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Vol. 41. TORONTO, DECEMBER 7, 1900. No. 11.

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 All made of the best material and finest workmanship.
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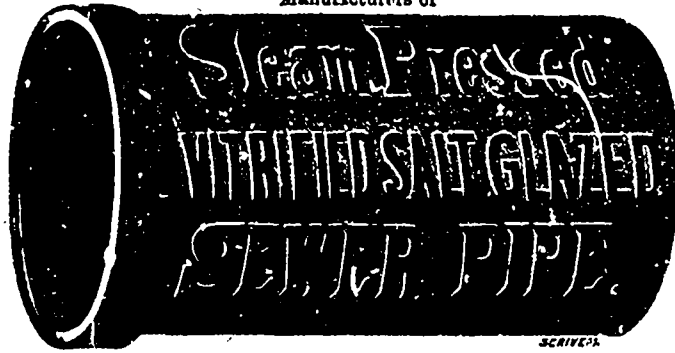
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New Black for Cotton

Colonial Black

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Fastest Black on the Market.

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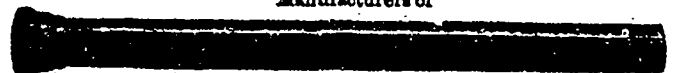
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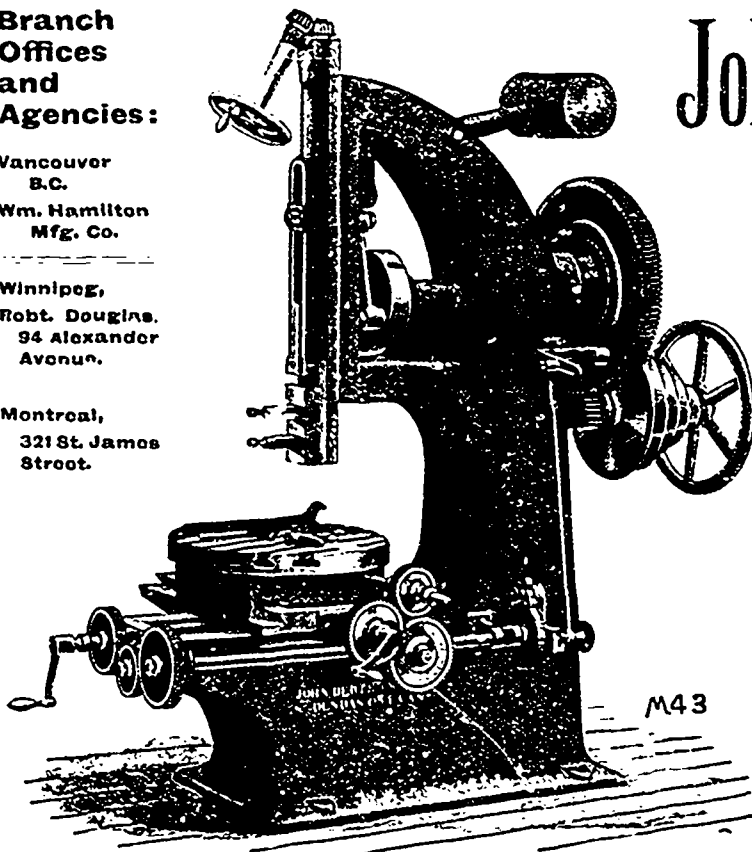
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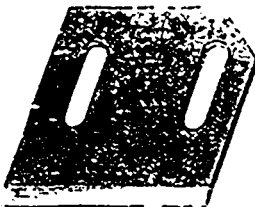
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THE BEST EQUIPPED BOILER AND ENGINE WORKS IN CANADA.

We Manufacture—

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STEEL STEAM VESSELS OF EVERY DESCRIPTION.

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BICYCLE SCREW PLATE
WITH 22 BICYCLE TAPER TAPS.
14 DIES INCLUDING TAP WRENCH DIES.

STOCK 2 IN LONG

If your Dealer Does not Keep Them Send to Us.

CHEAPEST AND BEST
Bicycle Screw Plate

14 PAIRS DIES—22 TAPS

...A Complete Repair Shop in Itself...

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DONE FOR THE TRADE.

GET OUR PRICES.



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Manufacturers of

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HOT PRESSED NUTS.



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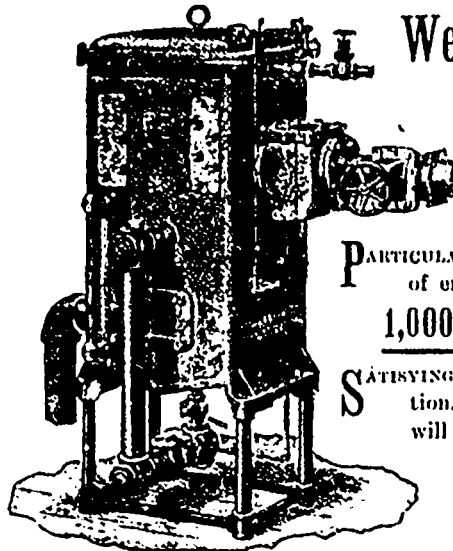
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Webster Feed Water Heater AND PURIFIER

BEFORE PURCHASING ELSEWHERE
ENTERTAIN A BID FROM US.

PARTICULAR experience for ten years in this department
of engineering, and the fact that over
1,000 WEBSTER HEATERS are in use, is
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SATISFYING particulars, embracing details of construc-
tion, materials, operation and exclusive results,
will be sent on application.

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A. KLIPSTEIN & CO. 122 Pearl St. New York

Anilines, Dyestuffs & Chemicals

DELIVERY MADE AT NEW YORK, MONTREAL OR HAMILTON.

WRIGHT & DALLYN, HAMILTON, ONT.

Cheaper Steam

The cost of steam depends upon the cost of
the coal necessary to produce it.

You have no control over the price of coal
per ton, so if you want cheaper steam you must
use less coal.

The MUMFORD STANDARD BOILER will burn
10 to 25 per cent. less coal to the horse-power
than a return tubular boiler.

At the present high price of coal the saving
will soon pay for a new boiler.

Robb Engineering Co. Limited,

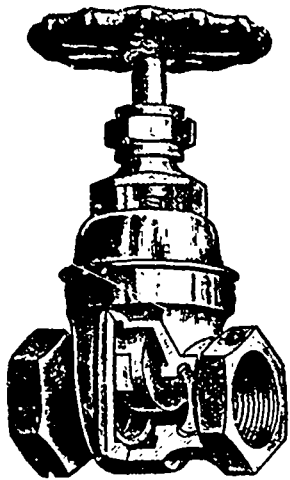
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VALVES



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TO
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ASK YOUR
DEALER
FOR THEM.

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on
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THE KERR ENGINE CO., Limited,
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RUBBER BELTING

"We have used considerable of your 'Para' brand rubber belting, and found the quality very satisfactory."

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Current
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No
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ABSOLUTELY ACCURATE

From Less than 5 c.p. to Full Capacity. Guaranteed for Three Years.

METERS

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No Wear.

MADE BY... **STANLEY INSTRUMENT CO.,** GREAT BARRINGTON, MASS., U.S.A.

FOR SALE IN CANADA EXCLUSIVELY BY

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"FOR ALL DUTIES"

We invite enquiries from engineers in need of any description of Pumping Machinery. We manufacture over five hundred varieties and sizes of Steam and Power Pumps for stationary and marine purposes. We will be pleased to furnish plans and specifications for any special types. Our Catalogue, giving a good idea of our standard patterns, sent free to all enquirers.

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To anyone requiring a compact, thoroughly reliable engine, especially suited for users of intermittent power, we recommend our Gas and Gasoline Engine. We shall be glad to furnish estimates for Gas or Gasoline operated pumps, electric light plants, etc., etc. Explanatory Booklet free on request.

Northey Mfg. Co., Limited, 1000 KING ST. SUEWAY, **Toronto, Ont.**

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MANUFACTURERS
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OF ILLUMINATING
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OILS, GREASES

and SPECIALTIES

SEE THIS SPACE NEXT ISSUE.

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Temple Bldg., - TORONTO.
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MANUFACTURERS:—Competent and impartial advice on
Industrial Electrical Systems of Lighting, Power Distribu-
tion, Heating and Welding, Etc. Plans, Specifica-
tions, Tests, Reports, Valuations.



Reflectors, Shades, Lamps

We Stock a Large Variety of SHADES
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ALUMINUM, MIRROR, CELLULOID, PAPER, PORCELAIN,
FOR FACTORY AND OFFICE.

Imperial Lamps and Helios Upton Enclosed Arcs Give BEST LIGHT with LEAST CURRENT
ELBRIDGE Sparking Dynamos, SAMSON Batteries and IMPERIAL Salts, for Gas or Oil Engines.

Write us about Lighting
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PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

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 ALL OTHER COUNTRIES IN POSTAL UNION, EIGHT SHILLINGS
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The Canadian Manufacturer Publishing Co., Limited.

McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.
 Cable address: "CANAMAN." Western Union Telegraphic Code used.

J. J. CASSIDY, Editor and Manager.

THE SMOKE NUISANCE.

A by-law is pending before the Toronto City Council, entitled "A By-law to compel manufacturers and others creating smoke to use smoke consumers." It provides that "all manufacturers and others in the city of Toronto using combustible materials to produce heat or power and thereby creating smoke in such quantities as to foul the atmosphere, or that may be carried by the wind or otherwise to other shops, houses or premises to the inconvenience or injury of the neighboring premises or residents therein, shall have such chimney or other apparatus connected with the generating of heat or power as shall consume the smoke, or prevent the same from fouling the atmosphere, or being carried by the wind or otherwise to other shops, houses or premises to the inconvenience or injury of the neighboring premises or residents therein." Section 2 provides that any person convicted of a breach of any of the provisions of this by-law shall forfeit and pay, at the discretion of the convicting Magistrate, a penalty not exceeding \$50 for each offense, exclusive of costs, in default of which payment the penalty may be levied by distress, and in case of there being no distress found, the offender may be committed to the common goal with or without hard labor, for any period not exceeding six months. The announcement that this by-law was about to be enacted called forth such a storm of protests from manufacturerers and others that the City Council very graciously deferred its further consideration for one month, in which time it was thought every factory, foundry, and smoke producing establishment in the city would be provided with smoke-consuming apparatus.

If such apparatus could be found—if any such really existed—it would be an impossibility to equip the thousands of offending smoke-stacks with them within the month's grace allowed, and if it could be done, it would call for the expenditure of many thousands of dollars on shorter notice than what would be required to produce them. No doubt some arrangements of grate bars and furnaces are made which accelerates the combustion of fuel, and effecting some abatement of the smoke nuisance, but if any such apparatus is in existence, applicable in a general way to factories and industrial establishments, it has never been placed in the market in this or any other city in any country. The

inventor of such an apparatus, working as perfectly as that required by the Toronto City Council, would become a millionaire, able, financially, to buy out even the Standard Oil Trust. Such a by-law, were it enacted, could not be enforced; and if it could there would soon be thousands of smokeless chimneys and idle factories in Toronto.

THE AGRICULTURAL IMPLEMENT INDUSTRY IN THE UNITED STATES.

The sixth annual convention of the National Association of Agricultural Implement and Vehicle Manufacturers of the United States was held at Milwaukee, Wis., a few days ago. There were about 100 delegates in attendance, representing all parts of the country. The importance of this industry as a consumer of iron and steel, and its particularly large demands upon the producers of iron in the past four years made the occasion of special interest to the iron trade. It was shown at the convention the great magnitude of the interests involved in the wagon and vehicle making industries of the United States, the statement being made that the value of the products in these lines per annum, according to the census of 1890, was \$195,823,558, the amount of wages paid \$62,010,283, and number of employes, 115,997, and that with the increase of business during the succeeding ten years, the census for 1900 would undoubtedly show that there is no industry in the country that uses larger capital, has a greater product or employs more labor than does the manufacture of agricultural implements and vehicles. An important matter touched on in the President's address was that of the reclamation of the arid lands of the West. He said:

In a report made by the Secretary of the Interior it is stated that 74,000,000 acres of land in the western half of the United States, capable of supporting 50,000,000 people, can be reclaimed by irrigation, and commenting upon the same the Secretary said: "That this vast acreage, capable of sustaining and comfortably supporting, under a proper system of irrigation, a population of at least 50,000,000, should remain practically a desert, is not in harmony with the progressive spirit of the age, or in keeping with the possibilities of the future." In view of the enormous number of implements and vehicles that would be required to supply this vast section of the country, when put under cultivation by a proper system of irrigation, built and controlled by the general government, the influence and aid of this association and of each of its members should be actively extended in support of this measure.

The committee on statistics reported that replies to its inquiries had been received from most of the members, and that as near as can be determined the association represents the following:

Men employed	85,000
Tons of freight received and shipped . . .	4,000,000

REORGANIZATION—SO CALLED.

A special meeting of the Board of Directors of the Toronto Industrial Exhibition Association was held a few days ago to consider the report of its special committee on membership appointed on the suggestion of Mr. McNaught, of the Canadian Manufacturers' Association, who is also a vice-president of the Industrial. On motion of Mr. McNaught, the report of the special committee was adopted, which was as follows:

That seven new members be added to the delegation from the Canadian Manufacturers' Association, making twelve; four miscellaneous manufacturers and agricultural implements, two machinery, two musical instruments, two transportation and two heating apparatus; two to the Board of Trade, making five; one to the City Council (the City Clerk), making fifteen; and one each to the Shire and Hackney Horse Associations, making their representatives two apiece; also that each of the following named bodies be represented as follows: Toronto Clinical Society, in place of the Educational Association, two; Retail Merchants' Association, two; Recognized Labor Organizations, three; Canadian Press Association, three; Canadian Kennel Club, two; Builders' Exchange, one; Brewery Association, one; Canadian Pony Society, one, and Toronto Camera Club, one.

The following schedule shows the constitution of the Industrial Association as it now exists, and what it will be if the above report is adopted and ratified by a general meeting of the Association.

	At present.	As proposed.
Toronto City Council.....	14	15
Toronto Electoral District Society.....	12	12
Ontario Beekeepers' Association.....	1	1
Ontario Society of Artists.....	2	2
Lumbermen's Association.....	2	2
Educational Department of Ontario.....	2	2
Ontario Poultry Association.....	2	2
Commercial Travellers' Association.....	3	3
Dominion Millers' Association.....	1	1
Toronto Horticultural Society.....	2	2
Toronto Board of Trade.....	3	5
York County Council.....	3	3
Canadian Manufacturers' Association.....	5	12
Toronto Poultry Association.....	2	2
Toronto Natural History Society.....	2	2
Canadian Institute.....	2	2
Ontario College of Pharmacy.....	2	2
Ontario Veterinary Association.....	2	2
Ontario Fruit Growers' Association.....	2	2
Butter and Cheese Association of East Ontario.....	1	1
Butter and Cheese Association of West Ontario.....	2	2
Clydesdale Association of Canada.....	2	2
Shire Horse Association.....	1	2
Hackney Horse Association.....	1	2
Canadian Horse Breeders' Association.....	2	2
Dominion Shorthorn Breeders' Association..	2	2
Dominion Holstein Breeders' Association..	2	2
Dominion Ayreshire Breeders' Association..	2	2
Canadian Jersey Breeders' Association...	2	2
Hereford Breeders' Association.....	1	1
Dominion Sheep Breeders' Association....	2	2
Dominion Swine Breeders' Association....	2	2
Toronto Gardeners and Florists' Association	2	2
Dominion Draft Horse Breeders' Association	2	2
Dominion Cattle Breeders' Association....	2	2
Toronto Educational Association.....	2	0
Labor Organizations.....	0	3
Canadian Press Association.....	0	3
Toronto Clinical Society.....	0	2
Retail Merchants' Association.....	0	2
Brewers' Association.....	0	1
Toronto Camera Club.....	0	1
Canadian Pony Society.....	0	1
Canadian Kennel Club.....	0	2
Toronto Builders' Exchange.....	0	1
Total at present.....	94	
Total as proposed.....		120

It will be observed that the Industrial directors propose, at the suggestion of Mr. McNaught, to invade the right of the Manufacturers' Association to select the twelve members apportioned to it, choosing whom it pleases, and dictate the occupation in which its representatives shall be engaged, the requirement being that two of the new representatives shall be

manufacturers of machinery; (1), two of musical instruments, two "transportation," whatever that may mean, two of heating apparatus, and four "miscellaneous," including agricultural implements. This is certainly an anomalous proposition, all the more remarkable because of its having been proposed by a representative of the Manufacturers' Association.

There are at present eighteen members of the Board of Directors, distributed as follows:

Toronto City Council.....	2
Toronto Electoral District Society.....	5
Toronto Horticultural Society.....	1
Toronto Board of Trade.....	2
Canadian Manufacturers' Association.....	2
Toronto Poultry Association.....	1
Ontario Veterinary Association.....	1
Ontario Fruit Growers' Association.....	1
Shire Horse Association.....	1
Dominion Short Horn Breeders' Association.....	1
Gardeners' and Florists' Association.....	1
Total.....	18

Neither Dr. Smith, the president, Mr. McNaught, vice-president, nor the Board of Directors of the Industrial Association give any intimation that the Manufacturers' Association are to have any additional representation on the Board, and perhaps it is well that they do not, seeing that the strength of this Association in the Industrial will not be materially increased under the reorganization. The reason why the Association never had but three members on the Board (now reduced to two), was because of the preponderating influence of the Toronto Electoral District Society and its friends in the Industrial Association, and under the proposed reorganization that influence will be as strong as ever, and it was this influence, presumably, that recently made Mr. McNaught a vice-president. Under the proposed reorganization the Manufacturers' Association will have twelve votes out of the 120 members, and these voters are to be classified by industries, not by the Manufacturers' Association, but by the Industrial Association, which, as we have shown, is dominated by the Electoral District Society. It might reasonably have been hoped that when this remarkable reorganization scheme was being incubated Mr. McNaught, who was the moving spirit of it, would have insisted that other organizations of manufacturers other than that which he represented, should be included. There are many such, and their inclusion would have gone far—very far towards allaying the friction which now exists antagonistic to the present Industrial management. It was well that an addition should be made in favor of the Manufacturers' Association, but why not have included the Agricultural Implement Manufacturers' Association; the Carriage Manufacturers' Association; the Piano and Organ Manufacturers' Association; the Iron Founders' Association; the Canadian Electrical Association; the Furniture Manufacturers' Association and others? These all represent most important industries, exhibits of which are always exceedingly attractive features at the Fair. Why were they ignored? It cannot be said that the inclusion of them would make the association top heavy and very cumbersome, while room could be found for nine additional organizations with sixteen members, some of which could be of no more advantage to the Association than many of those which already cumber it. The Manufacturers' Association is jollied along by the grant of seven additional representatives, making twelve in all,

against which is the addition of one member for the Shire Horse Association, one for the Hackney Horse Association, and the addition of the Canadian Pony Society with one representative, and the Canadian Kennel Club with two. It seems as though the Toronto Educational Association with two representatives was dropped out entirely to give place to an equal number of representatives of puppy dog interests.

When it is remembered that this action of the Board of Directors looking towards a reorganization of the Toronto Industrial Exhibition Association must be submitted to a general meeting of the Association for ratification or rejection, that the proposed new members cannot take their seats until such ratification is had, that the next regular meeting of the Association occurs in February next, and that the taxpayers of Toronto are to be asked on the first Monday in January to give \$200,000 to the old gang, the reorganization, so called, appears very diaphanous.

THE DOMINATING ELEMENT.

It is interesting to note the character and strength of the different organizations which will compose the Toronto Industrial Exhibition Association, as it will exist under the proposed reorganization, and to facilitate the study of the matter we have classified them in groups, according to their character, showing what their membership will be, as follows:

Group 1—Bees, poultry, flowers and fruit.	
Toronto Electoral District Society.....	12
Toronto Poultry Association	2
Ontario Poultry Association.....	2
Ontario Bee Keepers' Association.....	1
Toronto Horticultural Society	2
Ontario Fruit Grower's Association	2
Toronto Gardeners' and Florists' Association.....	2
Total	23
Group 2—Horses.	
Clydesdale Association of Canada	2
Shire Horse Association	2
Hackney Horse Association	2
Canadian Horse Breeders' Association.....	2
Dominion Draft Horse Breeders' Association.....	2
Canadian Pony Society (now).....	1
Total	11
Group 3—Cattle.	
Dominion Short Horn Breeders' Association	2
Dominion Holstein Breeders' Association	2
Dominion Ayrshire Breeders' Association.....	2
Canadian Jersey Breeders' Association.....	2
Hereford Breeders' Association	1
Dominion Cattle Breeders' Association.....	2
Total	11
Group 4—Dairy.	
Butter & Cheese Association of East Ontario.....	1
Butter and Cheese Association of West Ontario.....	2
Total.....	3
Group 5—Sheep, Swine and Dogs.	
Dominion Sheep Breeders' Association.....	2
Dominion Swine Breeders' Association.....	2
Canadian Kennel Club (now).....	2
Total	6
Group 6—Municipal.	
Toronto City Council	15
York County Council	3
Total	18

Group 7—Educational.	
Ontario Society of Artists	2
Educational Department of Ontario	2
Toronto Natural History Society	2
Ontario Veterinary Association	2
Canadian Institute	2
Ontario College of Pharmacy	2
Toronto Clinical Society (new).....	2
Toronto Educational Association (dropped).....	0
Total	14

Group 8—Industrial and Commercial.	
Toronto Board of Trade	5
Commercial Travellers' Association.....	3
Lumbermens' Association	2
Dominion Millers' Association.....	1
Brewers' Association (new).....	1
Canadian Press Association (new)	3
Toronto Builders' Exchange (new)	1
Toronto Retail Merchants' Association (new)	2
Toronto Camera Club (new)	1
Labor Organizations, unnamed (new).....	3
Total	22

Group 9—All Manufacturing Industries.	
Canadian Manufacturers' Association	12

RECAPITULATION AND PERCENTAGE OF REPRESENTATIVES.			
		Members.	Percentage.
Group 1—Bees, Poultry, Flowers and Fruit.	23	19.16	
Group 2—Horses.....	11	9.17	
Group 3—Cattle	11	9.17	
Group 4—Dairy.....	3	2.5	
Group 5—Sheep, Swine and Dogs	6	5.	
Group 6—Municipal	18	15.	
Group 7—Educational	14	11.67	
Group 8—Industrial and Commercial.....	22	18.33	
Group 9—All manufacturing industries	12	10.	
Total.....	120	100.	

A noticeable feature of this showing is that the whole body of manufacturers of the country is represented by only the twelve members apportioned to the Manufacturers' Association, but a very small percentage of the members of which are exhibitors at the Toronto Fair, while a large number of manufacturers who are not members are exhibitors. Another noticeable feature of the showing is that in the proposed reorganization of the Industrial Association, not one of the many associations of manufacturers whose organizations include only their particular guilds, received any invitation to be represented. It is quite certain that manufacturers are not a dominating, nor even an influential element in the Toronto Industrial Exhibition Association, but the Toronto Electoral District Society is not only the dominating but the governing element.

EDITORIAL NOTES.

The Canadian Manufacturers' Association had better stand from under.

The scheme to reorganize the Toronto Industrial Exhibition Association is exceedingly gauzy—so gauzy indeed that the tax payers can see through it at a glance.

The proposition to delete the Toronto Educational Association from the membership of the Industrial Exhibition Association, substituting therefore the Canadian Pony Society and the Canadian Kennel Club, is unworthy the gentlemen who suggest it.

This journal has frequently suggested the inclusion of the Canadian Press Association in the Industrial Association and we congratulate the directors of the latter in observing the matter through our spectacles.

What is the Toronto Electoral District Society that it should have twelve members in the Exhibition Association with five of them on the Board of Directors, while the whole body of manufacturers are represented by but probably twelve members and two directors?

A few days ago a Chicago court decided that the owners of a building having a smoky chimney are liable for damages to persons whose property is injured by the smoke and soot. The award for damages was \$1,500. The suit was brought by occupants of an office in an adjoining building, who presented conclusive evidence to sustain it. The amount awarded is so large that the case will doubtless be appealed, as other suits would follow from numerous sufferers. The defendants are owners of a large office building, who have less excuse for maintaining a "smoke nuisance" than if they were manufacturers. The case, says *The Iron Age*, is attracting widespread interest, as it has an important bearing on the hastening of the day when smoke preventing or smoke consuming devices will be in general use wherever bituminous coal is burned.

The council of the Board of Trade of Hamilton, Ont., has instituted a businesslike and significant movement in the direction of a comprehensive Canadian exhibit at the Pan-American Exposition. At a meeting, held a few days ago, the matter was brought up and the general feeling was in favor of an exhibit that would be creditable and representative. On motion the following resolution was adopted:

"That the Board of Trade ascertain from the Dominion Government whether there is any intention of transferring the Dominion exhibit from the Paris Exposition to the Pan-American Exposition to open in Buffalo in May of next year. Further, that this board do act in concert with other boards of trade in obtaining from the Government whatever aid may be necessary to ensure a fitting representation of Canadian products and resources at the Pan-American Exposition."

The members of the Hamilton city council discussed the importance of city manufacturers exhibiting at the exposition, and the following resolution was adopted:

"That this board adopts what measures may be necessary to encourage manufacturers and others to take advantage of the great opportunity that presents itself of making their products known to the many different countries of the Western Hemisphere by exhibiting at the Pan-American Exposition, to be opened in Buffalo in May next, and that the president do appoint a committee to act with the mayor and city authorities in this matter."

The sympathy of the press of Toronto is one of the easiest things in the world for the Industrial Exhibition to get. It will go out naturally to the Fair and to all those who seek to make the Fair a success.

Mr. McNaught's suggestions are very good, but if the directors of the Fair wish to gain the good-will of the press we feel sure we express the sentiments of every newspaper in town when we say that it is not necessary to appoint a committee to tour the newspaper offices to jolly the editors.

If real reforms are set in motion—not a show made to silence criticism, but a genuine movement to recreate the Fair—the newspapers will be quick enough in doing every justice to the institution.

Mr. McNaught is very much in the right in urging that action be speedily taken, for much time has passed over and little has been done, and little disposition to do anything has been shown, or to admit that anything is likely to be done.

It is natural enough that men whose relations to the Fair would be terminated by reform should resent any interference, but there is no reason whatever why the Exhibition Board should not frankly and eagerly undertake the work of putting its affairs in new shape for the Twentieth Century Fair of next year.—*Toronto Star*.

What about the Toronto Electoral District Society? If the *Star* thinks that antiquated and super-consequential concern will die of its own accord it is mistaken. Mr. McNaught knows this as well as any one else.

Mr. Hill, manager of the Toronto Industrial Exhibition is just too funny for anything. He tells the special committee of the City Council who are investigating the affairs of the Industrial, that the reason why machinery manufacturers had abstained from exhibiting at recent Fairs was because they were too busy. Mr. Hill knows that if proper accommodation and polite attention had been accorded them, the manufacturers would have appeared in force, as they always have done.

Editor THE CANADIAN MANUFACTURER.

DEAR SIR,—At a meeting of the Council of the Pembroke Board of Trade, held November 16th, the Secretary produced a copy of the special tariff edition of THE CANADIAN MANUFACTURER of July 6, which, to use a hackneyed but pertinent phrase, unquestionably "fills a long felt want." It is, as far as I am aware, the only publication in existence containing in the one volume, all the tariffs embraced in yours. I have tried in vain through the ordinary channels open to the book trade in New York, to obtain even a copy of the United States tariff. The Secretary was instructed to hang in his office the copy you so kindly sent, for the convenience of the members of the Board. I have frequent application for just such information contained in it, particularly with reference to the United States tariff.

S. E. MITCHELL, Secretary

Speaking of the necessity for tariff protection to the British iron trade, the *Cleveland Iron Trade Review* says:

An interesting phase in the tremor of alarm now passing through the British iron trade is the stress laid upon a proposition put forward with more and more insistence from that quarter of late. It is urged that "if other nations are permitted without let or hindrance to dump their surplus product on our shores, more or less regardless of price, the system must ultimately tend to the very serious detriment, and possibly to the final ruin of the British iron trade." The British manufacturer, the argument runs, never asked any favors from the state; but this was when he had "a fair field and no favor." But now the situation is changed and the conditions are vastly against him—this referring no doubt to the natural resources, the better equipment, and the more enterprising management of the American iron trade. Under the circumstances, therefore, an article in the *London Iron and Coal Trades Review* suggests, the question must now be seriously considered whether free trade is really the system best suited to the needs of the British iron master. This is not the first suggestion of the sort that has come from the British industrial press in the past year or two. It would not be surprising, indeed, to find in the next decade the battle of free trade and protection transferred to British soil, and

that the protection asked for will be, not against "foreign cheap labor," as in the rallying days of the hosts of protection in the United States, but against American resources, machinery, superior management and more productive labor.

A meeting of the Institute of Chartered Accountants of Ontario was held in Toronto a few days ago at which the President, Mr. W. C. Eddis, read an instructive paper on "Cost Accounts," illustrating it with black board examples. Mr. Eddis showed the absolute necessity of a system of cost accounts in which changes in tariff, prices of materials, etc., and the cost of labor in the different processes of manufactures could be entered and finally brought to a ledger, in which could be shown the cost of wages, of material, of other factory expenses, and of the expense incurred in selling the manufactured goods.

Mr. J. X. Perrault, of Montreal, has been appointed Canadian representative at the Pan-American Exposition. He formerly represented this country at Paris, Philadelphia, and London exhibitions.

It is announced that the British Government is negotiating for large water lots and other land in Sydney, Nova Scotia. The fact of England purchasing property at that place is most significant. The fortifying of Sydney would give England one of the best naval stations in the Empire. With one of the finest harbors in the world, Sydney could be approached at almost any time of the year, and the great coal deposits there would enable her to cater to John Bull's most extravagant demands for fuel. It could be stored in large quantities at small expense and held in case of emergency. During the past year a shortage has been experienced at the different dockyards, and the British authorities have had to buy American coal in order to keep steam up on their fleet in American waters. With Sydney a source of supply this would all be altered, and the coal question would be effectively solved. Another advantage resulting from the fortifying of Sydney would be that of bringing the British forces within easy striking distance of the French Newfoundland squadron and the Island of Miquelon. Competent officers have examined the harbors surrounding, which have been found to be capable of easy defence. The work of fortifying the harbors will, from present indications, not be long delayed, and Great Britain will have added another link to her chain of strongholds which encircle the globe.

The issue of the August statement of the imports and exports for the Dominion affords the opportunity of pointing out the great boon which has been conferred upon the manufacturers, the merchants and the business men generally of the country by placing within their reach, as speedy as is possible from the compilation involved, complete statistics with respect to the trade of Canada. The use of the term "complete" in this connection is amply justified by the facts. It is safe to say that in no other country in the world are the trade statistics placed before the public in such a detailed and comprehensive form as is now done in Canada, and by adopting this method of giving to the world the particulars of Canada's commerce, Hon. William Paterson, Minister of Commerce, has earned the gratitude of every business man in the country. Under the old regime it was not possible to

ascertain how the trade of the Dominion had progressed until long after the close of each fiscal year. When the trade and navigation returns for each twelve months were issued the figures were stale and of little use except to the Parliamentarian. The monthly statements now issued by the Department of Customs contain similar statistics to those heretofore given in the trade and navigation returns for the year, but in more detail and with a much better classification. For example, the latest statement contains about 968 items under the head of dutiable goods. Of items on the free list class there are approximately 480 items, and in the exports something like 350 items. It is thus possible to note the aggregate volume of trade, and also the progress of trade in every class of articles which bear any relation to commerce.

With the return of Messrs. G. R. Gray and G. E. Sylvester to Toronto a few days ago, the last of the exploration parties sent out by the Ontario Government into New Ontario has returned to civilization. The policy of the Government in despatching these parties has been amply justified by the results. Northern Ontario is shown to be much richer in arable, timber and mineral lands than was at first supposed. There is now known to be millions of acres in the vast region to the north of absolutely virgin soil, with spruce sufficient to supply the world for many years to come. Of the exploration parties that were at work during the past season the most satisfactory report is made by that under Mr. Niven. This party started from near the 200th mile of Nivens' boundary, between Algoma and Nipissing, and proceeded due west for 100 miles to the Missinabie River. The territory to the north and south of the route followed, covering 100 miles square, was carefully explored. The total area investigated was 7,800 square miles. Deducting about 1,800 square miles for water, it would leave about 6,000 square mile of land, of which 75 per cent. is clay land, splendidly timbered. In other words, taking only one section of country, the north of the height of land, explored by a single party out of the ten, it reveals the existence of nearly 3,000,000 acres of land suitable for agriculture, and well timbered with spruce. Upon the value of the latter as a raw material for pulpwood, it is unnecessary to dilate. The expectation was that a great part of this land would be merely muskeg that would require to be drained before it could be cultivated. Experience shows that the soil is of good clay, and only needs to be cleared of timber in order to become available for farming. At a point so far north there may perhaps be a doubt whether the summer is sufficiently long to permit grain to mature. But the experience at several Hudson Bay posts would seem to indicate that there is no room for doubt on this score. It is claimed that at several of the posts of the great fur company, even farther north than this, not only cereals, but celery and gooseberries, currants and other small fruits can be successfully grown. When the substance of the reports of all the exploration parties has been collected and embodied in one volume, it will make an interesting account of the natural resources of Ontario's great north land.

When Canada established preferential duties in favor of Great Britain the British Government had commercial treaties with Germany and Belgium, providing that they should have the same privileges in the British colonies as Great Britain. The British Government was obliged to denounce these treaties in order to give effect to the Canadian preference. Great Britain has now agreed to a modus vivendi with Germany which will have the effect of denying to Canadian goods most favored-nation privileges in Germany. Practically Canada is shut out of the German markets as a punishment for the preference, which, in a mistaken sense of loyalty, she gave to Great Britain. And the British Government consents to this! Canadians must feel that their love for the mother country is ill appreciated.—Buffalo Express.

THE CANADIAN MANUFACTURER

ESTABLISHED IN 1880.

Devoted to the Development of Canadian Trade,
Foreign and Domestic.

THE INTERNATIONAL BUREAU OF COMMERCE

... OF CANADA ...

In connection with The Canadian Manufacturer, works to attain this end.

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Files. Coffee, Sugar and Rice Machinery.
Saw Files. Farming Tools.
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GERMANY—Continued.

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Building Papers. Boots and Shoes.
Sash, Doors and Blinds. Groceries.
Window Glass. Hams, Bacon, Pork and Lard.
Paints and Oils. Sole and Upper Leathers.
Oilcloth and Linoleum. Cut Soles and Findings.
Window Shades and Fixtures.

Preserve this Bulletin for Reference—it will not be Duplicated.

If You want Information, Ask for It.

Address, THE CANADIAN MANUFACTURER, Toronto, Canada.

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, dynamo, 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.

Robert Kaulbach went to Truro, N.S., with two bricks of gold, one from the Tonquay Gold Mining Co., weighing sixty-two ounces, obtained from seventy-eight tons of quartz and slate, and one of sixty ounces from the Colonial Mining Co. property. Mr. Kaulbach is devoting his attention to both of these properties at present and reports the outlook for the future as very encouraging. The new lead he is operating on, shows free milling gold in abundance, and will average some three ounces to the ton. The specimens brought in by him were greatly admired and excited renewed interest in the Moose river district. —Mining Record.

Messrs. Brandon, McDougal & Austin, owners of the Fenelon Falls, Ont., electric light plant, have found it necessary to increase their lighting capacity, and have placed an order with the Royal Electric Co., Montreal, for one of their seventy-five k.w. S.K.C. two-phase generators, as well as for a number of transformers and a stock of supplies, and intend over-hauling and improving their present plant.

Messrs. Fair & Sargent, Bancroft, Ont., are about to put in an electric lighting plant in that town. They have placed their order with the Royal Electric Co., Montreal, for two direct current generators, that have a capacity of about 500 lights, also the necessary supplies. Messrs. Fair & Sargent certainly are enterprising and deserve success in their venture. They expect to have the lights in operation by Christmas.

As far as lumbering operations in the Ottawa valley are concerned, the season is now almost over. Every mill is running

hard to wind up operations before the frost sets in. The cut this year is somewhat in advance of 1899, which can be easily accounted for by the big fire in April last. That conflagration was the immediate cause of a large demand, and a considerable shortage at the same time, and, of course, this made the big mills run night and day to meet the requirements. The cut in Ottawa and immediate vicinity will probably exceed 400,000,000 feet, made up as follows.—J. R. Booth, 80,000,000; Gilmour & Co., 35,000,000; Hurdman & Co., 20,000,000; W. C. Edwards & Co. (Ottawa mills), 35,000,000; W. C. Edwards & Co. (Rockland), 65,000,000; McLaren & Co. (Buckingham), 40,000,000; McLachlin Bros., Arnprior; Gillies Bros., Braeside and Pembroke Lumber Co. and other small mills, 200,000,000 feet, not counting many small mills up the Gatineau and around Ottawa, within a radius of fifty miles, which would likely bring a total of eight or nine millions.

The Crow's Nest Pass Coal Co., has ordered a 360 h.p. engine from the Robb Engineering Co. for its mines at Fernie, B.C.

Messrs. Thompson, Worth & Martin, 39 Adelaide St. West, Toronto, have sent us "Rules for Running Electric Motors," printed on stiff cardboard in large type, intended to be placed in a conspicuous position wherever motors are used, for the information of the operator. It refers to the fact that in the first instance the motor should have a good, firm foundation, must be kept dry and free from dust, all connections must be kept tight to ensure good contacts; speaks of the tension of the brushes on the commutator, how the commutator should be cared for, etc. Mr. Thompson, of this con-

cern, was recently with Mr. Edison at his private works at Orange, N.J., and Mr. Martin was lately with the Toronto Electric Light Co.

The Edwardsburg Starch Works, Cardinal, Ont., who had the misfortune to lose their large factory by fire about three months ago, have entirely rebuilt the premises, and are installing a complete electric light and power plant, consisting of two 50 k.w. S.K.C., generators, with switchboards, transformers and motors complete, making it one of the latest and most up-to-date plants in Canada.

The Robb Engineering Co., Amherst, N.S., are building a 250 h.p. engine for shipment to Calcutta, India. The order was received through their representatives in London, Messrs. Dick, Kerr & Co.

"On the Making of Blank Books" is the title of a little book prepared by Messrs. Warwick Bros. & Rutter, wholesale stationers, printers and blank book makers, Toronto, issued recently for the information of those interested in the making and the use of account books. It describes the processes through which an account book must pass in the course of manufacture. This concern has given special attention to the making of blank books for many years, and are confident they have mastered the trade. They will send a copy of this little book to any who may be interested.

Clifford Patterson and other lumber operators of Cumberland County, N.S., intend building a large steam saw mill in the Chilliwach Valley, B.C., the machinery being built by the Robb Engineering Co., Amherst, N.S.

The Waterous Engine Works Co., Brantford, Ont., has concluded arrangements for going very extensively into the manufacture of heavy pulp-making machinery, and has already secured orders for \$40,000 worth of this kind of machinery alone. To enable them to construct the large pulp crushers and screeners, which are required in this industry they must have considerably more factory accommodation. The present boiler shop, which is already 100 feet long, will be increased to 200 feet, and the present main machine shop which now has a length of 300 feet, will be increased to 400 feet.

The Wright Taper Roller Bearing Co., Montreal, has applied for incorporation with a capital stock of \$300,000, to manufacture bearings known as the Wright Taper Roller Bearings. The applicants include W. H. Wright, Buffalo, N.Y., Chas. Ledoux and W. H. Laurie, both of Montreal.

INGERSOLL-SERGEANT Rock Drills

FOR MINES, TUNNELS AND QUARRIES

PISTON INLET Air Compressors

STRAIGHT LINE
 DUPLEX and
 COMPOUND.

FOR ALL DUTIES.

... COMPLETE MINE EQUIPMENT ...

JAMES COOPER MANUF'G CO., Limited, - 299 St. James St., Montreal.

Other Offices - - - ROSSLAND, B.O.

RAT PORTAGE, ONT.

HALIFAX, N.S.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

Messrs. Wm. R. Perrin & Co., 122 Church street, Toronto, manufacturers of power, hydraulic and filter presses of all kinds, inform us that they are placing considerable new machinery, and will make every kind and style of presses required.

The J. C. McLaren Belting Co., St. James street, Montreal, have sent us a circular showing tests as to the relative merits of English oak tanned leather belting and belting made of other leather not so tanned, being the gist of an article on tests of leather, rubber, cotton and other belts made by Prof. MacLeod, of McGill University, Montreal. The company will send this interesting circular to any who may be interested.

"After a long silence" is the title of a very beautiful desk calendar for the coming year, in which is represented a picture of a dear, loving old mother, reading a letter to the father from their far-away boy. It comes with much force and appropriateness at this time, when so many of our brave boys are away fighting for God and country. Many are the hearts that are waiting to-night, waiting for the war to cease.—From the Garfield Oil Co., Cleveland, Ohio.

The Toronto Brass Mfg. Co., Toronto, manufacturers of builders and cabinet hardware, window display fixtures, etc., have sent us their new illustrated cata-

logue having reference to some of the lines of goods made by them. These include about every fixture that can be made use of making display in windows of fancy, gents' furnishing, drygoods and other stores.

The War Eagle Mining Co., Rossland, B.C., have placed their order with the Royal Electric Co., Montreal, for one of their two-phase 20 h.p. S.K.C. induction motors. This is one of a series of motors that will be installed by these people for small power purposes in and about their mines.

The Chalcraft Screw Co., Brantford, Ont., will erect an addition to their factory 46x46 feet, two storeys high.

The Ham & Nott Co., Brantford, Ont., have nearly completed the brick addition to their factory, which will be 76x76 feet, three storeys high.

The Marmora, Ont., Electric Light Co., have secured an hydraulic power from Messrs. Pearce, and are installing a 1,000 light alternating current generator, with S.K.C. Transformers, etc., from the Royal Electric Co., Montreal. They expect to be in operation before the extreme cold weather sets in.

Stauntons, Limited, Toronto, has been incorporated with a capital stock of \$200,000, to acquire the wall-paper manufacturing business of M. Staunton & Co.

The Irving Umbrella Co., Toronto, has increased its capital stock from \$25,000 to \$100,000.

The corporation of the town of Newmarket, Ont., who four years ago undertook the operation of the electric lighting plant for street as well as commercial lighting, and who at that time installed a complete, up-to-date plant consisting of slow speed condensing engines, S.K.C. generators, and wood arc dynamo, have found it necessary in order to keep up with the demand for additional street as well as indoor lighting, to increase their plant, and have placed their order with the Goldie & McCulloch Co., of Galt, for a 250 h.p. Wheelock engine, and have also given their order to the Royal Electric Co., Montreal, for an additional 100 k.w. S.K.C. two-phase dynamo with the necessary station accessories and transformers. This town will possess, for its size, one of the most modern and up to-date plants to be found in Canada.

The Hutton Electric Co., Brampton and Huttonville, Ont., whose plant was destroyed by fire last spring, and who have since then been operating temporarily, have purchased from the Royal Electric Co., Montreal, one 1,500-light alternating current generator and one 50-light arc machine. These are in use at the hydraulic power house at Huttonville.

Transfer Ornaments,

AMERICAN MADE.

Guaranteed Quality.

TRADE MARKS, DECORATIONS, NAME PLATES, ETC.

For HARDWARE, BICYCLES, VEHICLES, POTTERY, FURNITURE, etc.

Sketches submitted free of charge. Being home makers can deliver promptly. Write us.

THE MEYERCORD CO., Inc.,

—MAIN OFFICE—

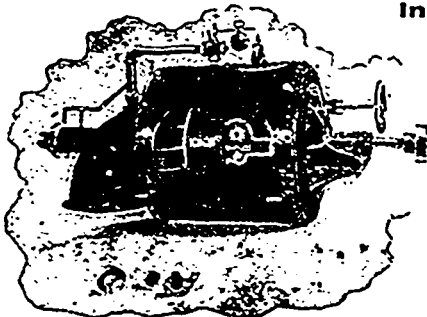
CHAMBER OF COMMERCE, - CHICAGO,

Canadian Travelling Representative,
CHAS. H. JAGGAR, Buffalo, N.Y.

Largest Makers in the World Guaranteed Decalcomania Transfers.

THE CROCKER Patent Turbine

In Horizontal Setting, with Quarter Turn Elbow.



Where the nature of the location will permit its use this type has many advantages. It is very suitable for direct connection to dynamos, and many are in operation in this class of service.

Notice how complete and compact this arrangement is, and how easily it may be installed. Can you use anything of this kind? Your inquiries will receive prompt attention.

WATER POWERS examined and Reports made. Estimates submitted for Complete Equipments.

The JENCKES MACHINE CO.,
42 Lansdowne St., Sherbrooke, Que.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

The saw factory of Wm. Chaflin, St. Catharines, Ont., was destroyed by fire Nov. 6. Loss about \$75,000.

The Institute for the Blind, Brantford, Ont., are installing a two phase S.K.C. motor for power purposes, the current being supplied by the Brantford Electric & Operating Co.

The Lake of the Woods Milling Co., is erecting a large wheat drier at Keowatin, Man.

Shipment was made a few days ago of what is claimed to be the largest motor that has yet been built in Canada. It was consigned to the British America Corporation, Rossland, B.C., and the shipment was made by the Royal Electric Co., Montreal. The motor is an S.K.C. two-phase machine and its capacity is over 1,000 h.p., and is to be used to drive the air compressors and hoists at the mines. The total weight of the motor, boxed, ready for shipment, was 105,000 pounds or 52½ tons. The weight complete of the motor with its accessories was over 120,000 pounds or 60 tons, requiring two full cars to transport it.

Robert Crean & Co., Toronto, has been incorporated with a capital stock of \$100,000, to manufacture hats, caps, furs, etc. The charter members include R. C. Crean, G. Crean and John Payne, all of Toronto.

The Cataract Power Co., at Decew Falls, Ont., have just completed the installation in their power house of one of the largest electric generators for light and power purposes, built in Canada, and, we understand, by weight, the largest in North America. The generator has a capacity of 2,000 k.w. with a large overload capacity. The weight of this generator complete is over 110 tons, or 220,000 pounds and is

similar in design to the 1,000 k.w. machine, two of which the Cataract Power Co., now have in their station. There was also shipped from the shops of the Royal Electric Co., Montreal, last week, the second of these large generators, making the capacity of the Cataract Power Co.'s plant, when this generator is installed, over 10,000 h.p. The entire machinery throughout has been supplied by the Royal Electric Co., Montreal, and consists entirely of S.K.C. apparatus operating at two and three phase. This is now one of the most complete power stations in Canada, and is giving excellent results. The two lines from Decew Falls to Hamilton, a distance of thirty-five miles, are now in constant successful operation.

La Compagnie Pontbriand, Sorel, Que., has been incorporated with a capital stock of \$100,000, to manufacture engines, boilers, etc. The charter members include A. E. Pontbriand, J. E. A. Pontbriand and J. T. Hurteau, all of Sorel, Que.

The Garfield Oil Co., Cleveland, Ohio, and Windsor, Ont., who are the sole manufacturers of Zanzibar Anti-Rust Paint have just shipped one ton of it to Sydney, N.S.W. Their agency at that place is arranging for an elaborate exhibit at the "Metropolitan Show" next April. The wide popularity of this paint certainly attests to its high merit. See their advertisement in another page.

The Canadian Produce Co., Toronto, inform us that they are in receipt of an order from Great Britain for ten tons of Canadian chickens. This order was obtained upon a sample shipment of a few hundred pounds made some six weeks ago. They say this is the largest single order for Canadian chickens they have yet received, and is a good start for a new home industry.

Mr. Donald McIntyre, who owns a water-power about three miles north of Paisley, Ont., has found it necessary to increase his electric lighting plant. He has ordered from the Royal Electric Co., Montreal, one of their 60 k.w. S.K.C., two-phase alternating current generators, and has added a third wire to his lines from the water-power to the town, thus placing himself in a position to furnish power as well as light.

A gas expert has been busy in the vicinity of Woodstock, Ont., following indications of natural gas veins, and he says he is so confident of the existence of the fuel and illuminant in paying quantities that he is ready to subscribe to a fund for the development of wells he claims to have located. It is stated that a company will be formed and options secured on adjoining properties for prospecting purposes.

Mr. James A. Spence, owner of the electric lighting plant at Colborne, Ont., who was unfortunate enough to have his plant destroyed by fire a short time ago, is rebuilding, and has placed his order with the Royal Electric Co., Montreal, for a 75 k.w. S.K.C. generator, complete with exciter and station apparatus. They were in running order three weeks after the fire.

The Minor Graves Syndicate is to transmit electric power from Grand Forks to Phoenix, B.C.

The town of Blenheim, Ont., is calling for tenders for lighting its streets electrically.

Dr. Groves, owner of the electric lighting plant at Fergus, Ont., has installed in his power-house a 75 k.w. S.K.C. two-phase alternating current generator, made by the Royal Electric Co., Montreal. The Doctor intends to supply power as well as light to the town.

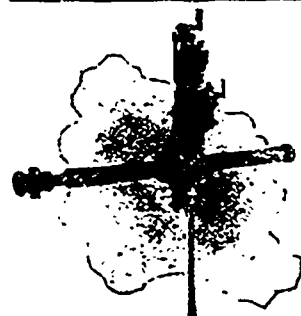
W. A. FLEMING & CO.

MILL SUPPLIES
HOSE of all kinds
DRIVING ROPE
BELTING of all kinds

CAMEL BRAND BELTING

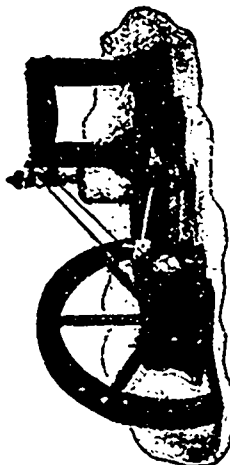


771 CRAIG STREET, MONTREAL.



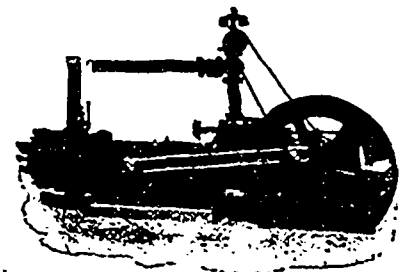
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The Canadian
Rand Drill Co.



MONTREAL.
 SHERBROOKE,
 HALIFAX, N.S.
 TORONTO, ONT.
 RAT PORTAGE, ONT.
 ROSSLAND, B.C.
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CRUSHERS-ROLLS

Roll Jaw Fine Crushers Reduce Large Rocks at once to Gravel and Sand. Centrifugal Rolls. Cost half and do three times as much as Common Rolls of equal dimensions, and do finer work.

SEND FOR CIRCULAR.

STURTEVANT MILL CO., 104 Clayton St., BOSTON, MASS.

The town of Cayuga, Ont., is to install an electric lighting plant. Mr. H. F. Strickland, Toronto, is the engineer.

THE BOURNE-FULLER CO.

IRON, STEEL


AND

PIG IRON

CLEVELAND, OHIO, U.S.A.

PEOPLE WHO KNOW.

People who have used our Filter are repeating their orders. They know that the



Cross Oil Filter

is the Filter they want

Can't we send you one on approval at our expense?

Catalogue 26.

The BURT MFG. CO.

Akron, Ohio, U.S.A.

Largest Mfrs. of Oil Filters in the World, also Burt Exhaust Hoods.



TO EXPORTERS AND IMPORTERS

The Publishers beg to draw attention to the preparation of the 15th edition of the 'MERCHANTS' MANUFACTURERS & SHIPPERS' DIRECTORY OF THE WORLD,' containing classified lists of Trades and Tariffs for all countries. Highest award—Gold Medal—Paris, 1900. For further particulars, charges for advertisements, etc., apply

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NITROUS OXIDE and OXYGEN GAS

Electrical Contractors

SWITCHES AND SWITCH BOARDS MANUFACTURED

Dynamos and Motors

Built and Repaired. We have a well-equipped Machine Shop, Model and Experimental Work a specialty. Inventions perfected. All work perfectly confidential. Correspondence solicited.

35 to 39 ADELAIDE ST. W., TORONTO

PHONE 2494.

The Pratt & Litchworth Co., Brantford, Ont., have placed in their new factory, a 30 h.p. S.K.C. two-phase motor, which is operated from the lines of the Brantford Electric & Operating Co.

The ship repairing works of N. Evans & Sons, Dartmouth, N.S., are to be greatly enlarged, a dry dock and steel ship-building plant are to be built, and altogether \$1,000,000 expended in new machinery and equipment.

The Canadian Pacific is to build a steel bridge across the Columbia river near Robson, B.C., connecting the Nelson branch with that to Rossland and Grand Forks, to cost \$500,000.

The Lumber camps of the upper Ottawa river are now in full swing. This is one of the best lumbering districts in Canada. Along the Ottawa and Lake Dumoine there are nine lumber camps, three of the E. E. Eddy Co., five of the J. R. Booth Co., and one of the Hawkesbury Lumber Co. This is the largest number that have been in the district, and the promise for a large drive in the spring is exceptionally good.

The Central Electric Co., Portage la Prairie, Man., have just installed and placed in operation a 150 k.w. S.K.C. two-phase alternator. They contemplate going into the power business.

Mr. George Johnson, the Dominion statistician has compiled some interesting figures about the 34 electric railways of Canada. During the year ending December 31, 1899, the 630 miles of track were so used that the total number of miles run by cars was 29,646,847. The number of passengers carried was 104,033,659, equal to carrying every man, woman and child in the Dominion twenty times. The mileage run and the passengers carried, show that for each mile run the railways carried 3½ passengers. Compared with the previous year, the number of passengers carried increased nearly nine and one-half millions, and the number of miles run by over a million; the passengers carried per mile increased from 3½ to 4½. The number of transfers given in

Toronto was over 10½ millions. These are not included in the total of passengers carried. The amount of paid-up capital invested in electric railways is \$21,700,000. The steam railways in 1899 carried 16,168,191 passengers, running a train mileage of 25,292,800, thus making an average of 1½ passengers per mile. The electric cars travelled over 4 1-3 million miles more than the passenger and mixed trains of the steam railways. Together the steam and electric railways carried over 120 million passengers, and the proportion was about 13 by steam to 87 by electricity.

Dr. Thompson, Cayuga, Ont., the owner of the electric lighting plant there, and whose power-house was destroyed by fire some six weeks ago, is rebuilding and has placed his order with the Royal Electric Co., Montreal, for a 750 light, alternating current dynamo, with the necessary station accessories.

The present contract for lighting the streets of Montreal expires December 31, 1903. Tenders are to be invited shortly from firms desiring to secure this contract, the matter having been taken up at this time in order to enable the successful bidder to instal the necessary plant. It is estimated that to do this, will require two years.

The Gravenhurst, Ont., Electric Light & Power Co., who were unfortunate enough to have their lighting station destroyed by fire in October, are rebuilding on a more extensive scale, as they have secured the lighting of the Sanitorium, which requires an additional capacity of 250 lights. The order for the 75 k.w. S.K.C. generator, with the necessary switch-board, etc., was placed with the Royal Electric Co., Montreal, and the plant is again in operation.

The Quebec Railway, Light & Power Co. is laying a double track from Beauport to Montmoroney.

An electric railway is projected to run from Yarmouth to Dighy, N.S.

A company has recently been formed at New Denver, B.C., to light electrically the villages of New Denver and Silverton.

BLACK IS BLACK

Extra C is our best grade. We cannot make anything better than the best. You cannot buy anything better, try where you will. When you buy, see that our Trade Mark and grade are stamped on it and quality will be there.

D. K. McLAREN

Mfr. "GENUINE OAK" BELTING.

88 Bay St., TORONTO

Factory, MONTREAL

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

The Brantford, Ont., Electric & Operating Co., who have been operating a 180 k.w. S.K.C. machine for the past two years, have found it necessary to increase their capacity for both light and power, and have just started an additional 360 k.w. S.K.C. two-phase generator, furnished them by the Royal Electric Co., Montreal. This gives them a total capacity of nearly 600 k.w.

The Atlantic Grindstone Co., Providence, R.I., who purchased the Grindstone Quarry at Lower Cove, N.S., some months ago, intend equipping the quarry with modern machinery and largely increasing the output. The power will be supplied by two 125 h.p. Mumford boilers and a 250 h.p. Robb-Armstrong engine which are being built by the Robb Engineering Co., Amherst, N.S.

The Canadian Gold Fields Co., Delora, Ont., who own extensive gold mines at that place, have equipped their mines, offices, houses, etc., with electric light and power. They have placed their order with the Royal Electric Co., Montreal, for a 40 k.w. S.K.C. two-phase generator with the necessary transformers and supplies. They purpose furnishing light to their employees.

The Farmers' Binder Twine Co., Brantford, Ont., a co-operative concern in which the stock is held by farmers, has declared a dividend on the year's operations of 90 per cent. The company was organized seven years ago by Joseph Stratford, and it has been successful, financially, far beyond his expectations. For the first five years a dividend of 10 per cent. was paid. Last year a dividend of 100 per cent., and the profits this year warranted a dividend of 90 per cent. At the annual meeting the officers of the company gave general-manager Stratford credit for the extraordinary profit to the shareholders, holding that it was due to his wise administration, and he was voted a substantial bonus as a mark of the company's appreciation of his management.

The corporation of Bridgwater, N.S., have found it necessary to increase their incandescent lighting capacity, and for this purpose have placed their order with the Royal Electric Co., Montreal, for one 80 k.w. S.K.C. generator, with the necessary switch-board, etc.

The Brantford Carriage Co., Brantford, Ont., will erect an addition to their factory, 70 x 40 feet, three storeroys high.

The Perth, Ont. Water & Electric Co., who have been operating their water-works system by electrically driven pumps from their lighting station, where they have had a 150 k.w. S.K.C. generator in operation for the past two years, have found it necessary to increase their plant both for power and light, and have placed their order with the Royal Electric Co., Montreal, for one of their 200 k.w. S.K.C. two-phase generators, which is being installed to work in parallel with their present outfit.

La Compagnie de Pulpe de Peribonka, Peribonka, Que., has been incorporated with a capital stock of \$30,000 to manufacture wood pulp, etc. The charter members include T. du Tremblay, Roberval, Que.; V. Filteau, St. Etienne, Que.; and A. M. Deschene, St. Roche des Aulnais, Que.

The Nickel-Copper Co., whose large refining works are at Hamilton, Ont., have begun operations on a large scale and have placed in their new power-house, two 240

k.w. and one 75 k.w. S.K.C. generators, the former to drive the dynamos for the electrolytic process, and the latter to drive the ore process. These three machines are being used as Synchronous Motors taking the current from the Cataract Power Co's lines at 2,400 volts.

In response to an enquiry by THE CANADIAN MANUFACTURER to the Ottawa Carbide Co., as to when they would have their works in condition to furnish carbide to the trade, we are informed that while it was their expectation to have been in full operation several months ago, they have encountered many difficulties in getting started. In almost every case, they say, they have had to await delivery of machinery, long after the date for which it was promised. The great fire last spring, was also responsible for much delay, as the flumes which supply the works with water, were partly destroyed, the reconstruction of

which was rushed during the summer, and are not yet in perfect order. The company are filling orders, and while they may not be able to overtake this demand for some little time, they hope to have the entire establishment in full working order at an early day, when they will, they think, supply the entire Canadian demand. They are now producing some seven or eight tons of carbide per day, and expect to double that quantity before the close of the year.

The corporation of the town of Parrsboro, N.S., have taken up the Municipal lighting question, and have placed their order with the Royal Electric Co., Montreal, for one 50 k.w. S.K.C. two-phase generator and 500 lights capacity in transformers and wiring supplies. It is expected that the plant will be in operation by the first of the new year.

The lumber mill of Mr. Alexander MacLaren, Montreal, was destroyed by fire, Nov. 6, loss about \$60,000.

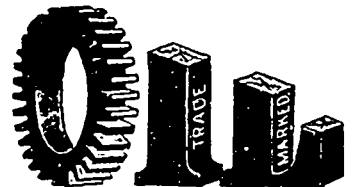
"Capitol" Cylinder

"RENOWN" ENGINE

"ATLANTIC" RED

RELIABLE WELL-KNOWN BRAND

ALL ORDERS PROMPTLY FILLED



THE QUEEN CITY OIL CO. LIMITED
SAMUEL ROGERS, Pres. TORONTO, Canada.

YOU ONLY GET
BRILLIANT MOUNTINGS

—BY THE USE OF—

TRIPLE EXTRACT

Sutton Polishing Compound

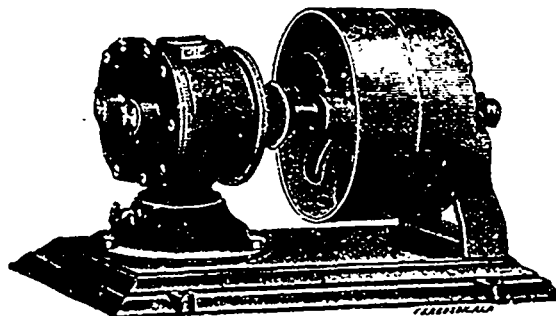
FOR SALE BY ALL THE LEADING GROCERS, HARDWARE
AND HARNESS SHOPS OR THE
MANUFACTURERS

The Wm. Sutton Compound Co.
of Toronto, Limited.

WM. R. PERRIN & CO., 122 CHURCH ST.,
TORONTO.

WE BUILD

**Rotary
Pumps** POWER
OR
HAND.



MANUFACTURERS

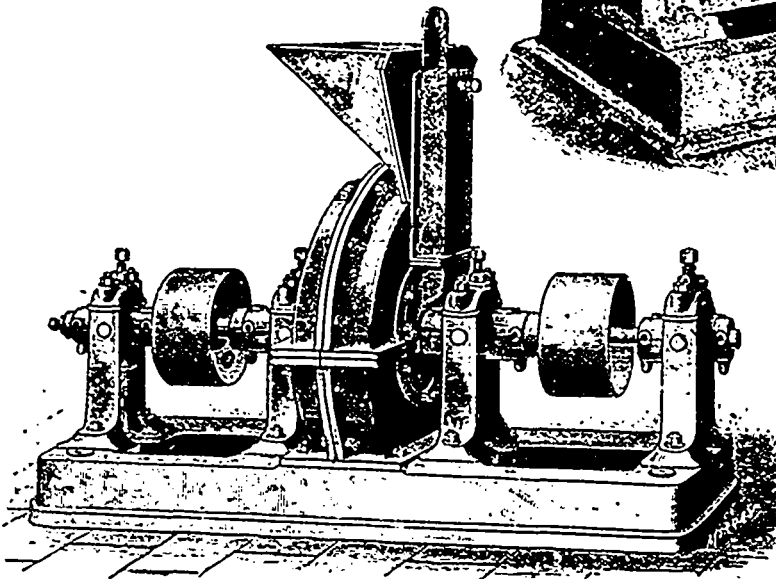
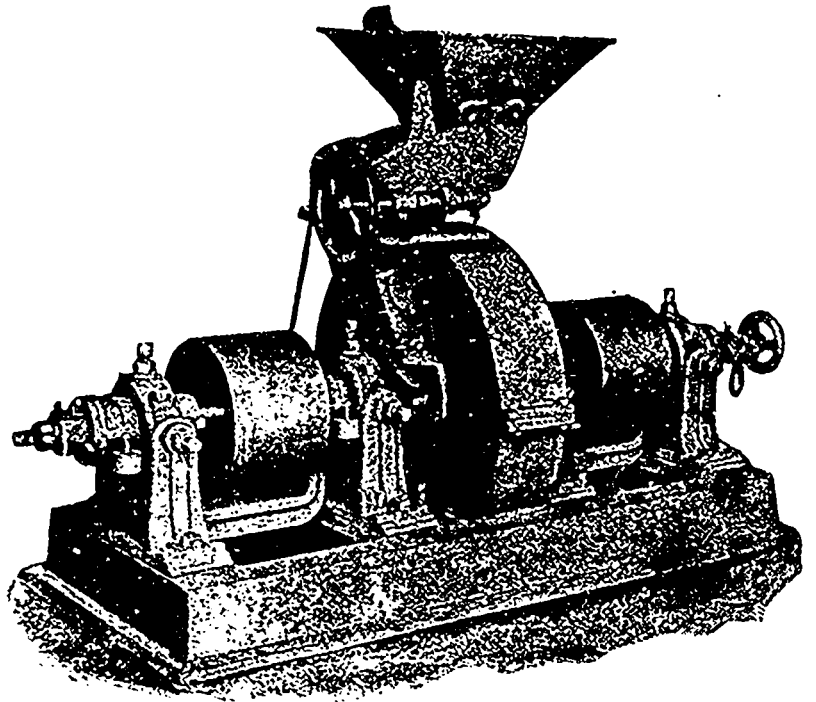
PACKING HOUSE MACHINERY
AND PRESSES.

THE STRATFORD MILL BUILDING CO.

STRATFORD, ONT.

Manufacturers of all kinds of.....

FLOUR MILL
MACHINERY,



**PLATE
CHOPPERS,**

**ROLL
CHOPPERS,**

Brown Automatic Engines

ETC., ETC.

ELECTRIC POWER OF NIAGARA FALLS.

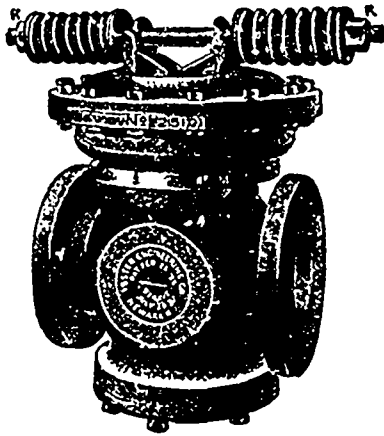
Buffalo is about twenty miles from Niagara Falls, and is connected with the latter place by a passenger railway which is also operated by electric power from the Falls. The street railways of Buffalo are similarly operated, and the streets are illuminated by arc lamps from the same source. Yet, no longer ago than 1892, the question was still under debate by the Niagara Falls Power Co. whether they should use cables, or compressed air, or electricity as the means of transmitting the power which they were preparing to generate from the falling water of the great cataract.

There are to-day ten dynamos of 5,000 horse-power each in operation in a low, unpretentious, but architecturally graceful

building on the outskirts of the city. They make very little noise—less than one old-fashioned flouring mill would produce. They are capable of sending out the energy of 50,000 horses. One of the dynamos is kept in reserve and usually one is under examination or repairs, leaving eight in operation making 250 revolutions per minute. One hundred and sixty feet beneath each of these dynamos is a turbine wheel of 5,000 horse-power to which the water of Niagara is communicated by a steel tube or penstock. Before these giant constructions were put in place there had never been a turbine, or a dynamo, made or designed or imagined of more than 2,000 horse-power, nor was it known that any device could be contrived or any materials put together that would endure the pressure of a perpendicular steel shaft of this length and magnitude support-

ing the weight of the giant dynamo and whirling with such velocity. It seemed as though nothing could prevent it from boring a hole to the centre of the earth if the revolutions could be maintained. Mr. Emile Geyelin conceived the idea of applying the pressure of the water to the bottom of the turbine wheel instead of the top, so that the weight of the shaft and the dynamo should cushion on the water itself instead of on the lignum vite socket which supports the weight in ordinary turbine practice. This was accomplished by giving the bottom of the penstock the turn of a half circle, and inverting the turbine itself. Without this simple but most ingenious contrivance the great enterprise as it stands to-day would have been impossible of execution.

This is only one of the new conceptions and devices that have been added to the



FOSTER PRESSURE REGULATING VALVES.

Automatically Control the Delivery Pressure of Steam, Gas, Air or Water, regardless of Variation in Initial Pressure.

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THE FAIRBANKS COMPANY

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Royal Paper Mills Company, Limited

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QUE.



WAREHOUSES:

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F. P. BUCK, - - - PRESIDENT AND GENERAL MANAGER.



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Fine News, Book, Lithograph, Tub and Engine Sized Writing, and Colored Cover Papers.

ROYAL CANADIAN BRAND
Soda and Mechanical Pulp

SPRUCE, PINE and HARDWOOD (Dressed and in Rough.)
CLAPBOARDS and SHINGLES.

CABLE ADDRESS—"OBBAPER," EAST ANGUS--A.B.C. and Lieber's Code.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

world's resources in the course of the development of Niagara power. The truth is that the men who have put this wonderful machinery to work for the satisfaction of human wants have been obliged to "feel their way" from the outset. They began work in 1890. Electrical science was in its infancy so far as they were concerned. All that was then known had reference to the day of small things. Even Mr. George Westinghouse advised them at first to use compressed air instead of electricity for the transmission of the power. He did not conceive it possible to construct electrical machinery which could make profitable use of power of the magnitude contemplated by the Niagara works. It was not until the experiment of long-distance transmission was made at Lauffen, by which the water power of the river Main was conveyed to the city of Frankfort, that the decision was made to use electrical apparatus at Niagara.

It is futile to seek to popularize electrical science. All teachers of the subject are agreed that it cannot be simplified. Even the writers who contributed the article in the "Niagara number" of Cassier's Magazine, tell us that we must accept results without seeking to know the processes except in some vague outline. Very few persons know or can be made to know the difference between volts, amperes, and watts, or what an alternating current is. When we come to the two-phase, the three-phase, and the polyphase systems, we must take everything on trust. One fact, however, can be grasped by the lowest intelligence, viz., that electricity is not a power, but is only a means of transmitting power. Even this is not generally appreciated, the phrase "electrical power" being commonly understood as something different in its nature from steam power or water power, and therefore an addition to the forms of energy previously available for the use and behoof of mankind. Any kind of power which can be used to revolve an armature in the near vicinity of a series of magnets artificially excited can be transmitted by electricity for considerable distances and reproduced as power to turn machinery, or as heat to fuse metals or bake bread, or as light to illuminate a city, with some loss by way of leakage in transmission. Ninety-seven per cent. of the power applied to the turbine down in the wheel-pit can be transmitted electrically for use in factories near to the power house. Ninety-two per cent. can be delivered at Buffalo. It is computed that sixty per cent. could be delivered at Albany, 330 miles distant from the Falls, and that at the latter distance the cost of the power would be something, but not much less than that of steam power produced by the most economical engines:

The power at Niagara Falls is practically unlimited. The company operating it has the right to use 200,000 h.p. on the American side, of which it has as yet developed only one-fourth. It is now excavating a new wheel-pit of the same capacity as the one in operation. The company is not offering any securities to the public, and never has done so. All of its extensions have been financed by the original group or those who have joined without solicitation. The work has been going on steadily, intelligently, and under the guidance of the best engineers of all nations until it has become the greatest creator of working energy in the world, and is still only at its beginning. Its noblest work, however, consists in the instruction it has communicated to the world in the handling and utilization of one of the great forces of nature for the benefit of mankind.—New York Post.

The Diamond Machine Screw Co. Limited, Toronto

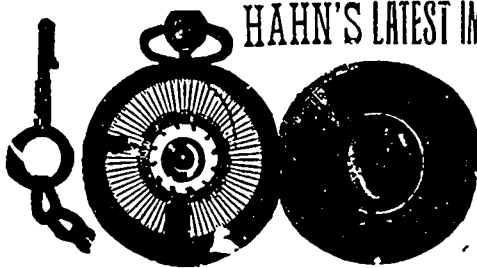
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This Clock is adapted for six or twelve stations, and the keys are all different, ranging from 1 to 6, and 1 to 12, instead of as in the old style Time Detectors, which mark either by holes or an impression on the dial, being the same for all stations.

For circulars, prices and further information address

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This Clock received the First Prize at World's Fair

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STRUCTURAL IRON WORK
BRIDGES, ELEVATORS, Etc.**

A Paint that will not Blister, Crack, or Peel off

A Paint that is Rust, Water, and Spark Proof.

A Paint that is GUARANTEED.

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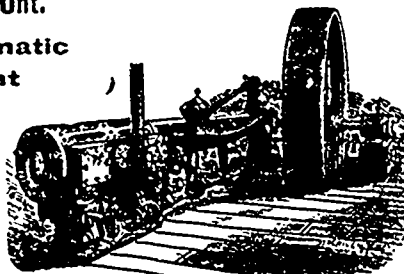
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LIMITED,

High Speed Engines, Brown Automatic Engines, Boilers, Rogers' Patent Shaking and Dumping Grate Bars, Pumping Machinery, Electric and Hand Power Travelling Cranes, Shafting, Pulleys, General Machinery, Etc.

Western Office—435 Ross Av., Winnipeg.



CANADIAN COPPER.

In discussing the question of the sources of the supply of copper, the London, Eng., Mining Journal, says:

As a result of the encouragement to mining afforded by the high prices which have ruled for over a year past, the production of copper throughout the world has increased. But during the same time consumption has also made headway, consequent upon the spread of electricity, large shipbuilding orders and other factors, and the increase here threatens to outrun the increase in production. America is sending less of the metal to Europe than it sent during the first half of the year, and we have been told to look for no improvement yet awhile from that quarter. Increased shipments are made

from the other copper producing countries, but they will have to grow much larger if they are to neutralize the effects of diminished exports from the States, and at the same time to meet the rapid expansion in the demand. There are numerous countries capable of contributing in large or small quantities to the world's requirements, but it is probable that those who have new ground to break are deterred from action by the fear that the existing range of values may not be maintained long enough to give them a fair chance of establishing themselves, and of securing a profit on their inevitably large outlay. And yet nothing is more likely, failing a sudden flood of metal on to the market or an appreciable decrease in the consumption—both somewhat remote contingencies—than that prices will be kept at a relatively high level to afford an inducement to mining enterprise. It has to be remembered that any great increase in the quantity of copper available would send down the quotation, in spite of the most strenuous efforts of which the American combine might be capable. But this is not to be anticipated. The increase is almost bound to be gradual, and against this must be placed the fact that the increase of consumption is inclined to be rapid. Looking at the whole question pro and con, the chances of those who choose to embark in copper mining are more favorable

than we can ever remember them to have been. It seems desirable, therefore, to enumerate some of the countries and localities in which the industry might be extended and enlarged.

British Columbia has made such substantial progress in the last few years in the production of copper that it would be almost ungracious to complain against it for not doing more. It is undoubted, however, that there are large tracts of cupriferous land in the province, which, if developed, would swell the world's annual total appreciably. Mr. J. D. Kendall pointed out in these columns in the earlier months of this year, when discussing the distribution of ores in the southern portions of British Columbia, that outside the Rossland and Nelson districts these ores occur more or less abundantly in the Boundary district, on both sides of Kootenay Lake, on Coal Hill near Kamloops, in Copper Creek, north of Kamloops Lake, near Nicola Lake on the east side of Pitt Lake, on the southwest side of Vancouver Island, on Texada Island, and at numerous points along the coast of the mainland and elsewhere. Mr. W. M. Brewer, of Victoria, B.C., has drawn special attention to the deposits on Vancouver Island, and his conclusion, based on scientific examination in loco, is that "the western portion of the island presents features of great promise so

far as copper deposits are concerned. There are also ledges of gold-bearing quartz, some of which yield high values at and near the outcrop. But nothing of any consequence has been done for their exploitation. It is the same with the deposits of the other parts of the Dominion, if we except Ontario. The largest deposits in this province are those of Sudbury. These, it may be added, are the deposits from which nickel is also obtained, copper representing 27 per cent., and nickel 14½ per cent. The native copper, which has been so extensively and profitably worked on the Michigan shore of Lake Superior, exists also "in large quantities" on the Canadian side, and its more complete exploitation might be undertaken by the Dominion authorities. The ore has been found also in Quebec and the other eastern provinces, and Newfoundland has recently reported further discoveries, which, so we are told, promise to supplement those of Tilt Cove to a material extent.

DYEING KATIGEN COLORS.

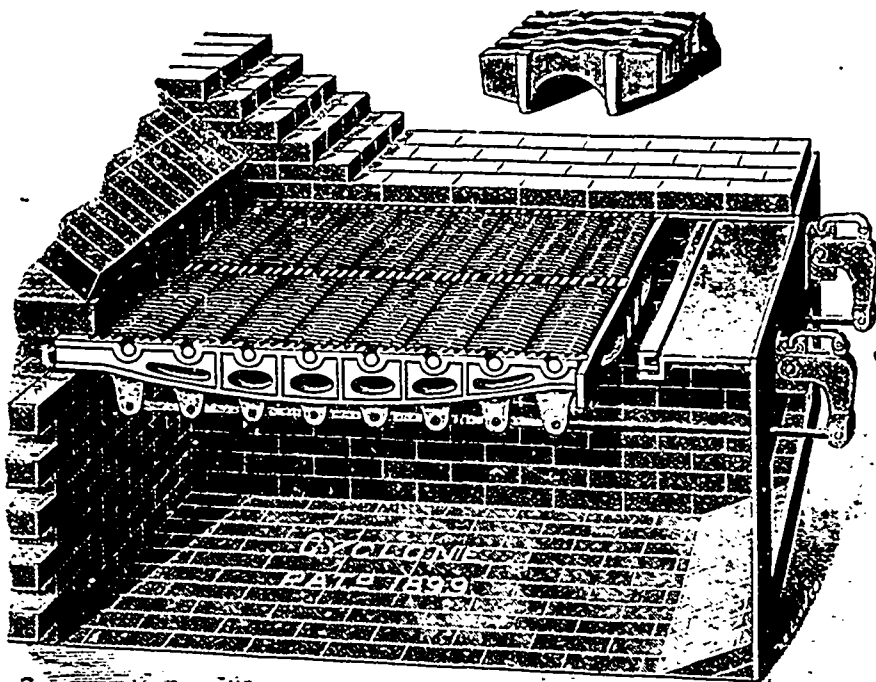
All Katigen Dyestuffs are of the same character, and are dyed and after-treated in the same manner. The following is a general receipt for dyeing Katigen dyestuffs.
Five per cent. sulphide of soda.
Eight per cent soda ash.



FOR Mechanically Drying Everything

THE F. D. CUMMER & SON CO.,
HUNDREDS IN OPERATION. CLEVELAND, OHIO.

THE CYCLONE GRATE BAR



Simplicity, Durability, Economy.

FIRST TEST at Hamilton Asylum was reported as follows: Was taken with the Grate Bars put in by Waterous Engine Co. of Brantford.

People's Coal used	1,950 lbs.
Water Evaporated	18,400 "
Weight of ash remaining	522 "
Test commenced	at 9 a.m. April 17th.
Ended	at 5 p.m. "

SECOND TEST was made with Cyclone Grate Bar of Toronto, with the following results:

People's Coal used	1,850 lbs.
Water Evaporated	20,608 "
Weight of ash remaining	315 "
Test was made	April 24th.
Test commenced	at 9 a.m.
Ended	at 5 p.m.

These tests were made under 75 horse power Boiler in west boiler house main building.

(Sgd.) **J. W. MARTER,**
Chief Engineer.

TESTIMONIAL.

MESSRS. THE CYCLONE GRATE BAR CO.,
Limited, Toronto.

GENTLEMEN,—Replying to yours of recent date, we are pleased to state that the Grate Bars put in some months ago are giving splendid satisfaction. Would not do without them.

Yours truly,
SCHAEFFER, KILLER & CO.

August 10th, 1900.

Representative for Ontario and Quebec.

W. G. BLACKGROVE,

Cyclone Grate Bar Co. **E. J. PHILIP,** Office. 404 Temple Building,
Manager. Telephone. **TORONTO**

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Fifty to sixty per cent. common salt or calcined glauber's salt.

These percentages are for full shades, prepared with about 12-15 and more per cent. of dyestuffs, and for the first bath. For light shades and subsequent baths, the above quantities are to be reduced correspondingly. For Katigen Black a greater amount of sulphide of soda is to be recommended. For a 20 per cent. dyetest, 20 per cent. of this agent is to be employed. The quantities of color and sulphide of soda should be about the same, whereas those of soda and salt remain as given above.

It is further to be recommended that all colors are dissolved together with the prescribed quantity of sulphide of soda, as then they are easier dissolved than in water only.

The fastness of all direct Katigen dyeings is equally as good as of those after-treated, so that it would not be necessary to after-treat at all in order to obtain better results in this respect; yet very often the same is done so as to get a nicer and fuller shade. An exception to this general rule is Katigen Chrome Brown 5 G. which is much better in fastness to light when after-treated, and therefore this product only is recommended for after-treatment.

For the dyeing of loose cotton, the Katigen colors are mostly employed when dyed direct, as otherwise the material is not so good in spinning. For the after-treatment, use the following:—

Two to three per cent. bichromate of potash.

Two per cent. sulphate of copper.

Three per cent. acetic acid.

And especially for black:

Two to three per cent. bichromate of potash.

Two per cent. alum.

Three per cent. acetic acid.

By this latter recipe the shade is rendered bloomier and bluer than by bichromate, sulphate of copper and acetic acid. However, the alum gives the material a stiff handle, and where this has to be avoided the alum should not be employed, but more acetic acid taken.

ANOTHER TRIBUTE TO THE N.P.

An important result of the mining legislation passed by the Ontario Legislature last session is just being realized at Sudbury. It will be remembered that by the amendment to the mining act authority was given the Lieutenant-Governor in Council to impose a mineral tax on certain ores mined in the province and which were not refined here. Although this authority has not yet been exercised, steps are being taken by at least one large corporation which will exempt them from such a tax in the future.

The Orford Copper Co., which have been for years refining at their works in New Jersey the copper nickel matte of the Canadian Copper Co., are now establishing a smelting or refining works at Coppercliff, a few miles west of Sudbury, in the vicinity of the Canadian Copper Co's. McArthur mine. It is expected the refinery will be completed about the end of this year. Mr. S. C. Lake is in charge. The plant consists of a 75 h.p. engine, two 125 h.p. boilers, a dynamo, a Cameron pump, a Krupp ball

mill, a Blake crusher, brown straight line calcining furnace with a 70-foot stack and two cupola smelting furnaces.

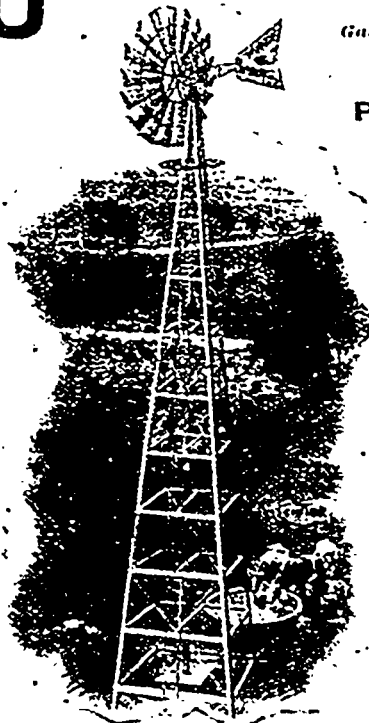
The object is to calcine and smelt the copper-nickel mattes at present produced by the Canadian Copper Co., with a view of raising the metallic contents of the matte to about eighty per cent., thus by further reduction than is now done by the company making it a high grade matte instead of one of low grade, as at present. It is also proposed to treat the basic copper matte after smelting the ore from the Orford Company's mine near Massey Station in the same plant, using as a flux with these ores the somewhat cupriferous silicious slags from the reconcentration of the Canadian Copper Co's matte.

The works will be capable of treating about double the present matte output of the Canadian Copper Co., and will employ about 150 men. The copper vein in Salter Township, near Massey Station, which the Orford Company is working, is about a mile in length and varies from four to eight feet in width. The ore is chalcopryrite. The company proposes to raise 200 tons of ore per day, about one-half of which will be sent direct to the smelter, which the company intend to construct at Massey Station, and the other 100 tons will be concentrated to a product containing about fifteen per cent. copper.

It will be noticed that the plans of the Orford Company, while they do not mean complete refinement of the ore in Canada, carry the work a good deal farther than is done at present, and reduce that to be done at the New Jersey works to a very small percentage.

STAR WIND MILLS

FOR PUMPING OR POWER PURPOSES



Galvanized Steel or Wood, all Sizes, 4 to 26 feet in Diameter.

PUMPING MILLS

FURNISHED WITH OR WITHOUT TANK ELEVATED IN TOWER.

GALVANIZED

Steel Towers

Any height, either three or four post, with substantial ladder.

TANKS

Any Capacity, Any Purpose

Made in Pine, Cypress, Fir or Galvanized Steel.

Our windmills are self-regulating and self-governing, and with our Hoosier Automatic Anti-Freezing Force Pump the windmill outfit takes care of itself, night or day, in calm or storm.

"Hoosier" IRON AND "Fast Mail" PUMPS

Designs and Prices Furnished. Write for Catalogue.

Address **FLINT & WALLING MFG. CO.**

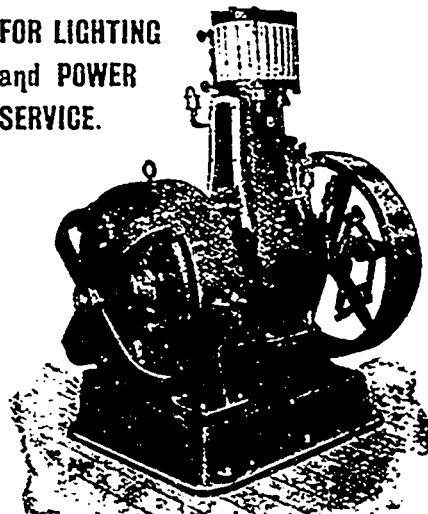
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KENDALLVILLE, IND.



Buffalo Engines

FOR LIGHTING and POWER SERVICE.



Buffalo Upright Direct Connected Engine Running in Oil.

BUFFALO FORGE CO., BUFFALO, N.Y.

E. A. WALLBERG, Canadian Representative, 410 Temple Bldg., TORONTO



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THE ROBB ENGINEERING CO., LIMITED.

We feel sure the announcement of the Robb Engineering Co., Limited, which is appearing in the daily papers offering debentures and a limited amount of stock, will meet with a ready response from investors, as they are known as one of our most enterprising and successful concerns in Canada.

The Robb Company dates from 1848, when Alexander Robb, the founder, started in a small way at Amherst, N.S., so that he was the pioneer of manufacturing in that thriving town. For the past twenty-five years, the business has been conducted by the sons of the founder, who have grown up in it, and, therefore, have the benefit of practical training and experience of two generations in the same line. They were among the first to recognize the possibilities of the Maritime Province in the engineering line, which is bound to follow the development of mineral products, especially coal and iron, and about ten years ago, the Robb Engineering Co., foreseeing the rapid growth of the uses of electricity, commenced the manufacture of a line of high-class engines, especially adapted to driving electric machinery. Mr. E. J. Armstrong, a clever and experienced American mechanical engineer, was engaged to assist them in designing engines and organizing workshops and special machinery to build these engines. They were fortunate also in being favored with the advice and assistance of Professor John E. Street, President of the Straight Line Engine Co., formerly instructor of mechanics at Cornell University, who is regarded as one of the best authorities of the

United States in machine shop practice. Later on, while building engines for the Dominion Coal Co., Halifax Tramway, and other large corporations, under the direction of Dr. F. S. Pearson, of New York, consulting engineer for these companies, they received some very valuable advice from him. Dr. Pearson was chief engineer of the Metropolitan Traction Co., New York, and formerly developed the electric street railway system of Boston, so that he has had more experience perhaps than almost any man in engines for electric railway purposes. As a result of this careful preparation, the Robb-Armstrong engines have found a demand in Great Britain, Spain, Australia, Cuba, Brazil, British Guiana, India, and many foreign countries, and the manufacturers of them have demonstrated that it is quite practicable to produce high-class machinery in Canada, and export it to any part of the world.

Engineering establishments form the groundwork of all industrial countries because machinery, especially engines, must be used for almost every other branch of manufacture. From such small engineering concerns have sprung the great ship-building and engineering corporations of Great Britain, and if such establishments are conducted systematically, they will be found among the safest and most permanent investments, as they are in Great Britain and the United States.

It goes without saying that a manufacturing business which is already established and has shown its ability to succeed and make money, forms much safer investment than a new and untried venture, no matter how promising.

The Robb Company have a record and

established reputation and have already shown their ability to expand, and we wish them every success in their present move to increase their capital and facilities.

CANADIAN SHIP BUILDING.

The Dominion Department of Marine is calling for tenders for building two fine cruisers to be used on the Pacific Coast for the protection of the fisheries. The steamers will be built in British Columbia. The specifications of one of the steamers call for an elegantly fitted craft splendidly equipped, with a speed of twelve knots in ordinary weather. She will be 130 feet long, 24 feet beam and 10 feet depth of hold or 11 feet molded depth. She will be a wooden, screw vessel, schooner rigged, with three pole masts. Her hull will be of the best seasoned British Columbia fir, with hardwood finishings in the cabin, and her machinery is to be the finest of the kind required.

As stipulated in the specifications, "the steamer is to be built and constructed in every particular according to Lloyds' rules for ships built in North American colonies, also fitted in every way to meet the requirements of the board of trade and of the Canadian steamboat inspection act, and to be under the supervision of an officer or inspector to be named by the Minister of Marine and Fisheries." Her masts are to be no less than 40 feet from the deck to the hounds, and are to be single sticks. The decks will be planked with three by three timber.

The pilot-house and chartroom six feet high, will be well forward, connected with the deckhouse. It will be a neatly finished room for the steering wheel, compass and chart table, and will contain steam heating

THE BEST PIPE THREADING and CUTTING-OFF MACHINES

Are Made by the **ARMSTRONG MFG. CO., BRIDGEPORT, CONN.**

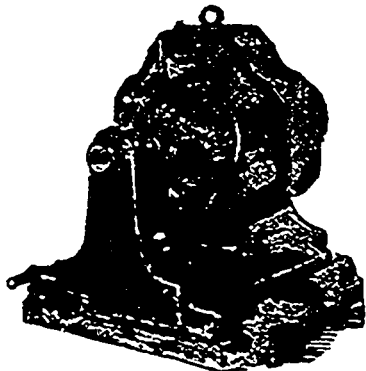
Also Manufacturers of a FULL LINE of **ADJUSTABLE STOCKS and DIES** and Water, Gas and Steam Fitters' Tools.

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A COMPLETE STOCK OF

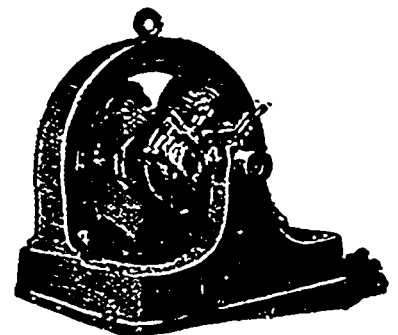
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Toronto Woolen Machinery Co.

We now offer as a going concern the property known as

The Vienna Woolen Mills

Consisting of the following machinery:-

- One set 18 in. Platt Cards, all clothed.
- One 26 1/2 Spindle Bancroft Mule.
- One 21 in. G. & Mc. Picker. One Cone Duster.
- One Fraser's Card Grinder. One Yarn Spooler.
- One 60 Spindle Fly Twister.
- One 103 in. Crompton Cone Loom, 4x4 box, 1 harness.
- Two 32 in. Falsay " " 4x4 " 21 " "
- One 43 in. Gilbert " " 3x1 " 4 " "
- One 43 in. " " 1x1 " 4 " "
- One Broad Warper and Beamer.
- One Hubbin Winder.
- Two Broad Up and Down Glgs.
- One Rotary Fulling Mill. One Cloth Washer.
- One Yarn Washer.

With Spools, Bobbins, Tools, etc., etc.

BUILDING No. 1.

Two and a-half Storey Frame, with stone foundation, 30x60 feet.

BUILDING No. 2.

Boiler and Picker House—One Storey Brick, 24x61.

A never-failing Water Power, all heat by steam and in first-class order. Good local trade has always been done.

The above can be bought cheap and on easy terms. Apply

TORONTO WOOLEN MACHINERY CO.
118 DUKE ST., TORONTO.

The Wm. Hamilton Mfg. Co.

Peterboro, Ont., Can.

Acting as the Patentee's Licensee,

Are prepared to manufacture and supply

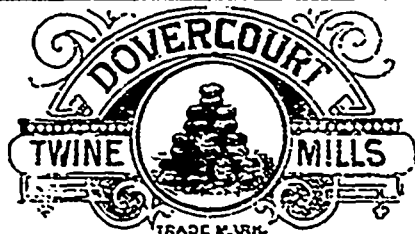
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As Described in

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Manufacturers of

- Cotton, Jute, Hemp and Flax,
- Twines and Cordage,
- Mill Banding and Driving Ropes,
- Chalk and Fishing Lines,
- Seine Twine, Hammocks, Tonnies,
- Crickot and Fly Nets,
- Cotton Rope and Clothes Lines,
- Plough Lines, etc.

HUTCHISON, SHURLY & DERRETT,
1078 Bloor St. West, TORONTO.

apparatus, officers' lounge, etc. An officer's bridge will extend over the pilot-house. The officers' mess is to be finished in hardwood, and to be furnished with dining table, seats, glass rack and hand rails, with brass and nickel-plated fittings. The captain's and officers' rooms are to be handsomely finished, with every comfort. There will be one spare stateroom, finished in the best style, with the finest Brussels carpet on the floor. There will be four bathrooms, one for the captain, one for the other officers, one in connection with the spare stateroom, and one for the crew. Provision will be made in the crew's quarters for fifteen seamen and firemen, in two apartments.

On the deck there will be two five-oared boats and one dingy, with oak gunwales and gratings. The steering gear will be worked by hand and fitted to be operated fore and aft. The magazine will be fitted up in the forward hold, and a room will be provided in the most convenient place for the storing of small arms and uniforms, with racks for rifles, revolvers and cutlasses. There will be two hatches on the main deck.

The engines will be fore and aft, compound in style, with surface condensers, and the boiler is what is known as the Scotch "multitubulat."

The specifications of the other cruiser are not complete.

CANADA'S NEW GRAIN ROUTE.

The first cargo of western grain to be shipped from the city of Quebec by the new Canadian route was placed on board the steamship Albanian, of the Leyland line, November 17, from the recently constructed Great Northern Railway elevator.

Grain shipped by this route is brought from Duluth by lake steamers to Parry Sound, on Georgian Bay, where it is taken out of the vessels at deep water berths alongside an elevator of a million and a quarter bushels' capacity and placed directly on board the cars for Quebec. The trains run over the Canada Atlantic road via Ottawa and Hawkesbury, and thence over the Great Northern to Quebec.

Thus was established a new grain route between Duluth and Liverpool, 800 miles shorter than that between the same terminal points via Buffalo and New York. Trains at Quebec run directly into the elevator, and the steamships come alongside of it, where they have forty feet of water. Grain is thus handled at a minimum cost for transshipment, and so confident are the promot-

THE ABBEY IMPROVED CHILLED SHOT COMPANY, Limited, Newcastle.

What better testimonials do Sportsmen require than the following, viz.:

Output of Shot in 1899 exceeded 1897 by 5,010 cwt., or equal to the loading of (at 1 oz. per load) 9,021,650 Cartridges.

The winner of the All-England Championship Cup in December, 1899, fired with our shot, and speaks highly of it.

ers of ultimate success that new elevators are to be erected both at Parry Sound and Quebec.

The Leyland Steamship Line announced that in order to carry the ocean freight at lowest possible price, it would furnish ships next year of 10,000 to 12,000 tons each. These vessels cannot ascend the St. Lawrence channel to Montreal, as they draw from thirty to thirty-five feet of water.

The Albanian took only 230,000 bushels the shipment being in the nature of an experiment, which proved a success.

CORIPHOSPHINE O.

This new product is extremely well adapted for the dyeing of all kinds of tanned as well as sumach tanned leathers, such as calf, goat and sheep-skin as well as cow-hides. It is also particularly worthy of notice for the dyeing of chromed leather, as on such material it produces very full yellow browns which are just at present in fashion. Before dyeing, the chromed leather should be mordanted with sumach.

Coriphosphine O. is distinguished for its pure shade and good solubility. It has a remarkable affinity for leather, and covers the grain extremely well, and the shade is not altered when dried. It can be combined with any basic color, and especially with Leather Yellow O. extra and Leather Blue B., whereby any desired Havana or fashionable shade can be obtained. The color should be dyed at 95-105 deg. F., without the addition of acid except in the case of hard water when an addition of acetic acid should be made.

The Garfield Oil Co., Cleveland, Ohio, have sent us a brochure which is a "Treatise on Ice and Refrigeration," and relates particularly to the apparatus, materials and methods best adapted to obtaining the most desirable results in this direction. It tells us that no branch of industry necessitates more minute and careful attention than that of ice-making and refrigeration, and the running of the machinery and care of the water are most important details. The suggestions contained in the little book are the result of the long and practical experience of Mr. E. A. DeBerg, the general superintendent of the Garfield Company. We are sure the company would take much pleasure in sending the publication to any applicant, and we are equally sure it would possess very much interest to anyone into whose hands it might come.

E. B. THOMPSON, CUSTOM HOUSE BROKER

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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 Miners' Requirements.

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OPPORTUNITIES FOR TRADE.

The following enquiries have been received at the offices of the High Commissioner of Canada in London, and of the Canadian Section of the Imperial Institute, London, England.

NOTE.—Those who may wish to correspond with any of these enquirers can obtain the names and addresses by applying to THE CANADIAN MANUFACTURER, Toronto. No charge for giving information. When writing refer to the numerals opposite the enquiries.

365. The names of a few large fish exporters who ship Labrador and other dried cod to Levant ports direct, are asked for.

366. A Toronto company, having warehouse accommodation, etc., will be glad to accept agencies for British goods other than liquors. They are prepared to receive merchandise either in bond or otherwise, and to pay freights, duties, etc.

367. An agent in Guelph, Ont., desires to be placed in communication with English firms who may wish to be represented in that province.

368. A manufacturer of boot and shoe dressings, creams, polishes, etc., desire to open up business with Canadian firms importing this class of goods.

369. A London firm of wine and spirit merchants ask for names of large importers in Canada.

370. Communications are desired by a firm in the Midlands, from the actual producers of crude asbestos.

371. A firm of Charlottetown, P.E.I., are prepared to purchase cheese in that province for good dealers in the principal trade centres of England.

372. Enquiry has been received from Toronto for the names of one or two dealers in wholesale spices, who would supply the raw material for manufacturing there.

373. A Vancouver, B.C., house asks for list of prominent English paper manufacturers, and parties interested in wood pulp.

374. A Nova Scotia firm make enquiry respecting the demand in the United Kingdom for "Excelsior" and Canadian sea moss for mattresses, packing purposes, etc.

375. A correspondent at Yarmouth, N.S., requests to be furnished with the names of English, French and German houses handling tinned lobsters.

materials than of undertaking the work, and, of course, in the former circumstances there are not the same incentives to push the business as would apply in the latter case. I do not pretend to be an expert, but I do know the advantages of the heating arrangements as they are applied in Canada. If you think well of the suggestion, you might have it mentioned in the press, and I hope it may lead to representatives of some leading Canadian houses being sent over to England to investigate the matter and to report. If this happens, I shall be very glad indeed to do anything I can to promote the success of any mission of the kind." In consequence of this letter, and the publicity the matter received in Canada, I understand that one of the leading firms sent a representative to this country to investigate the matter on the spot. I hear occasionally of large buildings being heated on the Canadian system, and I trust that the trade in this direction may be considerably developed. I am sure there is much room for it.—Lord Strathcona's Report.

According to a return from the Secretary of H.M. Customs, the quantities and values of pig-iron and unwrought steel registered as imported into the United Kingdom from the United States during the months of January-October, 1900, were as follows:—

	Pig-Iron.		Unwrought Steel.	
	Quantity.	Value.	Quantity.	Value.
1900.		£.	Tons.	£.
January..	5,742	22,898	409	3,988
February..	2,356	8,905	369	5,190
March...	4,688	18,101	585	4,991
April....	1,853	7,544	2,632	18,955
May.....	1,629	5,154	2,190	17,684
June...	4,829	14,783	14,988	109,034
July.....	3,121	13,022	10,200	67,108
August...	7,282	31,140	11,883	84,663
September	8,829	33,987	21,538	142,796
October..	11,041	45,175	31,217	181,591

UNITED STATES.—Our Consuls keep harping upon the importance of paying more attention to packing for export. This is one of the most important features to be attended to in getting and securing foreign fields for our products. Nothing is so disappointing as to pull out broken articles ordered when the buyer is looking on, eager to carry away the article or commodity for which he has been watching and waiting for weeks. A little extra amount of excelsior, a few more nails or screws, a little better wood in boxes, a little better binding material, making a very trifling difference in expense, would do wonders. Then, too, color, kind of articles, popular prejudices, means of transportation, geographical conditions, etc., play far more important parts in this matter than many merchants and manufacturers seem to think. Goods that go into the interior of South America, Asia or Africa, on pack mules, donkeys or camels, must be packed not only better, but with due consideration of the animals' carrying capacity, than goods going to a seaport. This matter has been too long and too often neglected.—The Manufacturer.

GREAT BRITAIN.—The following letter, which I addressed to you in April of last year, in reference to the introduction of Canadian heating apparatus into the United Kingdom, may perhaps be included in this report with advantage:—"It seems to me that more attention might be paid in Canada to the United Kingdom as affording an extensive market for heating apparatus. The houses in England are invariably cold in winter, and this is especially the case in the passages and in the bedrooms, where fires are not usually kept going all the time. If some houses in the trade in the Dominion would consider the possibility of starting branches here, a very considerable business might, I am sure, be done if the matter were properly pushed, for which purpose a little capital would of course be required. There can be no doubt whatever that if the advantages of the Canadian system of heating become known, the demand for its introduction into houses, etc., would be large. I am aware that one or two of the leading firms in the Canadian trade have in a measure tried to exploit this market, but it has been rather in the direction of supplying the

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It will not pay you to save power at your dynamo if you lose it on the way to your lamps. Our wires are proportioned to the power they are to carry, and we put them up to stay.

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TORONTO.

It is interesting to learn that the German Government has just paid some £100,000 to the Stowger Automatic Telephone Exchange of Chicago for the patents and rights to manufacture and use the automatic switch which the company owned. The deal has not taken place without due consideration by the Germans, as a trial was made of it in the earlier part of the year, and £30,000 was paid at that time. The contract at that time was for a 200-instrument exchange to be used by the Government for six months, and if considered satisfactory at the end of that time a further £10,000 was to be paid. The installation, as well as another which was fitted later, has proved a success, and payment has been made as above recorded. —Kuhlows.

The amendment to the Missouri Constitution authorizing the City of St. Louis to issue \$5,000,000 in bonds for the World's Fair in 1903 received a large majority of votes at the late election, as did also another

amendment authorizing the State Legislature to appropriate \$1,000,000 for the purpose of making an exhibit at the Fair. With \$6,000,000 from the State and the city, \$5,000,000 from Congress and \$5,000,000 subscribed by the citizens of St. Louis, the total sum of \$16,000,000 will be available as soon as the final preparations are completed. The management of the Fair has not announced its intention as yet, but it is understood that work will begin when the site for the buildings has been decided upon.—St. Louis Stoves and Hardware Reporter.

RUSSIA.—The new water-works, now in process of construction for the city of Moscow, will comprise four pumps of 9,500,000 capacity, motors, etc., four 36-inch conduits, each 9½ miles long, and other important installations of machinery and manufactured equipment. So far as reported none of the contracts for these requirements

have yet been let. The total cost of the plant is estimated at \$25,000,000.

The demand for agricultural machinery and implements in the district of Theodosia (near Odessa) continues to be strong, and also in the districts near Kieff. Germans are at present making the most headway in all classes of hand implements and light machinery, the American trade being confined largely to reapers and binders.

The city of Winnitza is shortly to have both electric tramway and lighting system.

The Societe des Tramways de Riga is reported to have decided to spend about \$1,200,000 in equipping lines with electricity.

Mr. Siemiczew, of Warsaw, has a concession to build an electric tramway from Czenstockhowa, or the Warsaw-Vienna Railway, to the Russian frontier town of Herby. A concession for another tramway of about fifty kilometers to connect with Warsaw was recently granted. Particulars

THE BEST IS NONE TOO GOOD.

The largest machinery builders in Canada and United States use our Babbitt Metal. Is this not sufficient proof of its superiority over other anti-friction metals? If the largest users are satisfied with our Babbitt Metals, why should it not suit you? We can furnish you with numbers of testimonials.

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regarding these lines may be obtained of W. Arnd, 22 Nowy-Swajt, Warsaw.

The Russian market affords a profitable opening for the sale of such articles as lubricants, driving belts, enameled metal utensils, dyo stuff extracts, pressed leather for furniture, talc, cement, asphalt, graphite, etched sheets of glass, hats, toilet articles, linen and fancy goods.

The Russian Ministry of Finance is reported to be actively engaged in preparing the details for the forthcoming adoption by that country of the metric system as the official standard of weights and measures.

AUSTRALASIA.—The London correspondent of The Manufacturer, Philadelphia, writes to that journal, a very interesting letter regarding the sale of American goods in Australasia, and pointing out how British trade is passing to the United States. The article is exceedingly suggestive to Canadian Manufacturers, and is, in part as follows:—“The fact is steadily being driven deep into the British mind that the competition most to be feared in the Australasian trade is the United States. Indeed, in many articles America already does a larger export trade thither than England. Perhaps the present condition of affairs can best be set out in statistical form. The figures I am about to quote are from the official returns made by the United States and British governments, respectively, so there can be no prejudice of any sort on either side.

Value of exports from United States and United Kingdom in 1899 to British Australasia.

	United States.	United Kingdom.
Farm implements and agricultural machinery	\$912,223	\$363,345
Books, maps, etc.	151,440
Carrriages, etc.	499,733
Cycles	239,022
Clocks & watches.	198,505
Cotton goods	507,000	\$24,440,000
Instruments, for scientific work.. . . .	537,608
Builders' hardw're	1,137,595	1,242,915
Sewing machines.	423,562	38,245
Typewrit'g mach.	109,548
Boots and shoes.	753,881	819,230
Furniture.	395,370

It is not possible to give at this moment the corresponding figures for all the articles; but where exact statistics are available we see in all instances except two (viz., cottons, boots and shoes), that the United States are

considerably ahead of England. I have not given a table giving the figures over a series of years, but may add that the United States trade with Australasia is steadily growing year by year.

Twenty years ago the American axe was hardly known in the colonies, and opinion on these was strongly in favor of the English-made tool. But to-day quite 90 per cent. of the people there use the American axe. The attraction is partly due to the superior enterprise of your exporters; partly because the conditions of life and work in the United States more nearly resemble those in the Australian colonies. The attention of British axe-makers in the United Kingdom was called a few years back to the competition from America. Out of about twenty letters sent to as many British houses, only two replied, one was a bare acknowiedg-

ment and the other a half-hearted attempt to adopt one of the suggestions then made. The Americans, on the contrary, at once grasped the position, and several of your largest axe-makers immediately brought out axes according to pattern and sent a quantity as free samples out to the colonies. Thousands of your axes are now sold every year in this market, and it may fairly be said that they dominate that part the world.

The same remarks also apply to files, a trade which has now largely gone to the United States: saws, locks, furniture, edge-tools, such as shovels, forks, etc., nearly all the bread knives of the cheaper kinds are American. In enameled kitchen ware, American and German is much more used than formerly, and one large retail hardware store keeps the three kinds—English, American and German. Some people will have

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The descriptive pamphlet, or any stenographer using the Underwood Typewriter, will explain why 1,000 of these machines have been sold in Canada in one year—more than all others put together.—Visible writing and the tabulator are winners.

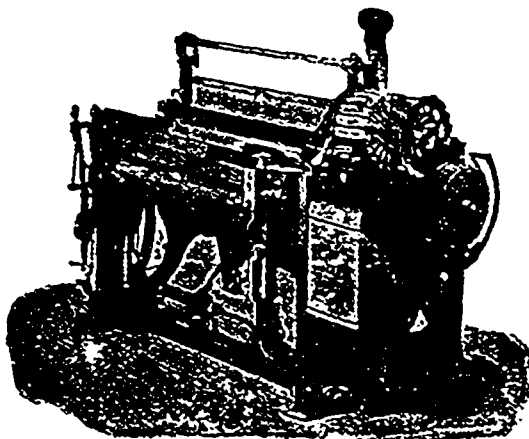
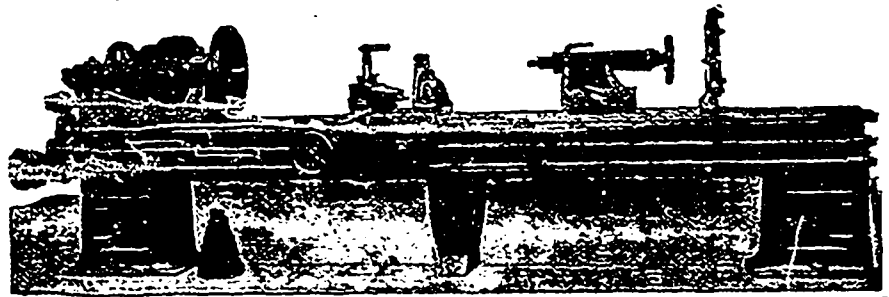
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CABLES FOR AERIAL and UNDERGROUND USE.

SOUTH AFRICA.

Messrs. Kelly's Directories Limited, (London, Eng.,) beg to announce that a new edition of the **General Directory of South Africa** is now in course of preparation and desire to draw the attention of Canadian Manufacturers to the importance of the work as an advertising medium for making their goods known to buyers in South Africa. Being the Standard Work it reaches the very people whom manufacturers desirous of opening up or extending their export trade with South Africa, would desire to get in touch with, **THE ACTUAL BUYERS THEMSELVES.**

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The Yeakley Vacuum Hammer.

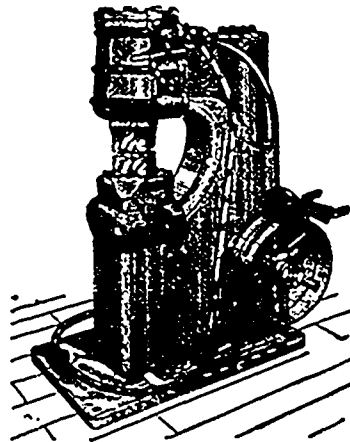
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nothing but English, but others are not particular whether it is American or German. The two latter nationalities are only too anxious to receive any suggestions they think may lead to business. A good trade might be done by United States exporters in galvanized sheet iron, which is shipped to Australasia in large quantities from England. It is packed in cases holding a net weight of half a ton, and to preserve the iron in transit, the cases are lined with a kind of common felt. The wholesale houses sell this iron in lots of 25 or 50 tons. The most important branch of corrugated galvanized sheeting, which is in most demand, sells in Melbourne, Victoria, at £18 10s. per ton. It is necessary to stamp the sheets with certain marks, which could be supplied them by local agents. There is also a steady expansion in the ready-made clothing trade throughout Victoria. The "blue denim clothing" for use by miners is supplied from San Francisco. It is of strong blue linen, which is much preferred to less durable striped cotton velvet.

The statistics I have quoted show clearly that your makers of farm implements and machinery quite dominate the Australian trade. It is significant of the steady growth of your foreign trade that British implements should be ousted from an English colony. But, of course; there can be only one reason, and that is a very simple one, viz., that American farm implements are better suited to colonial work and purposes. I have not statistics at hand to prove it, but I have a shrewd idea that American mining machinery is gaining the upper hand in the Antipodes. This is the case in South Africa and it is very likely true in Australia.

Messrs. Molden & Budden, manufacturers' agents of Melbourne and Sydney in a letter to the Manufacturers' Record, declare that their experience "points to the fact that the sale of nearly all American products in the Australian colonies is on the increase. The lines they are most in touch with, and for which there is a growing demand, include the following: fencing wire, saddlery and whips, bar iron, arms and ammunition, furniture, sanitary goods of all classes, bedsteads, lampware, platedware, glassware, oils, paints, colors, tools, woodware including axes, shovel handles, etc., general hardware, shelf goods and typewriters. With the last named article what they want is something cheaper than the standard lines already introduced, and at a price more with the reach of the general public; for such an article there would be an unlimited demand.

Messrs. Molden & Budden add:—"We shall be pleased to open up correspondence with any of your firms requiring direct representation for any of the lines enumerated or for any specialties requiring personal introduction and pushing. As we think we stated in our last letter to you, we have permanent show-rooms here and in Melbourne, from which we work the whole of the Australian colonies." Canadian manufacturers might find it to their interests to correspond with this concern.

PARAGUAY.—The United States Vice-Consul at Asuncion, writes as follows: Hats for men are imported into Paraguay from England, France, Buenos Ayres, and Montevideo. The selling prices are exorbitant, twice as high as in the United States for the same class of goods. Soft hats are very much in demand and sell at even a greater profit. The hats which have the largest sale are of good, but not of the best quality.

BAHAMAS.—The official returns show the values of the import and the export trade of the Bahamas for the years indicated.

Year.	Imports.	Exports.	Total.
1895	£172,591	£124,011	£296,592
1896	194,774	138,972	333,746
1897	186,010	146,095	335,095
1898	238,336	174,800	413,136
1899	329,196	169,148	498,344

The imports from the United Kingdom in 1899 show a slight increase as compared with 1898, but those from the United States increased nearly fifty per cent., whilst the exports of native produce continued, as before, to find their principal market in the latter country.

Values of imports and exports from and to the United Kingdom and United States respectively for the years 1899 and 1898:

Year.	United Kin dom.		United States.		Total.
	Total from.	Total Exports to.	Total Imports from.	Total Exports to.	
1899	£64,951	£19,340	£31,291	£223,912	£125,257
1898	59,069	29,727	88,736	170,766	101,900

Besides foodstuffs and other articles which are exclusively imported from the United States, there are a few classes of manufactured goods in which the United Kingdom shares the trade with that country, and also there are some kinds of tropical produce, such as rice, sugar and tea, which are imported through English agencies rather than American.

HINTS TO NAIL EXPORTERS.—American-Consul Schumann (Mainz) states that to Cape Colony nails are exported chiefly from Great Britain and wire nails from Belgium, Germany, and the United States. The sizes commonly used are: common nails, 1½, 2, 2½, and 3 inches in length; board nails, 2, 2½, and 3 inches long; wire nails, 2, 2½, and 3 inches in length. Board nails cost 14s. per 100 pounds; 2-inch wire nails cost 16s. 6d.; 2½ and 3 inch. 15s. per 100 pounds. From Great Britain the nails are exported in kegs; from Belgium in wooden cases; and from the United States in sacks. There does not appear to be a preference for any particular mode of packing. Import charges on nails in Cape Colony are: Customs duty, 7½ per cent. ad val.; dock charges, 2s. 6d. per ton.; delivery charges, 4s. per ton; brokerage, one per cent.

In Egypt, Belgian nails are mostly used, the demand for French and English nails having decreased. Lately, however, the import of German nails seems to be increasing, and the United States also has of late received large orders. The demand is chiefly for wire nails from 0.7874 to 7.874 inches in length, the greatest demand being for 1.18, 1.57, 1.97, 2.36, 2.75, and 3.15 inches, flat heads. Prices vary. The import duty is eight per cent. ad val., and other expenses amount to half per cent.

South Australia imports practically only wire nails. Conical heads are preferred to flat ones. All sizes, from one inch to six inches and from No. 4 to No. 16, are in demand. The imported nails come from Great Britain, Germany the United States, and Belgium. The nails from the United States often give rise to complaint, as the heads break off too easily. Prices vary greatly. Lately they averaged 10s. for Nos. 5, 7 and 8; 11s. for Nos. 9 and 10; 12s. for No. 11; 14s. for No. 12; 15s. for No. 13; 16s. for No. 14 and 20s. for No. 16. These prices include import duty and all other charges.

In Tasmania the demand is chiefly for nails for building purposes and for the

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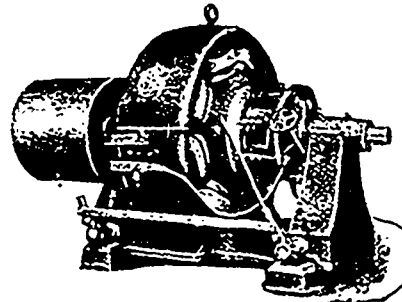
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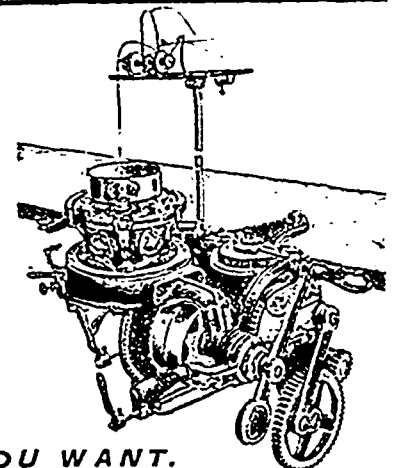
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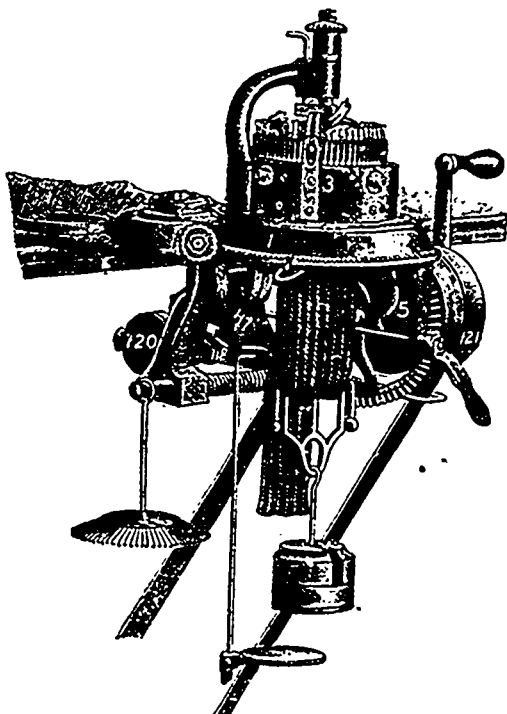
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GEORGETOWN, ONTARIO, Canada.

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manufacture of fruit cases. For the latter purpose, wire nails, 1 1/2 inch, No. 14 or 15, are used; also 1 1/2 inch, No. 12, 13, or 14. For other purposes, nails with conical heads are given the preference. The annual import of nails amount to about £6,295. The import duty amounts to £2 10s. per ton, and the wharfage dues to 5s.

In Western Australia wire nails with conical heads, of 1 to 6 inches in length and from No. 4 to No. 18, are mostly used, and these are imported from Great Britain, the United States, Belgium, and Germany.

NEW CALEDONIA.—The following from a report published in the French "Journal Officiel," shows the value of some of the principal products exported from New Caledonia in the years 1888 and 1899, thus indicating the commercial progress of the colony during the last eleven years:

Articles.	1888.	1899.
Copper ores.....	£2,100	£19,700
Nickel ores.....	19,500	221,800
Cobalt ores.....	8,500	13,500
Chrome ores.....	2,800	26,000

MEXICO.—A local capitalist, interested in the establishment of a commercial and trading company in the city of Mexico, desires to obtain price lists and catalogues of exporters of drugs, medicines and patent medicines; chemicals; perfumes, soaps and essential oils; paints; varnishes and enamels; glass, glassware and glass bottles for medicines; porcelain and earthenware goods, etc. All communications should be addressed to H.B.M. Consul in Mexico city, and all price lists should be accompanied by a clear statement of the terms on which business would be done.

NEW SOUTH WALES.—The Premier in a recent speech assured all who might be interested that there would be no departure from the established policy of that colony with respect to tariffs. Sydney will continue to be a free port until the new Federal tariff goes into effect, which will be eight months distant at least. There is a certain amount of buying in the colony in anticipation of the higher duties, but thus far the movement has not been very marked, owing in part perhaps to high ocean freights, and in part to the fact that there is still plenty of time.

ORANGE RIVER COLONY.—A despatch has been received at the British Patent Office from the Legal Adviser to the Military Governor of the Orange River Colony, stating that the Patent Laws of the late Orange Free State have been in no way altered or disturbed, and that persons interested in obtaining Letters Patent or renewing patent rights already granted should proceed as they would have done had no war taken place. All applications, specifications, etc., may be drawn up in the English language. The Patent Office was of necessity temporarily closed and will be reopened as soon as circumstances permit.

PHILIPPINE ISLANDS.—The work of the United States Commission appointed to draft a new tariff for the Philippines has been completed, says Duns' Review, although the text of the revised schedules has not yet been received at the War Department. The tariff is to be published in the United States before being put in force, in order to enable American exporters and manufacturers to suggest amendments which, if approved by the Department, may

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be incorporated in the measure before it becomes law. Specific duties are retained in most cases, but surtaxes and harbor dues have been abolished for the most part. Duties have been reduced on flour, provisions, canned goods and vegetables, while agricultural implements have been placed on the free list. All weights and measures are calculated in the metric system. One of the most important of the schedules in the new tariff will be that relating to cotton goods. The New York Journal of Commerce reports that the following schedule has been prepared by the New York Merchants' Association, with a view to enabling American coarse cottons to compete successfully with clay-filled European goods, and it is likely to be favorably considered by the War Department:—Rate for cotton tissues, plain or with figures, napped or not, not over 35 cm. in width and weighing not less than 9 kilograms per 100 square meters—for 9 threads or less, 13 cents per kilogram; for 10 to 15 threads, 17 cents; for 16 to 19 threads, 23 cents; and for 20 threads or more, 25 cents.

SOUTH AFRICA.—Consul J. G. Stowe, of Cape Town, commenting on the establishment of a British Australian-San Francisco steamship service, says: A line of steamers from New York to South African ports is just as necessary, just as feasible and would be as profitable as one to Australia. In the list of exports of the United States to foreign countries South Africa stands thirteenth, not a very bad showing for the Dark Continent, compared with older and more settled countries. She takes more than Russia, the Argentine Republic, Brazil and other South American countries, and all Asiatic countries except Japan.

A very large quantity of mining machinery has been ordered in the United States by the various mining properties along the Rand and in Rhodesia. In a few instances the orders may have been so placed owing to quicker delivery, but in most it was because American machinery had already been tried and had proved superior to other makes.

A 40-stamp mill is shortly to be ordered by the Anglo-French Matabeland Gold Mining Co.

The Rezondo Gold Mine, Rhodesia, is to install considerable machinery to replace that destroyed by a recent fire.

The Indwo Colliery Co., Limited, Cape Colony, will shortly be in the market for a large quantity of machinery.

A railway is to be built at once to the Hlabisa coal fields in Zululand, connecting with the Natal-Zululand Railway at the Tugela River. It will be about 100 miles in length; 3 feet 6 inch gauge; rails to weigh forty-five pounds per yard. Surveys have already been completed, and the first section of twenty miles is to be begun at once, the entire line to be completed within four years.

A bill is now before the Cape Colony Parliament authorizing a loan of £1,308,800 for railway and other public works, of which £645,802 is for rolling stock, and much of the balance for rails and other material. In the bill £25,000 are authorized for the construction of bridges. This, however, will not cover all that are contemplated. A new bridge is being projected to cross Van Staaden's Pass, near Port Elizabeth. It will be 500 feet long, of steel cantilever type, the central span being 300 feet. A viaduct is also projected for East London. A viaduct is also projected for East London, of about 900 feet long, and cost some £100,000.

Small electric lighting plants are to be purchased by the Town Councils of East London, Cape Colony, and of Uitenhage.

The Durban Corporation are to purchase two engines shortly for their lighting service.

The registration of patents and trademarks will for the present be administered under the laws of the late Republican Governments, and the same fees will be charged. Applications should be filed with the Military Governors.—The importation of fruits, plants, cuttings, etc., into Natal is now subject to stringent regulations as a precaution against the introduction of plant insects or disease.—The duties levied on merchandise imported into the Transvaal are assessed by the military authorities at the

same rate as those in the tariff of the late Republic.

FRANCE.—The monthly bulletin of the "Societe d'Encouragement pour l'Industrie Nationale," states that the large plain of Caen is well adapted to the use of agricultural machinery, and it is surprising that it is not in more general use there. Drills ought to be found everywhere in the district, but they are almost totally unknown; the reaping machine is not used, the harrow and machine plough are almost entirely ignored by farmers. Grain-sorting machines are lacking in the majority of farms where their employment would be of great value. As regards the implements in use, they are of a very primitive kind and usually defective. Some special competitions for agricultural instruments have been organized, and it is expected that they will lead to the adoption of improved systems of cultivation in that district of France. The implements which are at present in use are:—The plough of the country; the large harrow, with either wooden or iron teeth; the small harrow, with wooden teeth made of ash; and the wooden roller.

CAPE COLONY.—The colossal consumption of jam—which amounts to thousands of tons—by the troops, to whose diet it forms not only a welcome but even a necessary adjunct, gives good grounds for the supposition that this branch of industry will develop still further. Although Austrian producers would find it very difficult to compete with the large factories existing in England and America, still South Africa would afford them a market for better qualities and special kinds, such, for instance, as cranberry jam. Jam arrives here almost exclusively in hermetically closed tins, labelled in a suitable manner.—Austro-Hungarian Consul at Cape Town.

SPAIN.—A stock company, the Credito Industrial Gijones, has been organized at Gijon, with a capital of 4,500,000 pesetas, to undertake various enterprises, such as building and operating a gas or electric

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lighting plant at Gijon, railway construction, and the exploitation of iron mines in that vicinity.

According to Handels Museum, the German Consul at Madrid reports as follows: On importing goods into Spain the employment of agents whose reliability and knowledge of business is essentially adapted to protect exporters against unpleasant illusions

is to be recommended. Exporters are advised, (1) to state in their invoices for the purchases effected through the agents, in addition to the name of the customs-agent (or forwarding firm), the names of the intermediate forwarding agents, so that the buyers may know exactly to whom they have to send the customs papers as well as other instructions respecting the forwarding;

(2) the name of the consignee in the interior of Spain must be communicated to the intermediate forwarding agents, in order to render possible the utilization of the through freight tariffs; (3) certificates of origin must indicate the street and the number in the street of the sender, and no corrections and erasures must appear in them, nor must the slightest alteration be made in them after they have been signed by the Spanish Consul. A voluntary alteration would entail the payment of duty at the maximum customs rates, and, as later on the originals are compared with the duplicates of the certificates of origin sent to Madrid by the Consuls, they might be liable a year after their passing the customs to the imposition of a higher rate of duty, and of being visited with a customs fine; (4) in all documents concerning the shipments, such as certificates of origin, bills of lading, etc., the same designation of the goods must appear; (5) the invoice must state the gross weight of each parcel and the weight of each separate kind of goods with and without the package; (6) post-packets which go straight to Spain (therefore parcels weighing up to 3 kg. gross) do not require certificates of origin. But for post-packets addressed to a forwarding agent (customs agent) residing near the Spanish frontier, in order to be forwarded further by him as freight goods (therefore those weighing up to 5 kils.) certificates of origin are necessary; however, it should always be ascertained whether the cost of the certificate of origin does not exceed the difference between the maximum and the minimum customs rates; in bills of exchange the residence of the drawee must be stated, as otherwise the holder may get it protested.

GERMAN EAST AFRICA.—Discovery of Mica. - Some new geological explorations in German East Africa, in the Uluguru Mountains, situate to the West of Dar-Es-Salam, have resulted, says Handels-Museum, in the discovery of mica, which is a most valuable material for electro-technical purposes. The mica plates which have been found are very useful for the said purposes on account of their solidity and capability of isolation. Their even-surfaced splitting capacity, as well as the capability of enduring high electric tensions, render the East African mica equal to the most employed kinds of mica used in electro-technics of the United States, Canada, India, etc. In spite of the difficulties of transport which have to be encountered in connection with the exploitation of the East African mica, until the projected Central Railroad approaches the Uluguru mountains, the mining for the same might now already prove remunerative, as there is a strong demand for this material, the price of which varies according to color, size, etc., from 3 to 15 marks per kilo.

WEST AFRICA.—A large surveying party has recently left Liverpool for the purpose of continuing the Sellondi-Tarkwa Railway to Kumassi. Twenty-seven engineers and about 1,700 carriers and laborers will comprise the party during the preliminary work, but as soon as possible 10,000 men are to be engaged in the actual constructional operations. The line will be 180 miles long, 3 feet 6 inches gauge, and will run for the most part through dense tropical forest. It is expected that considerable difficulty will be experienced in supplying 10,000 men in this part of Africa with food and general stores, and important contracts in these lines may possibly be secured.

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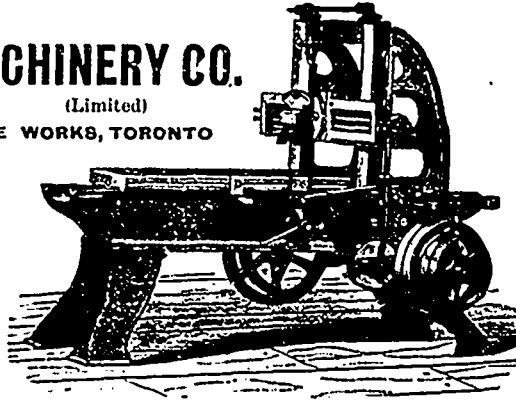
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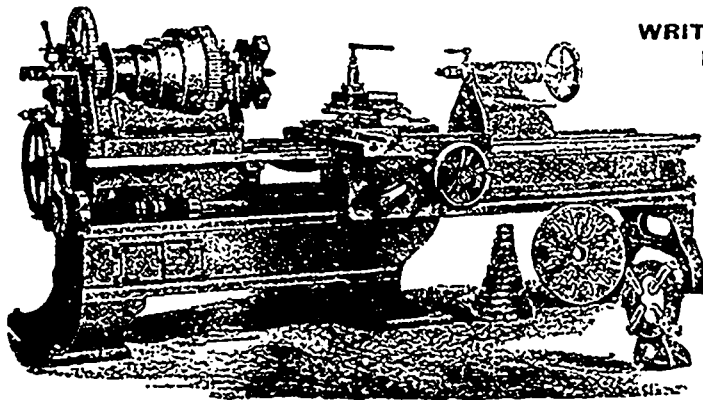
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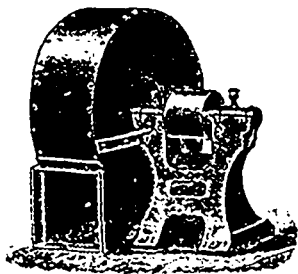
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THE DOWN-DRAFT SYSTEM OF FORGE CONSTRUCTION.

The problem of smoke removal from forge fires is most satisfactorily solved by the Buffalo Down-draft System, representing a new departure in forge shop practice. Under the old methods, the arrangement of overhead piping and hoods for exhausting the smoke and gases was not extraordinarily efficient as far as accomplishing its purpose was concerned, and in addition to obstructing light, necessitated frequent repairs and renewal.

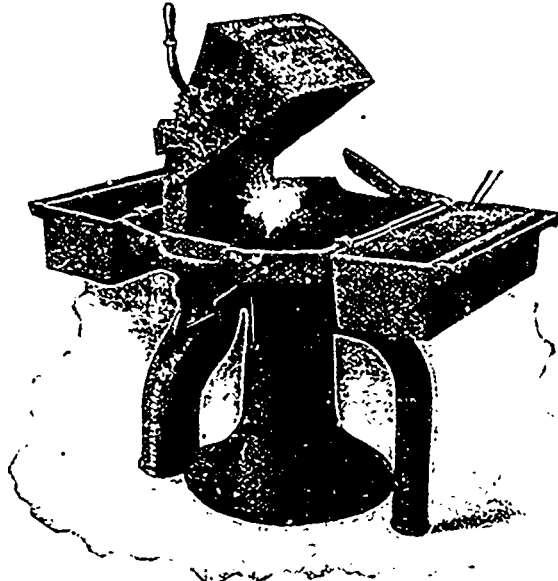
The Buffalo Down-draft System, originated, patented and exclusively controlled by the Buffalo Forge Co., Buffalo, N.Y., effectually avoids the objections of the old methods, and is, in fact, the most efficient system of its kind known. The smoke and gases are completely removed as soon as generated, by suction into the adjustable hood of cast iron at the side. Thence the exhaust current is conveyed away through tile piping, which is placed underground. By this arrangement there is no escape from the action of the suction hood in the largest and heaviest fires. The system is one of practical indestructibility, and interesting cases are

on record where Buffalo Down-draft forges have been taken from plants destroyed by fire and reinstalled with perfect success. The atmosphere of the forge shop is rendered remarkably pure and free from smoke, and in summer is appreciably cooler, since there is no escape of hot gases into the room.

In the accompanying illustration is shown one type of Buffalo Down-draft forge, which is adapted for moderate work, though the

down-draft system is applied to forges of all sizes and requirements. As will be noted, the construction is heavy and substantial. Blast gates are attached to the forge with leavers for controlling the blast, and the Buffalo Patent Anti-clinker Dumping Tuyere permits the dropping out, at the bottom, of clinkers and ashes without disturbing the fire.

For the purpose of supplying the blast and exhausting the gases, Buffalo Blowers and Exhaustors are employed. Where the number of forges to be served is small, one machine, a combined blower and exhaustor, may be used. Here the forge hoods are connected to the exhaust inlet of the fan, the discharge of which is into the blast pipe conveying air to the forges. Since, however, more air is drawn into the suction hoods than is delivered at the tuyeres, provision must be made at some point in the system for the escape of the surplus volume. This is effected by leading from the blast pipe to the outside atmosphere a by-pass connection a self-acting damper which regulates the surplus escape, according to the blast required. That is if all the blast gases are closed, the dampers open to allow all the air drawn in at the hoods to escape. The air which is drawn in with the gases at the hood insures that in the resulting mixture the oxygen will be abundantly sufficient for all combustion purposes. Where there is a large number of forges, the system is installed with two independent fans, one for blowing, and the other for exhausting, and for the latter purpose it is customary to employ steel-plate exhaust fans in contradistinction to the cast iron shell blowers for blast service.



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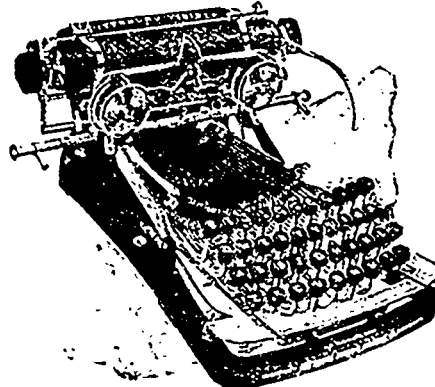
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A NEW TYPEWRITER.

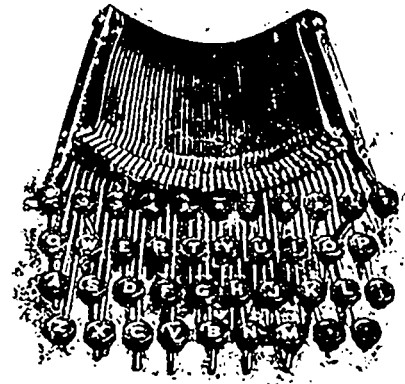
The introduction of the Pittsburg Visible Writing Machine into Canada means another triumph for the advocates of low priced typewriters, and at the same time providing in every way an up-to-date writing machine. That the price of \$125.00 usually charged for a Standard Typewriter is an exorbitant one has long been admitted. The Pittsburg Visible will sell in Canada at \$85.00, and if for no other reason the following description of the machine will prove interesting.

Only first class material goes into the construction of the machine and men of many years' experience are in charge of the factory. It is fitted with the universal key-board and takes but a short time to learn to operate it. When seen its workings are at once understood.

The carriage on the Pittsburg Visible does not require to be tilted, or the platen flopped over, and the operator does not require to refer to a scale either, as the work is always immediately in front of him. This permits of invoicing,



making out detailed reports, headings, card indexes and tabulated work of all kinds with an ease that is surprising, as the precise location of each character is determined by the eye. The paper can be moved backward or forward as much or as little as desired and any line horizontally or perpendi-



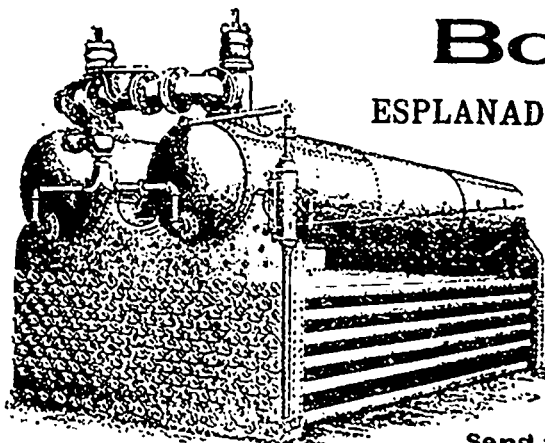
cularly brought into exact position at sight. Another good feature of the Pittsburg Visible is the ease of making corrections or insertions. In such case, the paper is immediately brought to the exact position without any possibility of error, and the correction or insertion effected. If necessary it can be instantly shifted, straightened or removed.

The Pittsburg Visible has several other good features, such as manifolding, ease of adjusting tension, bands for holding paper, ribbon movement, etc., but probably the strongest feature in the construction of it is the provision for removing the type basket containing the entire type action, including type, bars and keys, which is accomplished with a single movement in but a moments time. Exact baskets can be obtained for different languages or for special work if required. These can be fitted to the one instrument, thus saving the expense of additional machines.

The Canadian Typewriter Exchange, with head office at 45 Adelaide Street, East, Toronto, have been appointed sales agents for Canada and are at present appointing sub-agents throughout the Dominion. As a number of good districts are still without representatives, it would be well for anyone wishing to take up this line of work to communicate with them at once.

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 Boiler Co.**

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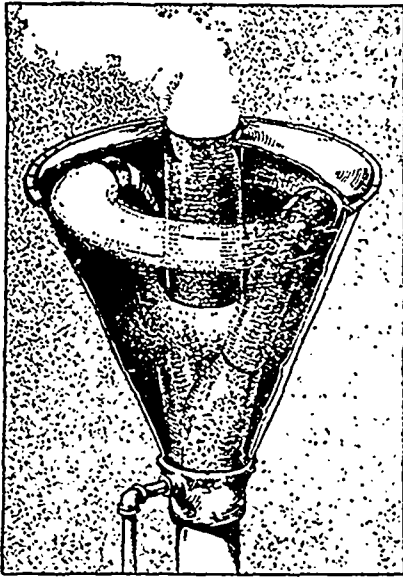
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THE OPERATION OF THE STURTEVANT EXHAUST HEAD.

An interesting example of the practical application of centrifugal force is presented in the design of the Sturtevant Exhaust Head. The accompanying illustration serves not only to show its construction but also its method of operation.

Externally it appears to be an inverted cone of heavy galvanized steel plate attached to the end of the exhaust pipe. Its interior construction is shown to consist of two branching pipes extending upward from and connected to the exhaust pipe. These individual pipes which are parallel to the sides of the casing terminate in elbows from which the steam escapes. Its contact with the circular sides of the case gives it a whirling motion which thus gives centrifugal



force an opportunity to act. In as much as this force is proportional to the weight of the substance acted upon and as water weighs about 1,600 times as much as does exhaust steam, the natural result is that the water contained in the steam is thrown outward in radical lines with great force. Striking upon the sides of the cone it trickles to the bottom and there escapes through the drip pipe. Such oil as may be entrained with the steam is likewise separated.

The steam, now dry, is forced downward by the additional entering volumes and quietly escapes to the atmosphere through the central pipe. It is evident that all tendency on the part of the water to escape with the steam is most forcibly overcome by the centrifugal action.

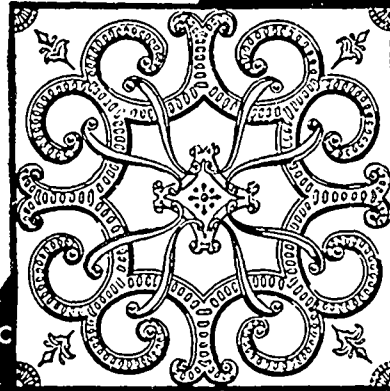
The central pipe being made larger than the supply beneath and the cold sides of the case tending to condense a portion of the steam, it is manifest that no back pressure can be exerted upon the engine. The absence of baffle plates and the absolute simplicity of design are the best guarantees of endurance on the part of this head. It is built by the B. F. Sturtevant Co., Boston, Mass., in sizes ranging from 1-inch up to 36-inch size of exhaust pipe.

This company has just received the order for two immense exhaust heads one for a 30-inch pipe and one for a 36-inch pipe which are to be built on this design.

An electric railway is projected to run from Yarmouth to Digby, N.S.

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We make countless beautiful designs, with borders, friezes, dados and every detail to match; they are easily applied, in old buildings over plaster, or in new ones where plaster is not required.

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Will be pleased to correspond with Canadian Manufacturers and Exporters desirous of opening up direct relations with Australasia.

MECHANICAL DRAFT AND ITS ADVANTAGES.

Within the past few years there has sprung up a decided sentiment in favor of forced or induced draft in land installations. The fitness of this form of draft from marine work, where tall chimneys are to be avoided, is readily conceded, and, following the precedent there established, the use of mechanical draft is extending to stationary plants.

Natural draft depends upon the difference in temperature between the gases inside and outside the chimney, and is greater accordingly as the smoke and gas from the furnace pass out in a more highly-heated state. But this entails a great loss of heat which might otherwise be used to better advantage. True, the introduction of an economizer into the flue space has the effect of absorbing some of this excess heat and returning it to the boiler through the water. Yet even the economizer dare not consume too much, or the temperature of the flue gases will be so much reduced as to seriously impair the effect of the draft.

Here, then, is where forced draft scores a point. By means of a fan or centrifugal blower the combustion can be made more perfect, owing to a nicety of regulation of the air supply, and therefore the gases will reach their maximum temperature. The economizer may then absorb every unit of heat that escapes into the stack, if possible, without detriment to the draft, since the pressure from the blower furnishes this. By this combined installation of economizer and forced draft a saving of fifteen per cent. has been made in cases where fuel was dear and the feedwater low in temperature.

More than this, it costs less to instal a mechanical draft apparatus than to build a suitable chimney for natural draft. And then it is possible to secure a more complete utilization of the waste heat than by ordinary methods. Poor grades of coal may be used, in connection with mechanical draft, to great advantage, thus lessening the cost of coal supply.

Again, there is no chance of the efficiency of the draft being influenced by the weather. If the draft tends to become weak the fan may be speeded up to keep it uniform, and if, under the stress of some sudden emergency, it is found necessary to generate more steam in a very short time, an increase in the force of the draft, directly under the control of the engineer, makes a quick response to the demand. This system is most flexible, and is adaptable to any and all situations. The Practical Engineer.

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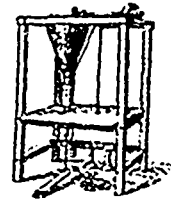
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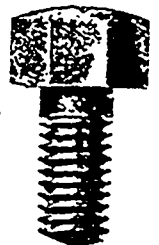
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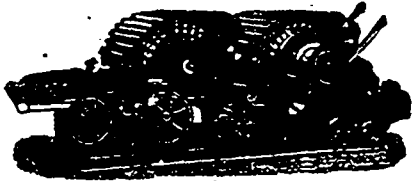
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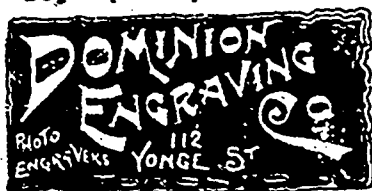
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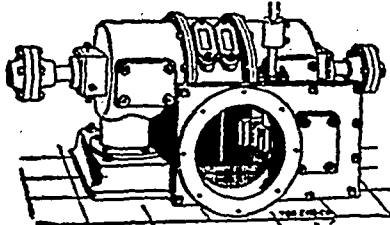
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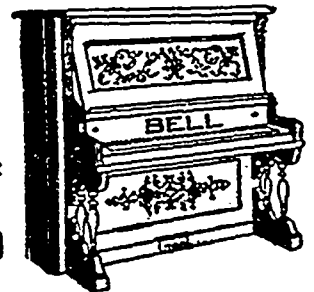
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