillies Bros., Carlton Place, Ont., will rebuild the mill burned last winter at Morristown.

According to The Expositor, the wage list of the Massey-Harris Company at Brantford amounts to \$20,000 per month.

The Little Salmon River Telephone Company, Sussex, N.B., is applying for supplementary letters patent, to enable the company to extend its lines into adjoining municipalities.

The McLaughlin Carriage Co., Oshawa, Ont., have established a salesroom in Bowmanville and are about to establish another in Whitby.

The Patent Clothboard Company, Parry Sound, Ont., are at work on a contract for over 45,000 clothboards.

Messrs. Close & Co., Woodstock, Ont., recently filled an order for brick-making machinery for St. Petersburg, Russia.

Great activity is shown in the shops of the Grant Trunk at Point St. Charles in the construction of both passenger and freight locomotives and cars.

THE Defiance Machine Works,

DEFIANCE, OHIO, U.S.A.

Established 1850

INVENTORS AND BUILDERS OF UP-TO-DATE NINETEENTH CENTURY

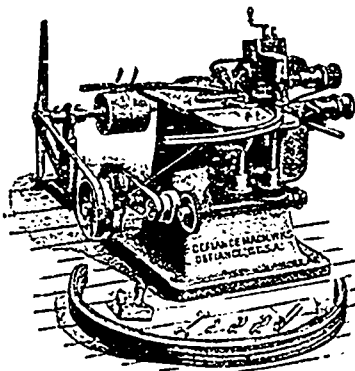
AUTOMATIC Wood-Working Machinery

For Making

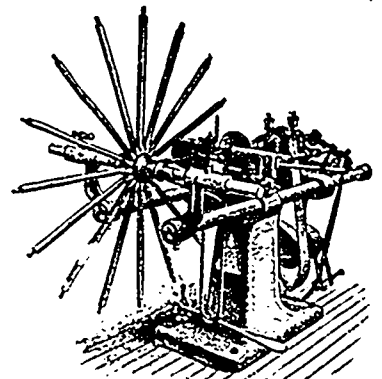
WAGON AND CARRIAGE WHEELS, HUBS, SPOKES, RIMS
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WHEELS of highest
quality for general
& special purposes.

Grinding Machinery.



A new company has secured control of the unique iron deposits of Conception Bay, Newfoundland. These deposits contain immense quantities of ore so cracked by natural processes that it lies in piles made up of or lumps about the size of ordinary bricks. Experts say that this kind of ore can be mined more cheaply than any other ore known to miners. Steamers will be constructed to carry the ore from Conception Bay to Sydney, a distance of thirty hours' sailing. There the Newfoundland ore will be mixed with a small proportion of native Cape Breton ore, which is found in abundance at the proposed site of the works. The annual output of the company will at the outset amount to 75,000 tons of pig iron which will require in the first instance 150,000 tons of crude ore, 60,000 tons of limestone and 200,000 tons of coal. But the company will not confine itself to the production of pig iron. It will enter extensively into the manufacture of steel rails and plates, and eventually the building of steel ships. Up to this time Canadian builders have not engaged in the steel shipbuilding enterprises, but the company now seeking incorporation will endeavor to establish that industry in this country. Some idea of the magnitude of the operations of this company may be gained from the fact that they will involve the annual consumption of four hundred thousand tons of coal. The new works will be situated close to the valuable coal fields of the Dominion Coal Co., which will profit immensely if its coal is used in the manufacturing industries of the new company.

A representative of Messrs. J. McDougall & Co., the well-known machinery builders of Montreal, was in London, Ont., a few days ago interviewing the city authorities relative to the establishment of a Sewage Purification plant there. Mr. McDougall offered to construct such a plant, capable of treating 2,000,000 gallons of sewage per day, for \$37,000, guaranteeing that the cost of operating it would not exceed \$3,000 per year.

The Messrs. Mooney are pushing operations on the pulp mill they are building at Mispec, N. B. Seventy-five men, eight teams and two large steam drills are at work, and nearly six thousand yards of rock has been excavated. When another thousand is done the stone dam will be begun and the working force more than doubled. A new wharf, 500 feet long, will be built to connect with the old one. A lot of spruce has been purchased, 1,250,000 feet having already been brought to the mill site.

It is probable that a large pulp mill will be built at Fredericton, N. B., in which Mr. Donald Fraser, of that city, will be interested.

The Duplessis Pegging and Sewing Machine Co., St. Hyacinthe, Que., has been incorporated with a capital stock of \$50,000 to manufacture machines for pegging boots and for sewing boots.

The G. A. Holland & Son Co., Montreal, has been incorporated with a capital stock of \$60,000 to manufacture sporting goods, baskets, etc.

According to the Manchester, Eng., Sextile Record, the Gessner cloth press is finding much favor in Canada, recent sales being to the Forbes Mfg. Co. and A. W. Brodie, Hespeler, Ont., the Waterloo Woollen Co., Waterloo, Ont., and the Montreal Weaving Co.

Mr. Kirkwood, of Sudbury, Ont., proposes to put a steamer on the route from Sault Ste. Marie to Quebec, calling at all lake and river ports for freight. She will carry downward lumber, shingles, etc.

The City of Victoria, B. C., have accepted the tender of W. A. Johnson Electric Co., Toronto, for a dynamo; price \$2,285.

The Rathbun Co., Deseronto, Ont., have already cleared the ground of the debris caused by the burning of their Terra Cotta Works, preparatory to the erection of new buildings.

The Burrow, Stewart & Milne Co., Hamilton, Ont., is being incorporated with a capital stock of \$250,000, to manufacture stoves, scales, machinery, implements, etc., and to do a general foundry business.

The Gartshore-Thomson Pipe and Foundry Co., Hamilton, Ont., have been granted supplementary letters patent, whereby their capital stock has been increased from \$50,000 to \$60,000.

The Nordheimer Piano and Music Co., Toronto, is being incorporated with a capital stock of \$250,000 to manufacture pianos, organs, etc.

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Canadian Rand Drill Co.,

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ROCK
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**HAMILTON
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Wire Screens for Every Class of Material.

Perforated Metal of Steel, Copper, Brass, Zinc for all purposes.

Special Attention given to Minor's Requirements.

The Northrop Loom Company, of Canada, is a new concern in which American capitalists are largely interested, who are about erecting works at Valleyfield, Que., for the manufacture of textile machinery such as is produced by the Draper Company, of Hopedale, Mass. Mr. Louis Simpson, Superintendent of the Montreal Cotton Company at Valleyfield is interested in the enterprise.

The sum of \$200 is offered as a premium for the best plans for the municipal buildings to be erected at Kalso, B.C.

The Jenckes Machine Co., of Sherbrooke, Que., shipped a few days ago one of their complete ten Stamp Mills, to the Cariboo Mining, Milling and Smelting Co., Fairview, B.C.

The Bell Asbestos Co., of Thetford Mines, Que., are changing over their system of operating their mine hoist, and for this purpose have placed an order with the Jenckes Machine Co., of Sherbrooke, Que., for one of their 100 h.p. steel tubular boilers, and have also purchased from the same company one of their small locomotives, for shifting cars in pits.

The Gould Cold Storage Co., Montreal, has been incorporated with a capital stock of \$75,000, to carry on the business of cold storage and refrigeration of perishable goods, etc.

The Metis Telephone Co., (La Campagnie de Metis) Metis, Que., has been incorporated with a capital stock of \$2,500, to build and operate a telephone line in the counties of Matane and Rimouski, Que.

The Deseronto Iron Co., Deseronto, Ont., has been incorporated with a capital stock of \$99,900.

The Woodstock Bicycle Co., Woodstock, Ont., has been incorporated with a capital stock of \$20,000.

William Jessop & Sons, Limited, incorporated under the laws of the Imperial Parliament of Great Britain, has been licensed to carry on in the Province of Ontario, the business of miners, prospector, developers and smelters; and of iron masters, iron founders, steel manufacturers, engineers and contractors.

D. S. McArthur & Co., of Nelson, B.C., are developing their properties, and have recently purchased, through the Rossland branch, from the Jenckes Machine Co., one of their complete hoisting plants.

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 Write for pamphlet, stating your Head.

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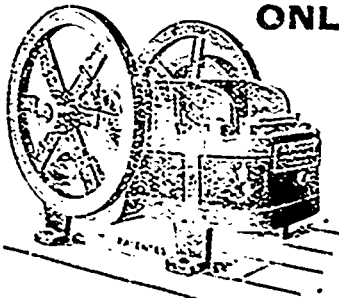
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It will interest you.
 Our Prices will Please,
 and to Purchase
 Our Machinery will Pay you.

The JENCKES MACHINE CO., 28 Lansdowne St., SHERBROOKE, Que.

The new shops of Messrs. Rhodes, Curry & Co., Amherst, N. S., to replace those recently destroyed by fire, are rapidly nearing completion. The wood-working shop is 175 feet long by 77 wide, two stories high. The bottom flat will be used for heavy car work machinery, and the upper part for the carpentry work of cars. They expect to employ 175 to 200 hands in their car works alone.

The Pure Gold Mfg. Co., Toronto, has been incorporated with a capital stock of \$175,000 to manufacture spices, baking powder, essences, etc.

The Fraser Hat and Cap Mfg. Co. of London, Ont., has been incorporated with a capital stock of \$20,000.

Galena ore has been found on the shores of Loch Lomond, Richmond county, Nova Scotia. Specimens have been sent to assayists in Halifax, and the ore has been pronounced of good quality.

Messrs. C. M. Walker and R. Clegg, who have been with the Ellis Furniture Co., of Ingersoll, Ont., have severed their connection with that concern for the purpose of establishing a factory at Wingham, Ont. They have purchased the old woollen mill property there, and have had the place thoroughly repaired. They intend manufacturing all kinds of upholstered goods, mattresses, etc., and will employ from 20 to 25 men.

E. C. Goodhue, Canadian, will furnish pulp wood for the Burgess Sulphite Fibre Co. of Berlin, N. H., for the coming year. He will put in about 5,000 cords of pulp wood at Island Pond, Vt.

The capacity of the new mills of the Royal Paper Mills Co. at East Angus, near Sherbrooke, Que., is fifteen tons per day. This company make middle grades of book and writing papers, but not news printing paper. In addition to its main building it has a saw-mill with water power, and a pulp mill with steam power. The authorized capital of the company is \$800,000, but the capital account shows \$596,505 expended. Hon. W. B. Ives is general manager.

Messrs. McNeill & Co., iron bridge builders of New Glasgow, N. S., are very busy at this season. They have under construction four bridges, and have recently shipped several to different places in the lower Provinces.

The Prescott and Lake Superior Navigation Co. is being incorporated with a capital stock of \$100,000, to do a general transportation business. Chief place of business will be Prescott, Ont.

Mr. G. W. Green, whose premises in Peterborough, Ont., were recently destroyed by fire, has secured what is known as the Whyto foundry, that town, which he has fitted up to carry on his business of manufacturing pumps, etc., as well as general iron founder.

W. N. Andrews & Co.'s oatmeal and woolen mills at Thornbury, Ont., were destroyed by fire May 25th, loss about \$5,000.

A strike that has been on for some time in Toronto among the upholsterers has resulted in the establishment of a factory where these operatives will be employed.

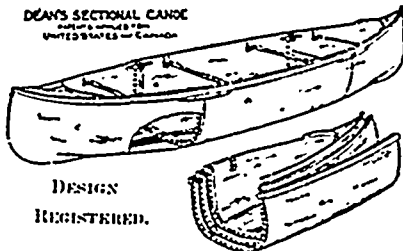
The power house being built by Messrs. Saxby & Dryden, Kingsville, Ont., will be equipped with a 500-light alternator, 50-light arc machine, 60 h. p. steel boiler and 50 h. p. engine with pump and water. E. Leonard & Sons, London, Ont., will furnish the engines and boilers.

A. C. NEFF, Chartered Accountant. JAMES WOOD, Late Sec. The T. Eaton Co., Ltd.
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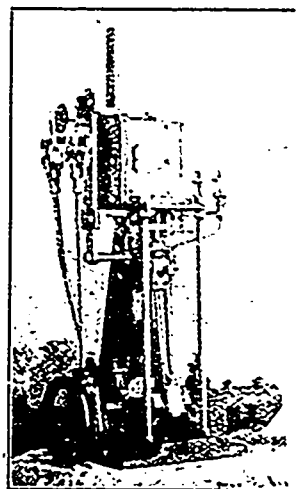
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 Specifications, plans, advice upon Steam and Electric Plants, Power transmission and distribution. Special machines designed.
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 Canadian Patent No. 5118, relating to apparatus for rapidly discharging cargo from vessels, whereby the necessity of shoveling grain, coal, etc., in small quantities is avoided. Apply to
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Leitch & Turnbull
 Canada Elevator Works,
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J. ALEX. CULVERWELL,
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BROKER,
 Special Agent Royal Victoria Life,
 5 King Street West, - - TORONTO.

The following Companies have been registered in British Columbia: Big Bump Gold Mining Company. Capital \$150,000 in 30 cent shares. Head office in Spokane. F. H. Oliver, Rossland, attorney. The British Columbia Copper Company. Capital \$1,000,000 in \$5 shares. Head office City of New York. Frederick Keffer, Anaconda, B.C., attorney. Northwest Gold Dredging

Company. Capital \$50,000 in \$100 shares. Head office Tacoma. W. A. Johnston, Quesnelle, attorney. The Westinghouse Electric and Manufacturing Co., of Pittsburgh, Penn., are building two three-phase belt driven generators, each of 500 horse power, 3,000 alternations and 2,400 volts for the Canadian Niagara Power Co. These machines will be installed

in the power house of the Niagara Falls Park and River Railway Co. in the near future. One of the first users of the electrical power to be generated on the Canadian side of the river will be the Carborundum Co., of Niagara Falls, N. Y., who have just purchased a plot of land containing six lots, and have awarded the contract for factory buildings to be erected thereon, and have also taken an option on more land.

The Canadian Brewing Company, Montreal, is installing a new steam plant using the Kingsley water tube boilers, ordered from E. A. Wallberg, Montreal.

The Dominion Cotton Mills Co., who have a large plant at Magog, Que., for weaving and printing cottons, are asking for an extension of the time during which the plant will be exempt from taxation, offering in return to add 350 to 400 looms to the present capacity of the weaving mill, the intention being to increase the capacity of the printing works later. It is thought that Magog is one of the points at which the company will centralize their mills, now scattered in many parts of the country.

The work on the large C.P.R., station and office building in Vancouver, B.C., and the hotel at Revelstoke, B.C., is progressing rapidly. Most of the materials are produced in the West, and the steel structural work is supplied by E. A. Wallberg, Montreal.

Messrs. T. D. Davis & Co., Somerset, Kings County, N. S., have been incorporated with \$1,000 capital stock to operate a cheese factory and to manufacture evaporated and canned fruits, vegetables, etc.

The Laurie Engine Co., Montreal, have recently installed in their works a high pressure compound Corliss engine and a Kingsley water tube boiler plant designed for 175 pounds working pressure. This is considered in every way a model and a highly economical plant, and produces power at a considerably less price than quoted by some of the electrical power companies. These Kingsley boilers are installed by E. A. Wallberg, Montreal.

William Knight, of Amherst, N. S., and associates, have been incorporated with a capital stock of \$50,000 as the Amherst Prospecting and Mining Co. for the purposes indicated by the name.

The Great North Western Telegraph Co., is installing a new heating system in their large building in Montreal, using the Kingsley water tube boiler installed by E. A. Wallberg, Montreal. David Ogilvy is the architect.

The Parnell-Decur Steam Baking Co., London, Ont., has been incorporated with a capital stock of \$15,000 to manufacture bread, biscuit, etc.

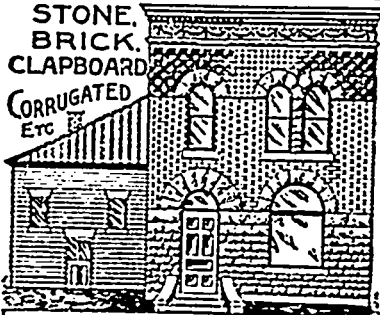
A. C. Hutchison, architect, Montreal, recently had tests made of the new Kingsley water tube boilers in the Ottawa Central Hospital. These tests gave highly economical results, exceeding the maker's guarantee by ten per cent. This type of boiler was used in nearly all the recent Ottawa work, including the American Bank Note Co.'s Works, and the C. Ross Co.'s building.

The Cornwall Milling Co., Cornwall, Ont., has been incorporated with a capital stock of \$40,000.

Mr. M. McLaughlin, Buctouche, N.B., is building a large flour mill and woodworking factory, the boiler and engine for which are to be supplied by the Robb Engineering Co., of Amherst, N.S.

STEEL SIDING

STONE.
BRICK.
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Barns, Sheds, Churches.

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Fancy Twist Yarns, in Worsted, Silk,
Cotton, etc. Polished Threads.
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20 years in the business
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lbs. per day. All our

Felts are woven endless, without a splice. Our Felts will last longer and make dryer Pulp. All up-to-date mills use our Felts. New mills, when in need, write or samples and prices.

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Write us, our Prices are reasonable and work good.



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Machine & Tool Co.
TORONTO, ONT.

Manufacturers of
Machine Screws
OF EVERY DESCRIPTION.

SEND FOR
CATALOGUE
and
PRICE LIST.

The Bristol Co., manufacturers of recording instruments for pressure, temperature and electricity, Waterbury, Conn., have sent us a copy of their latest revised partial list of such instruments. This list includes mention of 117 different varieties and ranges, to which additions are continually being made to meet any special requirements of the trade. Reference is made in the list to recording vacuum gauges, recording combination and pressure gauges, recording pressure gauges for ammonia and for all other purposes, recording thermometers for steam and also for ovens and closed spaces, also pyrometers; recording voltmeters for direct and for alternating current; recording amperemeters for direct and for alternating current; recording Watt meters for direct

and for alternating current, etc. Prices are also quoted for all these instruments, which are finished and ornamented to suit. We are requested to state that copies of this list will be mailed on application.

Work on the plant of the Cataract Power Company of Hamilton, Ont., is being vigorously pushed. At De Cew Falls a very large reservoir is in course of construction, the water for which will be supplied from the Welland Canal at Allanburg, which is itself fed from Lake Erie, and which stands at a considerable elevation above the site of the new reservoir. Seven or eight other storage reservoirs are being made between the De Cew Falls and Allanburg, so as to have an abundant supply of water always on hand. At De Cew Falls an immense power house has been erected and the water will be carried from the reservoir to the power house in the valley below, being about 100 feet. This will give an enormous power and will drive any number of dynamos. The Company expect to sell the electricity all along the route of forty miles to Hamil-

ton for electric lighting or motors for manufacturing purposes, and will be prepared to increase the power at any time it may be required. The work is being done by contract, and at the De Cew Falls end there are some 200 men at work, with about seventy teams of horses, working excavators, etc. The job is to cost \$1,000,000. The work has been going on for about eight months, and is expected to be completed next fall.

The Westminster, B.C., Columbian, says the mills there are all working overtime. The Royal City mills, it says, are working overtime on orders from the prairie country chiefly, and many carloads of house and railway lumber are being shipped every day over the C.P.R. The local trade is also brisk. The factory at the mill is working full strength, to increase the stock of doors, sashes, etc., while several large cannery orders already received are keeping the box factory busy early and late.

Mr. C. C. Cornelle and associates, Montreal, have applied for letters to incorporate the Sunlight Gas Co., with a capital stock of \$250,000.

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OF TORONTO.

Stating name, address, teacher, school, and which Examination, all information about competition will be cheerfully furnished. Mention this paper.

ADDRESS,
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YONGE AND CERRARD STS., TORONTO.

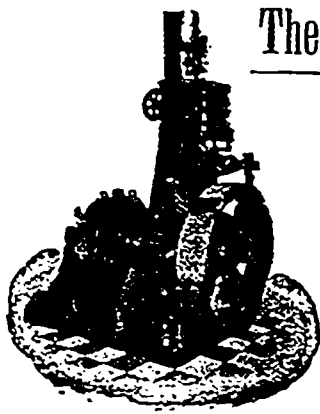
TORONTO MACHINE SCREW CO.

Manufacturers of
Hexagon, Square and Head Cap Screws.
Steel and Iron Set Screws.
Hanger and Plumber Bolts, Studs, etc.

Send for Price List and Discounts.

109 1/2 Adelaide St. W., - TORONTO.

R. C. Jamieson. A. T. Higginson.
R. C. JAMIESON & CO.
Manufacturers of
Varnishes and Japans.
Importers of Oils, Paints, Colors, Turpentine, Methylated Spirits, Shellac, Rosins, Glues, Gold Leaf, Bronze, etc.
OFFICE - 13 ST. JOHN STREET.
FACTORY AND WAREHOUSE - 23 to 29 ST. THOMAS STREET.
MONTREAL.



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SIMPLICITY, COMPACTNESS,
PERFECT REGULATION,
ECONOMY,
AUTOMATIC LUBRICATION.

For Electric Lighting Mills, Factories, and other purposes where Economy, close regulation and enduring service is required.

Manufactured by..... **R. WHITELAW, Woodstock, Ont.**

The Electrical Construction Co., OF LONDON, LIMITED.



MULTIPOLAR MOTORS AND DYNAMOS

AND
Direct Connected Plants
FOR ISOLATED LIGHTING.

Head Office and Factory:
No. 90 York St., LONDON, Can.

760 Main Street,
WINNIPEG.
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TORONTO.

Direct Current Dust Proof Motors,

For Crane and Elevator Service,

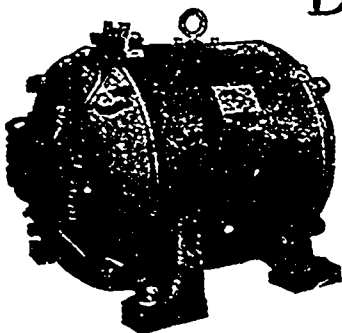
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ECO MAGNETO WATCHMAN'S ELECTRIC CLOCK.

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Write for descriptive circular to

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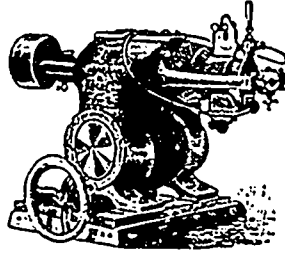
MONTREAL ELECTRIC CO.,
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Agents for Province of Quebec.

John Starr, Son & Co. (Limited),
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Manufacturers

DYNAMOS AND MOTORS

1/2 to 100 K.W.

SLOW SPEED MOTORS

A SPECIALTY.

200 Light Dynamo, second hand, cheap.
6 H.P. Motor, second hand, cheap.
1/2 H.P. Motor, second hand, cheap.
and several others.

22 Adelaide Street West, - Toronto.

Robert Jaffray, of Toronto, one of the directors of the Crow's Nest Pass Coal Co., and William Blakemore, General Manager of the Co., was in Nelson, B. C., a few days ago, on their return from a visit to Rossland and Spokane. The Company has a capital stock of \$2,000,000, and Col. Baker, Provincial Secretary of British Columbia, is President. To a Nelson Miner reporter Mr. Blakemore stated that the Company is rapidly getting its mines into shape for delivering coal and coke to every part of the Kootenay country. They have at present sixty men at work opening up two seams of coking coal. The best and most expensive machinery has been ordered for the mines, and fifty coking ovens will be in operation before the line of railway is completed to Nelson. The coal has been thoroughly tested, and the coke produced has been found to be superior to that produced in Swansea, Wales, or in Pennsylvania. It is of the bituminous coking variety and contains 95 per cent. fixed carbon. It is the intention of the Company to supply the smelters of Kootenay at the very best price possible, which will be about half the price now paid for the Welsh and Connellsville coke. It is estimated that one ton of coke is used in smelting five tons of ore, and the reduction in price made by the Crow's Nest Pass Coal Co. will reduce the cost of smelting ore about \$1.50 per ton. The present consumption of coke at the smelters in that section, when all are running is as follows: Hall Mines, 40 tons daily; Trail smelter, 60 tons; Northport, 40 tons. The product of the 50 coking ovens to be installed will be 200 tons per day, and the Company expect as soon as transportation facilities are available to supply the smelters above named. Besides supplying the Kootenay market, Mr. Blakemore is in negotiation to supply a number of the large smelters across the line. At the Everett smelter the daily consumption of coke is 60 tons; Tacoma, 40 tons; Great Falls, 150 tons; Helena, 50 tons; Butte and Anaconda, 400 tons. Owing to the advantages of quality and geographical position, and the cheapness with which the Company will be able to manufacture coke, he expects to be able to supply most of the coke used at all the points mentioned.

The Dominion Bridge Co., Montreal, have been awarded a contract to build a steel bridge at Windsor Mills, Que.

The G. T. Ry. will build twelve large locomotives in their Canadian shops.

The Jones & Moore Electric Co., Toronto, have installed a lighting plant on the steamer "Northern Belle," comprising 80 16 c.p. lights, and fitted with marble switchboard and first-class instruments.

Delegates from the Boards of Trade of Rossland, Nelson, Kaslo and Revelstoke, B.C., have interviewed the Ottawa Government with a view to impress upon them the desirability of placing a prohibitory duty on lead. They claim such a duty would secure the home market to the Canadian producers of this article.

The Arrowhead Saw and Planing Mills Co. has established a saw and planing mill on the south arm of Arrow Lake, south of Revelstoke, B.C., with a capacity of 20,000 feet per day. A sash and door factory in connection will employ about thirty men.

Messrs. James Render & Co., St. John, N.B., have put in a new 15 h. p. engine built by the Goldie & McCulloch Co., Galt, Ont.

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Bar Iron, Steel, Boiler Plate, Rivets, Tubes,
Tube Expanders, Hammers, Metallic
Letters and Figures for Patterns.

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THIRTY PRIZE MEDALS AWARDED.

HIGH-CLASS WORKMANSHIP. SEVENTY YEARS' REPUTATION.

LARGEST BOBBIN MAKERS IN THE WORLD—(Over 1,200 Workmen).

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BRANCH ESTABLISHMENT:

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OFFICE AND SHOWROOMS:

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Advertise in the Canadian Manufacturer.

BUSINESS BRINGERS.

Paying Pointers for Wide-awake Business Men who are Watching for Trade Opportnities.

A new building for the use of the Sisters of Charity in the city of Quebec is to be erected, of which David Oulette, that city, is the architect.

P. T. Legare, city of Quebec, will receive tenders addressed "Tenders for the Industrial Palace with two adjacent wings." Plans and specifications for the work will be furnished on application.

The City Council of Vancouver, B.C., will submit a by-law to bonus the erection of a 100-ton smelter at that place.

As soon as the city of Winnipeg, Man., provides a suitable site the Dominion Government will proceed with the erection of a drill shed there which will cost \$7,000.

Improvements to the Presbyterian church, Brampton, Ont., will cost about \$1,500.

The City Engineer of London, Ont., has ascertained that it will cost over \$80,000 to install a 350-light electric plant there.

Contracts are soon to be awarded for the construction of the Victorian wing of the General Hospital at Winnipeg, Man.

A large new hotel is to be built at Moose Jaw, N.W.T.

Tenders are to be called for by the Public School Board of Winnipeg, Man., for the erection of two new school buildings. Hooper & Russell are the architects.

A new hotel is to be erected in the city of Quebec, of which M. LeCardinal is the architect.

A joint stock company is to be organized to take over the plant of the condensed milk factory at Baldwin's Mills, Que., and will carry on the business on a larger scale.

Shawville, Ont., is to have a joint stock company for the purpose of placing a system of electric lights and waterworks within its midst.

The C. P. R. will build an extension of their road from Robson, B.C., to Midway, a distance of about 100 miles. It will be built under the charter of the Columbia and Western railway, which is the name of the road from Rossland to Trail and Robson. It will cost \$30,000 per mile, and will be a continuation of the Crow's Nest Pass line.

A new Roman Catholic Church is to be erected at South Osgoode, Ont., regarding which Rev. Father McAuley will give information.

T. G. Treleven, architect, Killarney, Man., is inviting tenders for the erection of a block of brick buildings.

A bill is being pushed through the British Columbia legislature, appropriating a large subsidy to Messrs. McKenzie and Marin to enable them to construct a railroad from the British Columbia coast to Teslin Lake.

The Grand Trunk Railway Co. will build head offices in Montreal at a cost of not less than \$250,000.

The city of Victoria, B.C., will expend \$15,000 in establishing a water reservoir near there.

Sealed tenders were received by the town council of Fort William, Ont., up to Tuesday of this week for the purchase of \$35,000 worth of debentures, the proceeds of which are to go for building a waterworks system there.

T. J. Blain, town clerk of Brampton, Ont., is advertising for tenders for lighting that town.

S. G. Curry, architect, Toronto, invited tenders up to June 1st for plumbing, heating, etc. required at the Collegiate Institute buildings, Toronto.

Two wings, three stories high, are to be added to the House of Industry, Toronto, at a cost of \$13,000.

A new school building is to be erected at Hintonburg, Ont., at a cost of \$7,000.

THE - - - -

WM. HAMILTON MANUFACTURING CO., Limited

MANUFACTURERS OF

THE "RELIANCE"

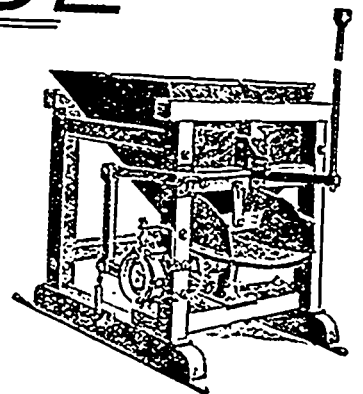
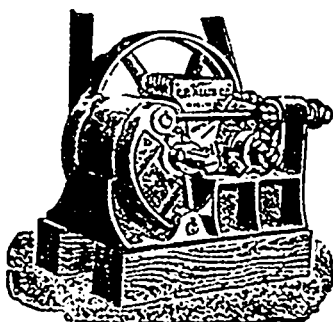
Mining, Milling

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FOR THE DOMINION OF CANADA

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Crushers, Rolls, Jigs, Concentrators, Screens, Stamps, Pumps, Compressors, Hoists, Boilers, Engines, Water Wheels, Etc.

Branch Office

VANCOUVER, B.C.

 PETERBOROUGH, ONT.

Contracts have been executed and work of construction actively commenced on the almost entire re-modelling of the building at 12 and 16 King street west, Toronto, the property of the John L. Lawlor estate. The plans have been prepared so that the whole of the ground floor will be occupied by the joint offices of the Dominion Building and Loan Association and the Trust and Guarantee Company. The latter company will erect what will be when finished probably the largest and most costly safe deposit vaults in the Dominion, and the general offices of both companies will be fitted up in

an elaborate and artistic manner with every convenience for the carrying on of their large and increasing business. The general entrance for access to the offices on the upper floors will be through a new stone and marble vestibule. The question of lighting such a deep building has been satisfactorily overcome by the adoption of the use of Luxfer Prisms to both the front and rear windows, thus dispensing with the large centre well at first contemplated. It is intended to lay out the upper floors in suitable suites of offices, with new elevator and vault accommodation, with a thorough steam

heating plant, and sanitary and electric arrangements of modern design. Mr. F. H. Herbert, architect, Toronto, will have entire charge of the work. The entire building will be ready by Nov. 1, and the outlay will probably exceed \$35,000.

The city of Winnipeg, Man., will purchase a \$9,000 plant for macadamizing the streets.

The school buildings at Fergus, Ont., are to be improved at a cost of \$3,000.

**CANADIAN
CHEMICAL
COMPOUND
COMPANY**

**CORRECTLY
COMPILED
CHEMICAL
COMPOUNDS**

**CIVILITY
CAREFULNESS
COMPLETENESS
CONTINUITY**

SAVE COAL! SAVE COAL!

USE OUR SPECIALLY PREPARED

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SAFE-SURE-AND RELIABLE.

See that our
Paper Brand is
on the Package.

ZINKOLINE
Will Save You Money.

Offices—
310-311 Temple Bldg.
TORONTO.

A Manufacturing Site FOR SALE

A Lot of Land in the CITY OF TORONTO, 73 feet 8 inches front, on a street 100 feet wide, extending 90 feet to a lane. Convenient to freight and passenger depots. Well situated for light manufacturing purposes.

One of the Most Desirable Locations in the City.

A Bargain, the owners being anxious to realize. Apply to

T. S. STAYNER & CO.,
Cor. Jordan and Melinda Sts., Toronto.

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For term of years,

**LARGE
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AT KING ST. SUBWAY, TORONTO.

Ground Floor Area, 36,000 feet.

Railway sidings and other City facilities.

LIBERAL TERMS.

LAND SECURITY COMPANY,
44 Victoria St., Toronto.

THE OTTAWA PORCELAIN AND CARBON CO., Limited, OTTAWA, ONT. . . .

MANUFACTURERS OF

CARBON POINTS for all kinds of Arc Lamps, including Cored and Solid Carbon for Incandescent Circuits.

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MOTOR BRUSHES and Specialties in Carbon for Telegraph, Telephone and Electric Light Supplies.

PORCELAIN INSULATORS, Cleats, Door Knobs, and all kinds of Pressed Porcelain for Electrical and Hardware Lines.

ALL GOODS GUARANTEED TO GIVE SATISFACTION.

A Saving.

The first cost is not the test of an actual saving. The truly Economical Manufacturer knows this to be true. For instance, the cheap, trappy Pulley, by its inferior working qualities, is a source of loss to the user the moment it is put in operation, and this loss continues all the time the Pulley is working. You do not get the full or proper results from your power plant. Higher price, though, is not always a sign of better quality, for instance—you may or may not have to pay more for

“THE REEVES” PATENT WOOD SPLIT PULLEY

but in either case you are getting the best value on the market. Because with THE REEVES the saving is continual, in Power, in Time, in Shafting, in Belting, and last but not least, and as a result of all the other savings, a saving in Money.

CAN YOU AFFORD TO BE WITHOUT “THE REEVES”? Is the best too good for you? WRITE TO-DAY FOR OUR CATALOGUE AND GET OUR PRICES.

Also COLUMBUS, IND.

REEVES PULLEY CO., Toronto, Ont.

Windsor Mills, Que., will build a water-works system. Mr. J. Foster, of Montpelier, Vt., will be the supervising engineer.

The Department of Public Works, Ottawa, will receive tenders until June 15th for repairing, strengthening, etc., the breakwater at Souris, P.E.I., according to plans to be seen at the Department in Ottawa and at the office of J. B. Hogan, resident engineer, at Charlottetown, P.E.I.

Now tenders will shortly be asked for the reconstruction of the breakwater and repairs to piers at Goderich, Ont. The contract was originally awarded to Mr. Luke Madigan, whose tender amounted to \$50,000, but he has been obliged to throw up the work owing to ill-health, which necessitates a new arrangement being made.

The Dominion Government intend to carry out improvements at Port Stanley, Ont., which are estimated to cost \$16,000. A sum of \$11,000 has just been voted by the House, which will be expended in reconstructing both the piers at the entrance to the harbor, dredging the entrance to the channel, and building a turning basin inside the harbor.

The Public School Board of Winnipeg, Man., will receive tenders until June 13th for the purchase of \$75,000 debentures, the proceeds of which are to go for the erection of school buildings at that place.

Berlinguet & LeMay, architects of Quebec, who are finishing the interior of the cathedral of Charlottetown, P.E.I., will add \$10,500 to the cost for some changes. These architects have much work on P.E.I., where they begin the Falkenwood asylum, at the approximate cost of \$30,000; the church of Tracadie, contractors, Schurman, Lefurgy, Clarke & Co., of Summerside, cost \$10,000; Kinkora church, in red stone from the island, cost \$15,000. Tenders are in for the Prince of Wales College at Charlottetown, approximate cost, \$35,000. The new wing of the Parliament buildings, to cost \$14,000, will be begun after the session of the present legislature. Same architects are preparing plans for a church at Souris, P.E.I., cost about \$18,000. They are asking for tenders for finishing the fine Gothic church of Beaufort, comprising two spires, 220 ft. high. Trade Review.

J. W. Ryan, architect, Kentsville, N.S., has prepared plans for the completion of the Roman Catholic church at that place.

The Sarnia Post is authority for the statement that the Ontario Lumber Company, of Toronto, will establish a large planing mill at Point Edward, Ont.

Acton, Ont., is to have electric light. The town engineer has laid before the council an estimate of the cost of 300 private incandescent lamps and fifty street lamps.

According to Mr. Tarte, a total sum of \$1,098,000 has been spent on the harbor works of Toronto. Of that amount about \$25,000 was disbursed before Confederation, and the balance since that time. Two or three groynes, costing about \$1,800, were built last year for the protection of the island. Excluding the cost of those groynes, it is estimated that it will take \$80,000 to finish the harbour improvements.

Mr. C. O. Macdonald, of Port Morien, C.B., who has been in England, is instructed by the Newcastle Coal Syndicate, which he represents, to call for tenders for sinking shafts and putting up mining works on the mining property which the syndicate has acquired at Port Morien.

Mr. F. S. Peters, architect, Winnipeg, Man., is preparing the plans for the three-storey block to be erected in that city for Messrs. Osler, Hammond & Nanton. It will be a handsome and substantial structure, and in every way in keeping with the improved class of business buildings now being erected in that city.

A by-law has been introduced into the town council of Whithy, Ont., to raise a loan of \$10,000 to re-establish the tannery there which has been idle for some time.

T. G. Treleven, Killarney, Man., is asking for tenders for the erection of a brick block.

FACTORY FOR SALE

GOOD WATER POWER.

ENGINE, BOILERS AND SHAFTING
IN GOOD ORDER.

On Main Lines G.T.R. and C.P.R.
Within three miles of Toronto.
Buildings brick and stone, suitable for
heavy manufacturing.

25 Acres of Land. A Great Bargain.

Apply

W. M. COCKBURN, 14 Toronto St., Toronto.

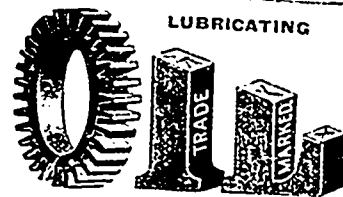
EMERALD-BOILER-OIL

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Plans have been prepared for the erection at Indian Head, N.W.T., of a Methodist church to cost \$1,500, town hall to cost \$7,500, and a block of buildings to cost \$3,500, all of brick, and a large frame warehouse to cost \$3,000.

The British Government have requested the Newfoundland Government to furnish plans showing the extent and location of Crown property at and near the city of St. Johns, the number of barracks available for the location of troops, the position of quarries where granite is obtainable, the number of contractors who could undertake the building of fortifications and the facilities for prompt construction. This means business.

Robert Kennedy, Ottawa, will erect a brick hotel at a cost of \$3,000.

The C.P.R. will construct a wharf at Kalso, B.C., at a cost of \$6,000.

The Baptist church at Ingersoll, Ont., burned a short time ago, will be rebuilt at once.

The Dominion Government has placed in the estimates \$11,000 for improvements to Port Stanley harbor.

The city engineer of Hamilton has reported against the proposition made by the Cataract Power Company to pump the city water supply by electricity. The city council has decided however, to engage an expert to report on the relative cost of steam and electric power for pumping purposes.

The Manitoba Grain Co., Winnipeg, Man., will shortly commence work on a new elevator at Calgary, Alberta.

The Royal Pulp and Paper Co., of East Angus, Que., will issue \$400,000 in first mortgage bonds. The mortgage will affect all their mills, dams, piers, booms and power, and the lands around the mills necessary for the company's operations, also about 65,000 acres of timber lands on the St. Francis river and its tributaries above the mills, which the company owns in fee simple. The construction account of the mills, piers, booms and dam amounts to \$96,505. The timber lands are easily worth \$5 per acre or \$325,000, so that the bonds are secured by property to the extent of \$921,505.

The city of St. John, N.B., will sell debentures to the value of \$147,000, the proceeds of which are to apply to the extension of city waterworks system.

The town of Lemoilon, Que., will erect a new town hall at a cost of \$7,000.

T. C. Silverthorn, architect, Brandon, Man., has prepared plans for the erection of a new church at Portage la Prairie.

A syndicate of English capitalists propose establishing abattoirs at the city of Quebec.

James S. Smith, architect, Montreal, is inviting tenders for the erection of a factory to be built at Hull, Que., for the Toronto Rubber & Shoe Mfg. Co.

Plans are being prepared by Tanguay & Vallee, architects, city of Quebec, for remodelling a factory for G. E. Amyot, the enlarging of the Sacred Heart Asylum, and for a new Seminary at Sherbrooke, Que.

E. M. Talbot, architect, city of Quebec, is arranging for the erection there and in that vicinity of buildings that will cost nearly \$25,000.

Under the direction of Mr. A. Davis, consulting engineer, the Coleraine Mining Co., Que., will put in a new and complete mining plant.

Permits were issued last week for the erection of buildings in Toronto as follows: John W. Coates, two-storey and attic brick, 36 Morse street, \$1,000; Consumers' Gas Company, brick and stone retort house, Parliament street, near the Esplanade, \$5,000; Wm. Scott, two-storey and attic brick dwelling, 92 Cowan avenue, \$2,000; H. Greisman, two-storey brick additions, 45 to 57 Chestnut street, \$1,100; J. Herron, pair two-storey and attic bricks, corner Spadina avenue and Spadina crescent, \$5,000.

The Dominion Government purposes to advance \$2,000,000 to the Montreal Harbor Commissioners for the completion of the harbor works there.

The Elora Carpet Factory will be removed from Elora, Ont., shortly and the municipality which offers the greatest inducements will secure it.

The Shipe Wood Rim Co., Toronto, are prospecting for a town in which to locate their business. They were recently burned out in Toronto.

A movement is on foot to build a union railway station at St. Thomas, Ont., to accommodate the Grand Trunk, the Wabash, the Canadian Pacific, and the Port Stanley roads.

The following building permits have been granted Toronto parties:—The Carlaw estate, warehouse, \$12,000; J. A. Kane, five brick houses, \$12,500; J. M. Loose, factory, \$3,000.

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THE CANADIAN MANUFACTURER,
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NO CHARGE MADE FOR GIVING INFORMATION.

THE CROFTAN STORAGE BATTERY COMPANY.

The Croftan Storage Battery Company, recognizing in Canada a profitable field for operations have, during the past month, opened up a branch in Toronto at 22 Shepard St., where they are manufacturing storage batteries which they claim are superior in lightness and efficiency and possessing a high degree of durability. The inventor, Dr. Croftan, of Chicago, assisted by Professor J. K. Pumpelly, one of the foremost storage battery experts in the Western States and the inventor of the Pumpelly-Sorley cell, recognizing the chief objection to other storage batteries arose from the great weight of inactive substance which has heretofore been considered a necessary quantity, have spent the last five years devising a plate which, while doing away with the greater portion of this inactive material, would still retain the requisite durability and efficiency. The result of their labors has been eminently successful, as has been demonstrated by numberless experiments, and it is a matter of note that although the American Company has been incorporated but a short time, they are receiving daily orders for batteries for all purposes from different parts of the States. A brief description of this storage battery will no doubt prove interesting.

In the construction of the Croftan plate chemically pure lead only is used, antimony and all other foreign substances being discarded. The plate is formed of minute particles of lead deposited to the desired thickness upon a perforated sheet of pure rolled lead by means of a spray—the perforated sheet having about 8,100 perforations to the square foot. The lead thus sprayed forms perfect contact with the perforated sheet lead and is further secured by perfect union through the perforations. The plate is then run through a corrugating roller by which interces are formed for the reception of further active material. That by electrochemical process is formed into one integral mass with the porous sprayed lead, which is converted jointly with the applied active material.

We thus have a plate which has no unnecessary weight and whose entire surface is active material. The plate, supported by the perforated sheet in the centre, which while abundantly capable of supporting the active material weighs less than fifteen per cent. of the entire weight of the converted plate. Being formed of chemically pure lead it is not subject to corrosion or disintegration, and being one solid integral mass the plates are not liable to sulphate as there are no spaces in which sulphate may form and dislodge the active material; and as it contains no dissimilar metals no local action can result.

The plate has the greatest active surface, and most perfect chemical union in every part, and a very large area of active material presented to the electrolyte. All connections in the cells are made by burning the lead, thus forming perfect contact without the use of solder or any other substance other than chemically pure lead.

The Canadian branch of this company is under the direct supervision and control of Messrs. W. M. H. Nelles and Rem Wadsworth, with E. B. Arnold, a brother of B. J. Arnold, consulting engineer of the Electric Storage Battery Co. of Philadelphia and W. L. Arnold of the Siemens & Halske Electric Company of America, manager of the manufacturing department. Their batteries are

especially adapted for lighting plants, electric launches, motor carriages and smaller work such as dentist and doctors batteries, carriage lamps, etc., and the company propose in the near future placing upon the market a bicycle lamp which they claim will cause a revolution in that line.

The St. John Sulphite Pulp Company have commenced the erection of a large pulp mill at Mispec, near St. John, N.B.

Mr. D. K. McLaren, manufacturer of oak tanned leather belting, card clothing mill supplies, etc., Montreal, with branch stores at Ottawa and Galt, Ont., inform us that his concern is hard at work in their new factory turning out a large quantity of belting for the new organ factory of Messrs. W. Doherty and Co., Clinton, Ont. More than three thousand feet of belting are included in this order, in which are two dynamo belts. The order was placed with the McLaren agency at Galt, Ont.

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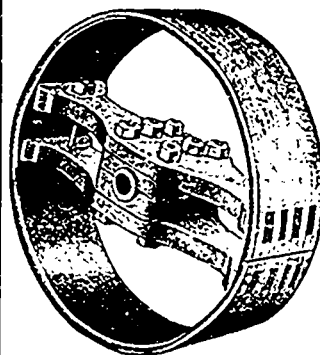
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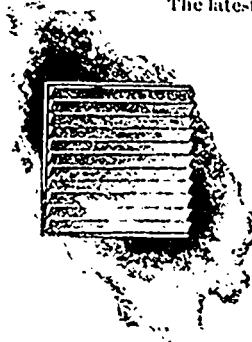
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**NEED OF GREATER UNIFORMITY IN
PIG IRON ANALYSES.**

BY THOS. D. WEST.

Read before the Pittsburg Foundrymen's Association, March 28, 1898.

While the past four years have witnessed a greater revolution in foundry practice than any like period, methods of making mixtures were never in the plight in which we find them to-day. The recent introduction of chemistry in founding has brought a realization of the impossibility of accurately judging the grade of an iron from fracture; yet there is still a prejudice with many, against chemical analysis as a determiner of grades or as a basis for making mixtures. It is unfortunate that there are features involved in such analyses that give the opponents of chemistry some ground for throwing doubt upon it. All improvements have to combat with more or less prejudice and difficulty before they can establish themselves. For this reason those who know from experience the value of working by chemical analyses, should not be discouraged or sit still and let the retarding influences have full sway. The thing to do is to determine the factors that tend to prevent the general use of chemical analyses and work to correct what needs correcting. The writer knows from experience some agencies that retard the general utilization of chemical analyses in making mixtures and in connection with this paper will cite a few of them.

At the outset two considerations may be stated: First, the founder who continues to make mixtures by judging the fracture of pig metal, will find that the iron in his castings is not always what he would like to have it and will often cause him heavy losses. Second, the principles underlying chemical analyses are established and their correct application gives the greatest assurance of attaining desired ends.

What is best to do, retain the old practice, or strive to perfect the new? This is a question that interests the maker of pig iron, as well as the consumer; for if the blast furnaceman can remove thereby any of the grounds of complaint by users of his product, he certainly has much to hope for from any progress toward perfecting analyses in making mixtures of iron. In one sense, the use of chemical analyses is but a comparative method, a guide to desired ends in making mixtures. With a certain percentage of silicon, sulphur, phosphorus, manganese and carbon in iron, other conditions being alike, as to fuel, etc., the progressive founder knows very closely just what physical results he may expect from his mixtures. If all the procedures have been correct, he will get expected results, but the difficulty lies in the possibility of error. For example, if a founder has been receiving metal from one furnace that has a careful chemist and correct methods for determinations, he will obtain—providing no errors have been made in the shipment or charging of iron—the results he counted on, in making his mixtures. But should this furnace change chemists or the founder secure iron from another furnace—changes occurring every day—we then find conditions that may destroy the comparative results of past practice in making mixtures. Such changes often cause bad castings, or castings lacking in the physical properties desired, and may result in the furnaceman being censured or losing his trade. The trouble would have been avoided

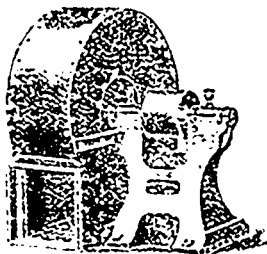
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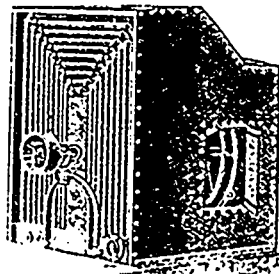
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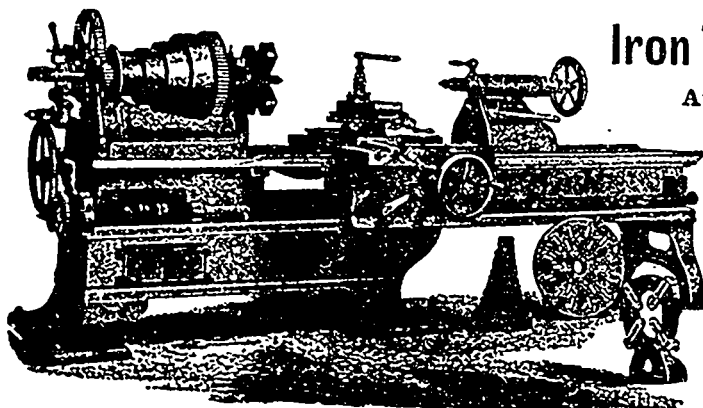
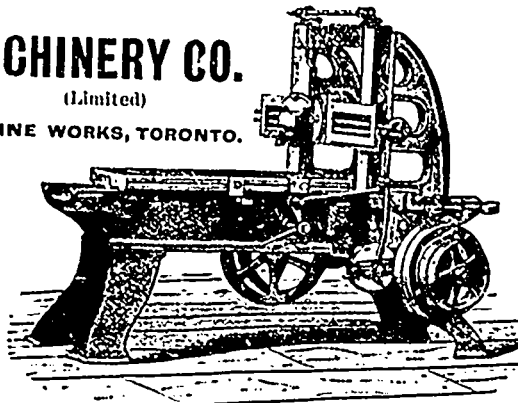
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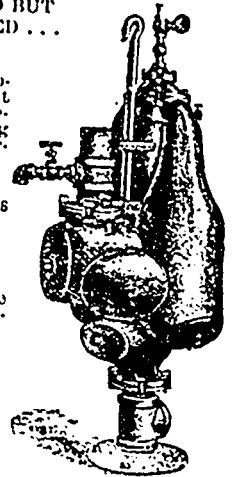
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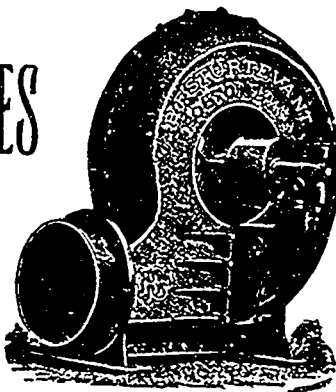
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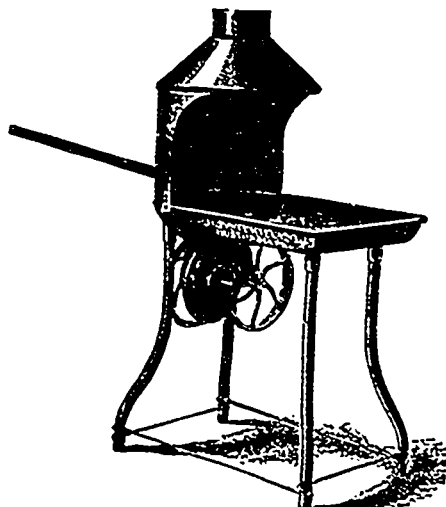
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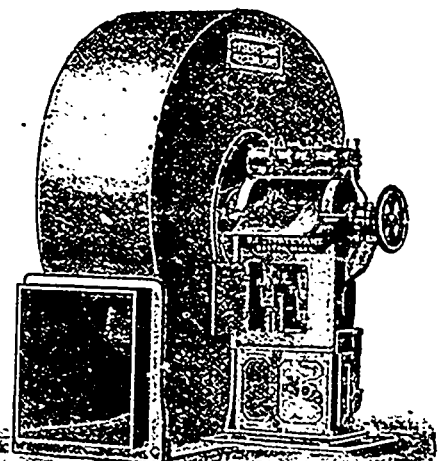
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had the founder understood how to allow for the new chemist's methods of analysis.

Two other factors are to be mentioned that affect the value of analyses: The character of the chemist's work and the

TABLE 1—COMPARATIVE ANALYSES OF FOUNDRY IRON.

Laboratory.	Sil.	Sul.	Phos.	Man.	G.C.	C.C.	T.C.
A...	1.95	.011	.69	.63	3.35	.18	3.83
B...	2.00	.010	.513	.56	.....	.....	1.27
C...	2.02	.0015	.615	.56	2.99	.61	3.63
D...	2.05	.010	.59	.69	3.20	.52	3.72
E...	2.05	.007	.59	.60	3.11	.15	3.86
F...	2.06	.011	.617	.62	.....	.....	3.85
G...	2.06	.013	.579	.....	.....	.....	.....
H...	2.11	.011	.617	.51	3.12	.80	3.92
I...	2.13	.006	.503	.56	3.01	.11	3.18
J...	2.138	.018	.....	.....	.....	.....	.....
K...	2.16	.015	.612	.550	.....	.....	.....
L...	2.19	.012	.591	.501	3.29	.82	4.11
M...	2.21	.008	.61	.16	2.82	.36	3.18
N...	2.21	.013	.600	.516	3.59	.32	3.91
O...	2.22	.029	.51	.59	3.32	.25	3.57
P...	2.221	.015	.603	.59	3.12	.29	3.71
P...	2.219	.019	.615	.60	3.15	.24	3.68
P...	2.228	.017	.610	.58	3.36	.10	3.76
Great Variation.	.27	.0155	.111	.23	.77	.59	1.09

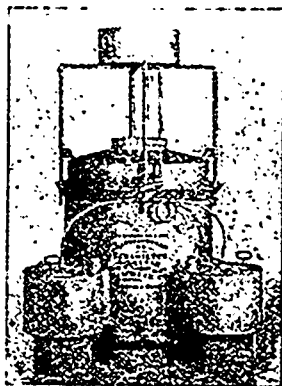
*Corresponding letters in the four tables signify that analyses are from the same laboratory or firm.

TABLE 2—COMPARATIVE ANALYSES OF BESSEMER IRON.

Laboratory.	Sil.	Sul.	Phos.	Man.	G.C.	C.C.	T.C.
A...	2.12	.050	.088	.73	3.19	.75	3.91
C...	2.15	.018	.091	.93	2.78	.85	3.63
D...	2.20	.055	.086	.91	3.10	.61	3.71
F...	2.21	.051	.093	.95	.....	.....	3.81
S...	2.25	.058	.090	.90	.....	.....	.....
E...	2.29	.018	.080	1.09	3.11	.57	3.71
R...	2.30	.051	.087	.91	3.16	.0	3.96
B...	2.31	.056	.083	.89	.....	.....	3.80
K...	2.31	.060	.085	.896	.....	.....	.....
O...	2.32	.051	.086	.81	3.06	.25	3.31
L...	2.32	.055	.111	.809	3.51	.81	4.35
Q...	2.37	.038	.087	.83	2.92	.82	3.71
P...	2.415	.061	.086	.93	3.15	.67	3.82
P...	2.402	.066	.081	.98	3.20	.68	3.78
P...	2.413	.060	.086	.96	3.12	.72	3.81
Great Variation.	.32	.018	.031	.36	.73	.60	1.01

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TABLE 3—COMPARATIVE ANALYSES OF CHARCOAL IRON.

Laboratory.	Sil.	Sul.	Phos.	Man.	G.C.	C.C.	T.C.
D...	.95	.019	.89	1.76	2.90	.78	3.68
A...	.97	.017	.86	1.77	3.10	.88	3.98
L...	.97	.013	.929	1.795	2.91	.91	3.85
E...	.98	.016	.91	1.80	3.01	.79	3.80
R...	.98	.022	.957	1.93	3.25	.60	3.85
C...	.99	.016	.916	1.90	2.81	1.02	3.86
T...	1.00	.016	.952	1.99	2.69	.18	3.17
F...	1.02	.017	.918	1.93	.....	.....	3.95
B...	1.01	.021	.905	1.83	.....	.....	3.76
N...	1.00	.033	.932	1.768	3.30	.11	3.71
P...	1.161	.027	.931	1.85	3.20	.56	3.76
P...	1.152	.025	.930	1.89	3.28	.11	3.72
P...	1.157	.021	.930	1.99	3.25	.18	3.73
Great Variation.	.21	0.29	.067	.22	.61	.53	.30

TABLE 4—FIRMS AND CHEMISTS FURNISHING COMPARATIVE ANALYSES.

Laboratory.	Analyses.	Concerns Furnishing Analyses.
A	3 Sets.	Buffalo Furnace Co., Buffalo, N.Y.
B	3 Sets.	Frank Hersh, Chemist, Carnegie Steel Co., Cochran, Pa.
C	3 Sets.	J. M. Camp, Chemist, Tennessee Coal, Iron & Ore Co., Birmingham, Ala.
D	3 Sets.	J. R. Harris, Chemist, Embreville Iron Co., Embreville, Tenn.
E	3 Sets.	F. E. Thompson, Chemist, Phillips Testing Laboratory, Birmingham, Ala.
F	3 Sets.	Illinois Steel Co., So. Chicago, Ill.
G	1 Set.	Spearmen Iron Co., Sharpsville, Pa.
H	1 Set.	W. E. Dickinon, Chemist, Thomas Iron Co., Hokendauqua, Pa.
I	1 Set.	Everett Furnace, Everett, Pa.
J	1 Set.	F. R. Bennett, Chemist, Booth, Garrett & Blair, Philadelphia, Pa.
K	2 Sets.	Crane Iron Co., Catsauqua, Pa.
L	3 Sets.	H. A. Knapp, Chemist, Hamilton Furnace Co., Hamilton, Ontario.
M	1 Set.	James C. Foster, Sheffield, Ala.
N	2 Sets.	Warwick Iron Co., Pottstown, Pa.
O	2 Sets.	Wm. A. Stephan, Chemist, Andrews & Hitchcock Iron Co., Youngstown, Ohio.
P	9 Sets.	Dr. R. Moldenke Met. Eng., Pittsburgh, Pa.
Q	1 Set.	Bethlehem Iron Co., So. Bethlehem, Pa.
R	2 Sets.	A. L. Colby, Met. Eng., Chaire Furnace Co., Sharpsville, Pa.
S	1 Set.	D. K. Smith, Chemist, Stewart Iron Co., Sharon, Pa.
T	1 Set.	E. R. Sarnborn, Chemist, Superior Charcoal Iron Co., Detroit, Mich.
		W. P. Putnam, Chemist.

purity of the chemicals used. Serious harm may be done by a careless chemist and such men should have no place in a chemical laboratory. Mistakes are liable to happen with any man, but where one is indifferent to them, no consideration should ever be extended. The strength and purity of chemicals is an important matter also. To guard against variations in this regard, chemicals are tested when received, and the impure rejected. To determine the variation due to the method and to personal factors, the practice of standardizing drillings is followed. A chemist will first obtain from five to twenty pounds of clean, fine, well-mixed drillings, out of which he will send samples for analysis to four or more chemists of known ability and accuracy in their work. The reports of these analyses may be two to five months in coming back. When all are received he will accept the average as a standard. The labor and expense involved in procuring standardized drillings for testing chemicals or analyses are considerable, and suggest the question, Why cannot a central laboratory be maintained where all chemists dealing with cast iron could obtain standardized drillings, promptly and at a price comparatively small? As the writer is surrounded by blast furnaces and their laboratories, he has often thought of the steps that might be taken toward the establishment of such a standardizing laboratory for furnace work and iron founding.

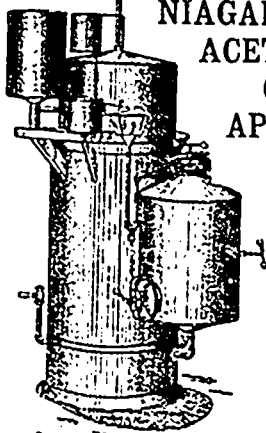
In a paper read at the November meeting of this association, the writer solicited the addresses of chemists willing to analyze drillings, so that the results could be checked up and compared. It was surprising, the great interest manifested in the work. As a result of this call the writer has the pleasure

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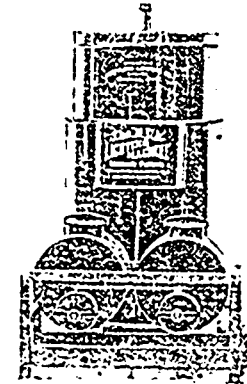
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of presenting in this paper, forty-six sets or 273 separate analyses, from leading laboratories in the different iron working sections of this country and one from Canada. The samples the writer selected for the drillings lie before you on the table. Here are three pieces of pig about nine inches long, having 7-inch holes drilled about 2½ inches deep from the face down, and as close as they could be obtained. The drillings from these samples of foundry, Bessemer and charcoal pigs respectively, were kept separate and those for each pig thoroughly mixed, so as to ensure that all samples sent out were exactly alike, as far as it was possible to get them by the use of pig metal. Pig iron was selected in place of making any special castings, so as to test particularly the ordinary practice followed at blast furnaces, in taking drillings from pig metal.

The writer's thanks are tendered to the various firms and chemists mentioned in Table 4, for so kindly furnishing the analyses seen in Tables 1, 2, and 3. It has taken no small expenditure of time and money to obtain these analyses, and it is to be hoped that the end sought by this paper will lead all the contributors to feel that their labors have been devoted to a good cause.

Considering that drillings were taken from pig metal, which are not as good for checking purposes as those taken from a clean, especially prepared and solid casting, and that there is no uniformity of method in analyses at the present time, the close results seen in Tables 1, 2, and 3, are very creditable to the various chemists and demonstrate that great care was exercised by all. In justice to the donors of these analyses it is to be said that the analyses given by the respective firms and chemists may not represent half of their work, as checks were run on the analyses reported to make sure no error had been made. To illustrate what is meant by "checks" the last two analyses of each table are cited, which are Dr. Moldonko's checkings. This is, of course, more exacting practice than is generally carried on in the daily routine work of furnace laboratories. For this reason, a much greater variation in the analyses of pig iron, as it leaves the furnace yard for the foundry, may be expected than is shown by Tables 1, 2, and 3.

The first suggestion that will come to the practical furnaceman and founder in studying Tables 1, 2, and 3 (which are arranged according to the variations in the silicon), is whether the variations found in the analyses of the respective pig metals are sufficient to have any serious effect on their comparative value, when applied to making mixtures of iron. To aid in seeing clearly what are the greatest variations to be found in the analyses shown, attention is called to the last line of each table. In Table 1, there is an actual difference of .27 for silicon, .0155 for sulphur, .114 for phosphorus, .23 for manganese and 1.09 for the total carbon. Table 2 shows a variation of .32 for silicon, .018 for sulphur, .031 for phosphorus, .36 for manganese and 1.01 for total carbon. Table 3 shows .21 for silicon, .020 for sulphur, .067 for phosphorus, .22 for manganese and .30 for total carbon. When such a difference is to be found in analyzing pig metal where the greatest care and skill has been exercised, as exhibited in Tables 1, 2, 3, what are the chances to be run in accepting analyses made by the different rapid methods in the rush of every day furnace practice? Here we have, with the best of care and skill, a variation in the ingredients, mainly due to a lack of uniformity in

laboratory methods and of a standard for analyses sufficient to affect two-thirds of all the castings made, causing them to be either bad, or ill-suited for the use for which they were intended.

Is it not time that furnacemen and foundrymen were awakening to the necessity of co-operating to secure greater uniformity in the methods of making chemical analyses and in establishing a central standardizing agency?

The writer holds a description of several of the methods used for obtaining the analyses shown in the tables and chemists who have seen them could outline their reasons for giving different results. As the writer is not a chemist he does not assume to discuss anything regarding their work. Some good work is now being done in this line by a committee headed by the eminent Dr. C. B. Dudley. It is to be hoped that the near future may see such a co-operative agency as that referred to, so that it may be patronized by all chemists employed in the manufacture or use of cast iron.

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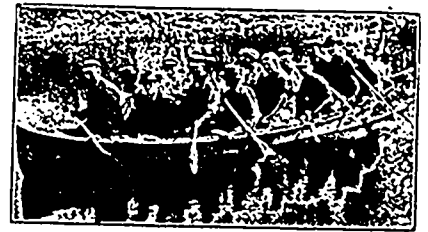
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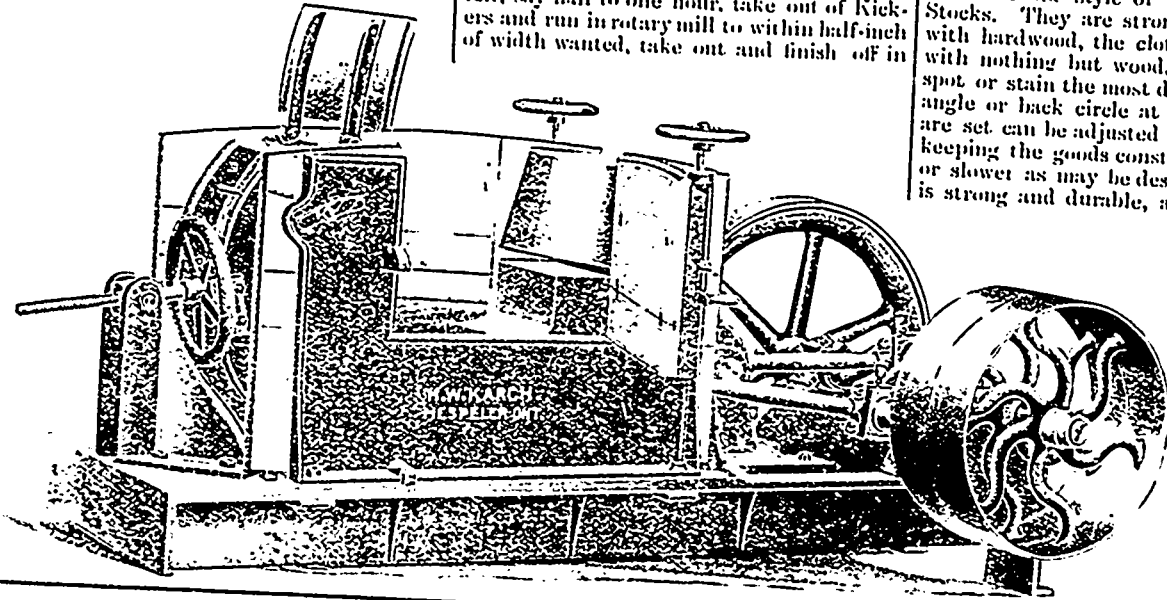
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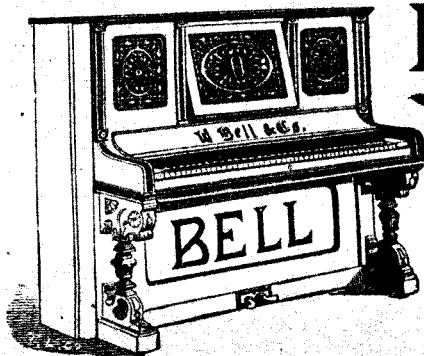
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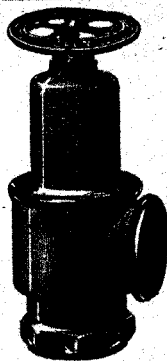
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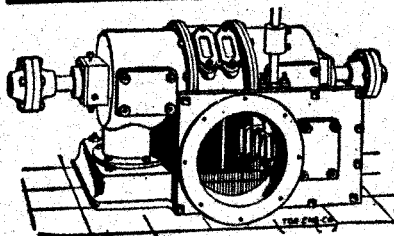
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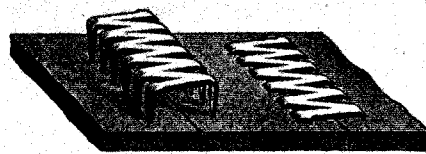
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