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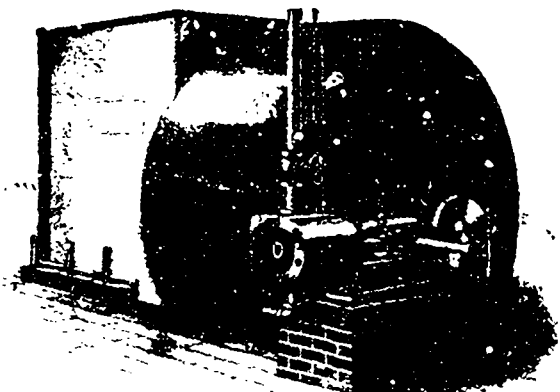
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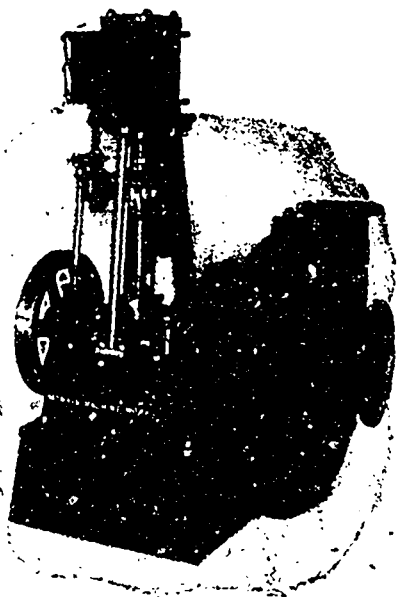
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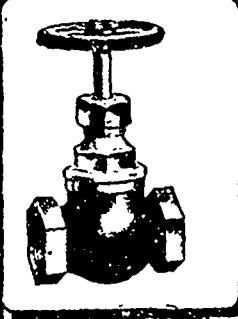
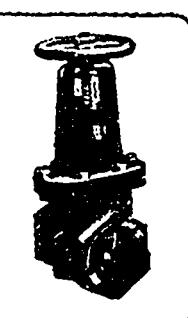
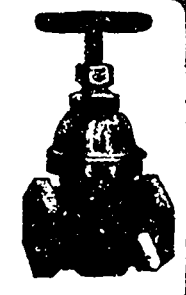


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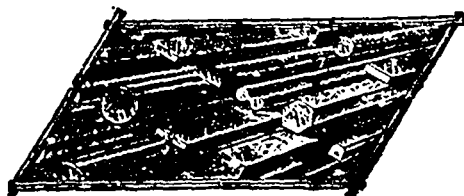
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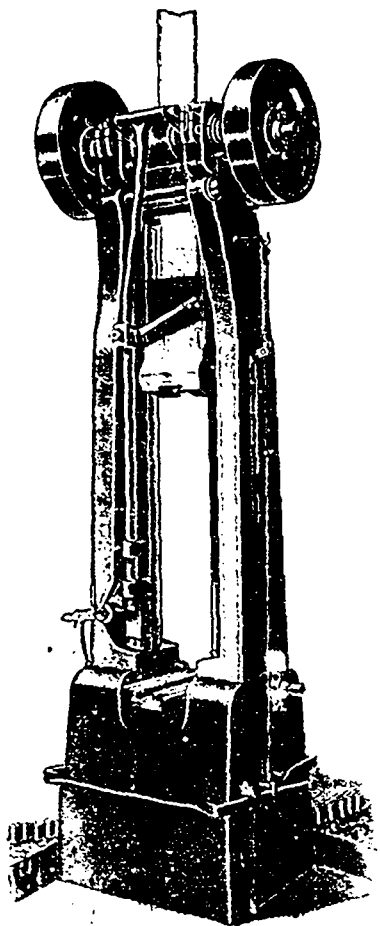
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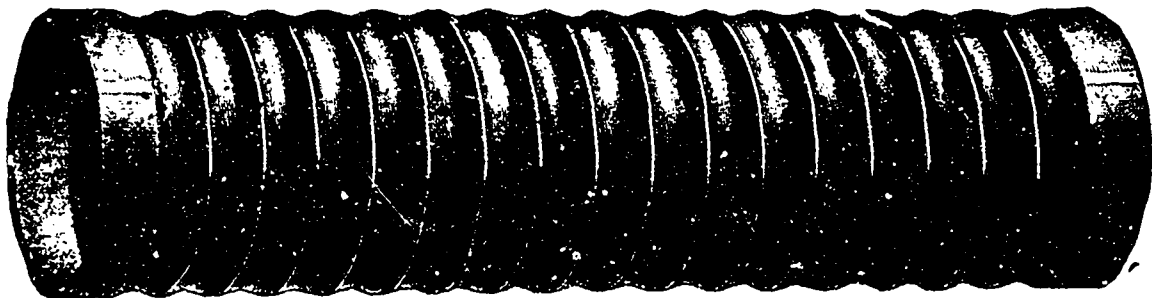


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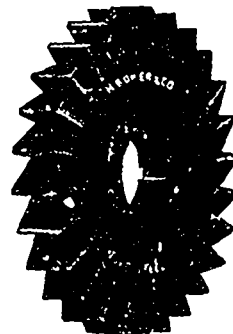
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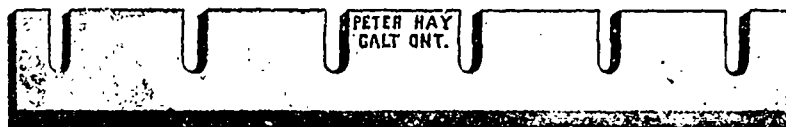
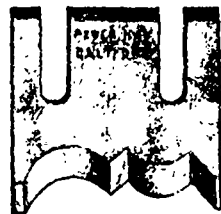
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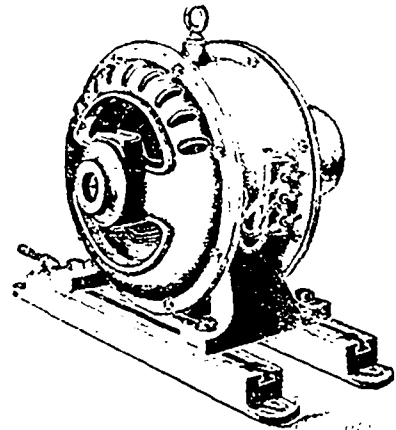
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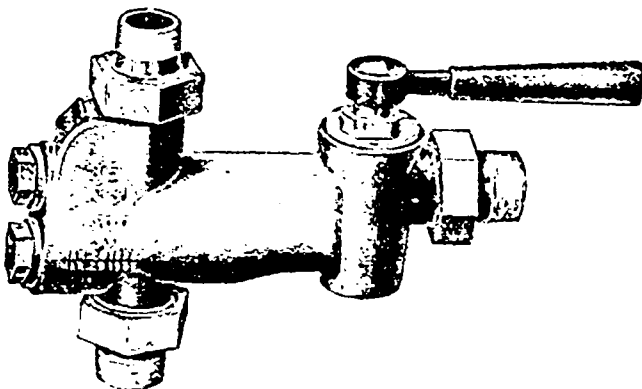
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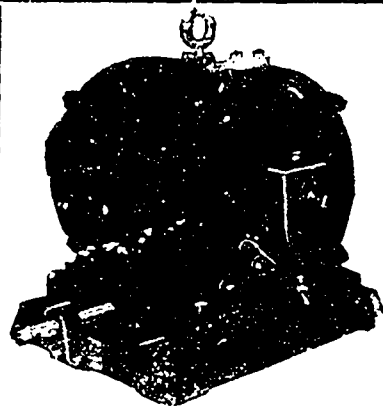
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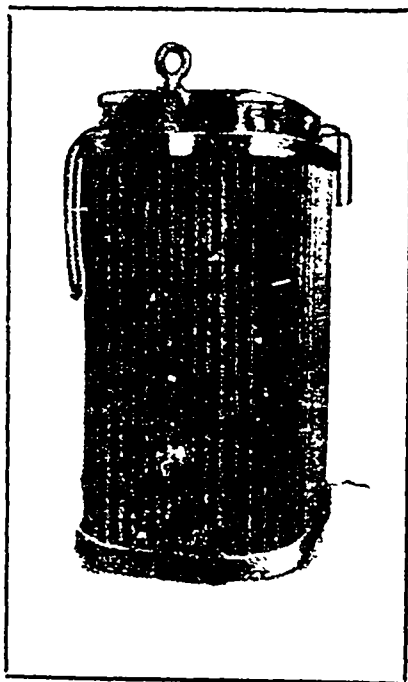
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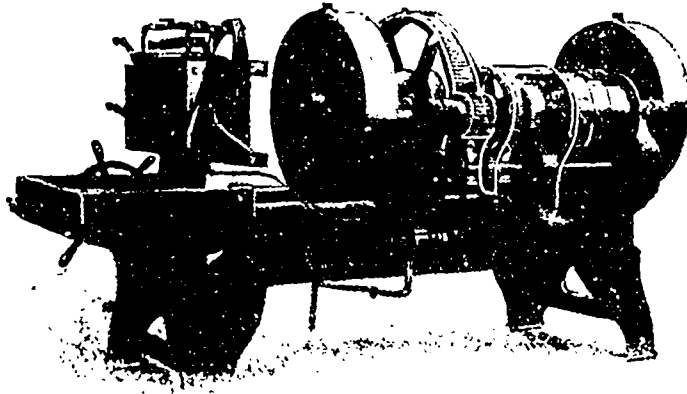
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The Latest in Design.  
Most Thorough in Construction. Simplest in  
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Cuts an absolutely perfect thread on any pipe from 1½ in. to 6 in. It does the work with one cut and does it quicker and cleaner than any other machine in America.

Weights 4,300 lbs. and is so rigid that a wavy thread is an impossibility.

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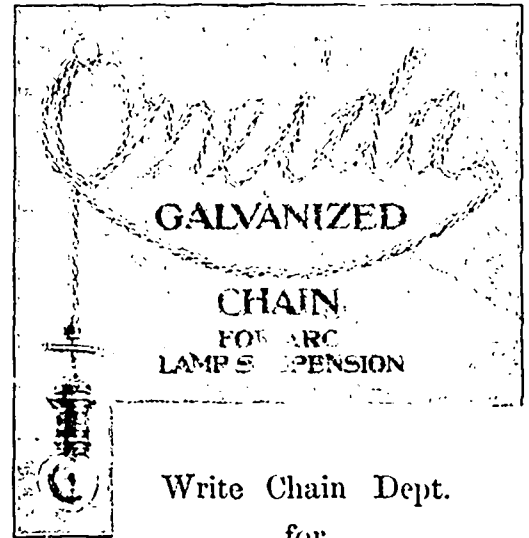
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# Unique Box Making Factory.

PLANT OF CONSUMERS BOX AND LUMBER CO., LIMITED, TORONTO. THE MANUFACTURERS OF WOODEN BOXES.

By FRASER S. KLEIB, B.Sc.

The plant of the Consumers Box & Lumber Co. Limited, is unique in many respects. First of all the main building is designed on the one floor principle, having no uprights in the interior area of the main floor. All shafting is placed underneath and the machinery, belt driven from below. The powerhouse is in a separate fire proof building. A complete exhaust system is part of the equipment, by means of which shavings and refuse are taken directly from the machines to the boilers.

apart. The shafting is 50 per cent. heavier than ordinarily placed for wood-working machinery, in order to give high speeds desired. Two main lines of shafting run across the building driven by 16 inch D. K. McLaren belts each transmitting 110 h.p., while a smaller shaft runs along the length of the building transmitting 110 h.p. The belting used is extra heavy and has never been tightened, nor required any attention since installed. As the shafting is situated about four feet from the floor it is easy of access and little trouble is experienced in oiling the bearings. The friction load has

Situated in the basement on concrete foundations is a Shelton & Sheldon double 60 inch fan driving the exhaust for the shavings. There is also a 50 inch fan for saw-dust. A complete system of piping is included connecting with every machine. All shavings, saw-dust and refuse are conveyed by means of these from the manufacturing floor to a hopper situated on top of the power plant. The refuse from the mill is fed into furnaces automatically by means of this system and practically all the fuel used is refuse from the factory. Two large fire-proof vaults are situated adjacent to the boiler room, provided



CONSUMERS BOX AND LUMBER CO.—VIEWS FROM EAST END

This concern is in reality subsidiary to the Parry Sound Lumber Co., with which it has some of its officers in common, the president of the company is Mr. J. B. Miller, Secretary-treasurer, W. P. Levack, and general manager, F. Sully.

On the main floor may be seen one of the largest single spans, without supports, in Canada, containing an area 21x64 feet, with no uprights to mar the view of the Superintendent, who can tell at a glance what is going on in the entire process of manufacture. The building is supported on heavy concrete foundation with concrete floor in the basement, the beams supporting the main floor are 12x13 inches Georgia pine, while the pillars supporting these are 12x12 inches Georgia pine. As the building was erected these uprights were put in perfect alignment and the bearings bolted thereto with 14 inch bolts. These bearings are only seven feet

found to be very light, owing to the perfect alignment of the bearings, the heavy supports used and the entire lack of vibration.

### POWER PLANT.

The power plant building situated near the main building and from which a shaft is run into the basement is of brick, steel and concrete 60x50 feet, 22 feet high. The power installation includes a Brown automatic engine 18x54 in.; running at 70 r.p.m. with a 16 foot fly-wheel. The Brown engine is manufactured by Polson Iron Works of Toronto. Two boilers are installed with room provided for a third, each of approximately 125 h.p. manufactured by Polson Iron Works. The feed-water heater and feed-water pump were supplied by the same firm. The electric light plant consisting of a high speed engine and generator was installed by Jones & Moore, Toronto.

with fire doors and in these are kept shavings and saw-dust.

### MANUFACTURING FLOOR.

The manufacturing floor presents an interesting spectacle as from any point thereon may be seen what is taking place in the entire plant. It also makes it easy to follow the process of manufacture from the rough lumber to the finished boxes. The manufacture of a box calls for a large amount of machinery and requires more skillful handling of the material than the average person would imagine.

At the west end of the building lumber is received and is passed through a band resaw made by Conell & Dangler, Rochester, N.Y. This is a heavy machine with a capacity of 40,000 feet of lumber per day and will resaw four boards out of a one inch board. From there the material goes to a double surfacer,

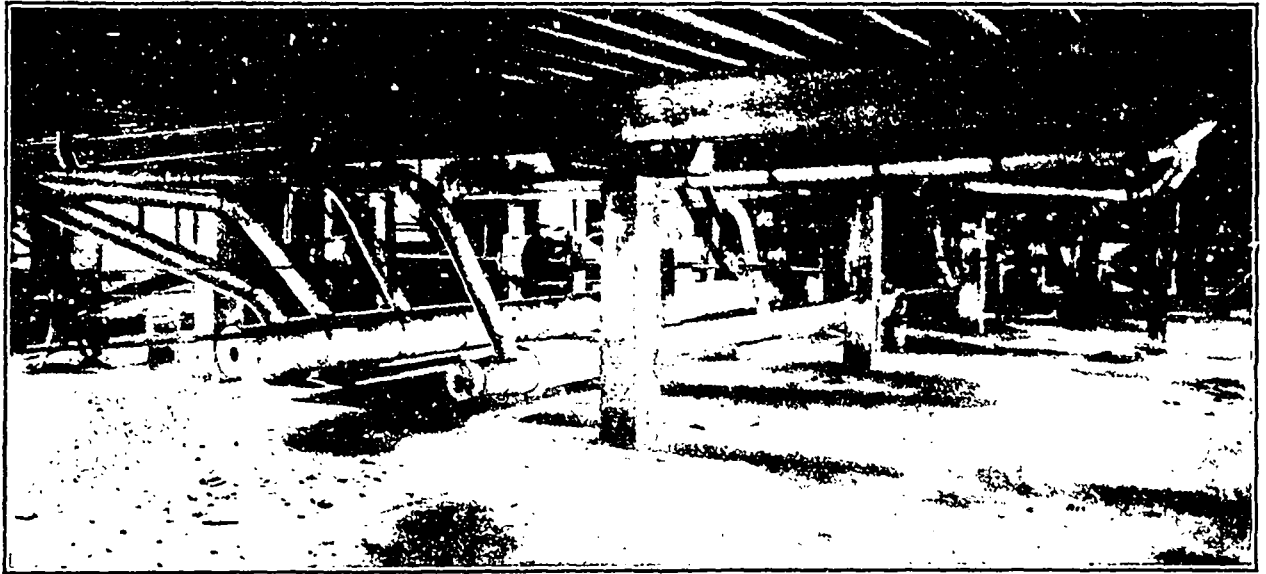
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MCCLELLAN PHOTOGRAPHY

manufactured by Cowan & Co., of Galt, where it is planed on both sides. The capacity of this machine is from 15,000 to 25,000 feet, depending upon the thickness of the lumber going through. There are three of

pieces are taken from the shook assembler to the printing room. This printing room is kept dust proof, being situated in the east end, where are to be found two large printing presses and a great variety of steel and brass

city of from 8 to 10,000 boxes per day. They are manufactured by the Morgan Machine Co. and cut both ends at the same time. From the lock corner machine the parts go to the setting-up machine, which



CONSUMERS BOX AND LUMBER CO.—SHOWING SHAVINGS PIPING SYSTEM IN BASEMENT

these machines. After being planed the lumber is taken to cut-off saws which are arranged across the factory. Of these there are five cross-cuts and five rip-saws, manufactured by both Canadian and American makers. After being sawn to the proper lengths and widths the pieces are received by one of two matchers, which have a feeding capacity of 160 feet per minute. One manufactured by Cowan & Co., of Galt, and the other by the Morgan Machine Co., of Ro-

chester, N.Y. One of these is a cylinder press type. One of these is a cylinder press manufactured by the Morgan Machinery Co., Rochester, N.Y., being a double color machine. It has a capacity of 3,000 pieces per hour. The other press is manufactured by the Prouty Printing Press Co., of Boston, it is one of the largest of its kind in Canada. Steel and brass type are used exclusively, of which there is a large variety of both kinds. The capacity of this machine depends entirely upon the operator. Both machines are

forces the ends and sides together after being lock cornered. They then go to the trimming machine where the corners are smoothly trimmed. The next operation is nailing. There are seven of these machines, also made by the Morgan Machine Co. These machines are almost human in their action and will drive any number from one to sixteen nails at a time in sizes from one to three inches in length. When the nailing machine is through with it we have a finished box.



CONSUMERS BOX AND LUMBER CO.—VIEWS FROM EAST END

chester, N.Y. Having passed through the matchers the work is delivered to a shook assembler, where the pieces are forced together making two or more capable of being handled as one piece.

If the box is required to be printed the

operated by power from pulleys underneath.

From the printing machines the pieces are taken to the lock corner or nailing machines depending upon the style of package called for. The lock corner machines have a capa-

The boxes are taken either to the north side of the building where there is a siding running the entire length of the factory or shipped by rail, or the south side where the siding doors are located for delivery by day to the city.

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**SPECIAL FEATURES.**

No material is carried by hand in the factory. All lumber, no matter in what stage of manufacture, that requires transporting from one part of the factory to the other is loaded on easy-running four-wheel

The factory is connected to the railroads by an 800 foot siding. The property contains five acres. About 75 hands are employed. The amount of property enables the lumber to be kept at a distance of 100 feet from the

with 14 foot roads running east and west and north and south.

The general manager, Mr. Sully, has had 25 years experience in the manufacture of boxes, which include everything from cigar boxes and jewel cases to the very largest packages required for shipping. The factory is under his direct supervision.



CONSUMERS BOX AND LUMBER CO.—VIEW OF PRINTING PRESSES

trucks that are found to give very satisfactory service. They were manufactured by Taylor & MacKenzie, of Guelph, Ont.

The main floor foundations are so strong that the floor has a carrying capacity of 2,000 tons and in spite of the fact that there is a large amount of heavy machinery operating at high speed there is absolutely no perceptible vibration.

Every machine is equipped with its own exhaust so that there is no dust, nor shavings, nor saw-dust on the working floor of the mill. This combined with the fact that it is particularly well lighted makes it an attractive factory for the men employed.

The heating is accomplished by exhaust steam from the engine. Incandescent lights are installed for any artificial light that may be required.

The factory management is worthy of notice, the superintendent has entire charge of the plant and may see at any one time what is going on in any of the departments. He is responsible to the general manager for the work turned out and for the general operations of the plant. Under him are three foremen, each in charge of a different department. These departments are: (1) Resaw and Planing; (2) Cutting Department and (3) Making-up Department.

Above the main floor is situated the filing room where a complete outfit is installed to take care of band saws and circular saws.

The factory is situated in the new factory district of Toronto, north of Dundas St. bridge, the premises are bounded on the south by Ernest Ave., on the north by Wallace Ave., Perth Ave. on the east, and the Canadian Pacific Railway and Grand Trunk Railway on the west.

factory, giving a low rate of insurance. The yard capacity is from six to eight million feet of lumber. It is laid out in parallel lines

The Schmidt chain consists of multiple toothed links stamped from high carbon steel,

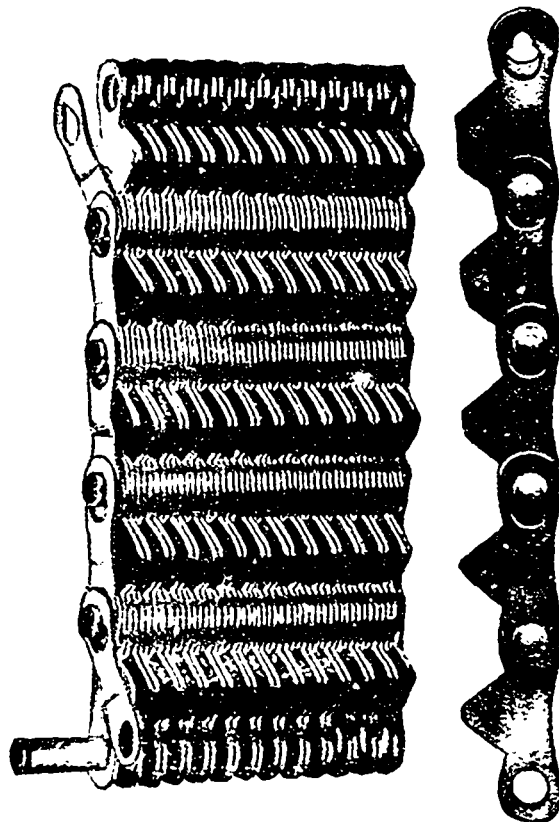


FIG. 1.—THE NEW TRANSMISSION CHAIN MADE BY THE SCHMIDT DRIVE CHAIN COMPANY, NEW YORK.

**The Schmidt Silent Drive Chain.**

For years mechanical genius has been endeavoring to lessen the waste of power in transmission and the noise in industrial establishments.

One great means to this end is the chain of the toothed type, as distinguished from sprocket chain. They have distinct advantages over the latter. They may be run at higher speeds, they make very much less noise and are consequently called "noiseless," they divide the load over several link lengths instead of one; they adjust themselves as they stretch, retaining their full efficiency much longer, and they may be made of any width irrespective of the pitch. Unlike belts they provide a positive flexible drive on short as well as long centers, and they are less affected by dampness, grease and heat. The most recent chain of this type is the one illustrated, made by the Schmidt Drive Chain Co., 265 Broadway, New York City, and invented by Carl G. A. Schmidt, Jr. It is claimed to combine great capacity, durability and simplicity of construction and to run smoothly and silently with little consumption of power.

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REPRODUCED BY PERMISSION OF THE SCHMIDT DRIVE CHAIN COMPANY

assembled on case hardened steel pins and held in position by pin retaining links. As will be seen from Fig. 1, the tooth of the link is midway between the pivots, instead

As there indicated the retaining links are assembled from top to bottom, the key-shaped hole being slipped over the pin and drawn down until its smaller diameter fits the

for expansion and contraction. There are 87  $2\frac{1}{2}$  inch tubes in each boiler. The average

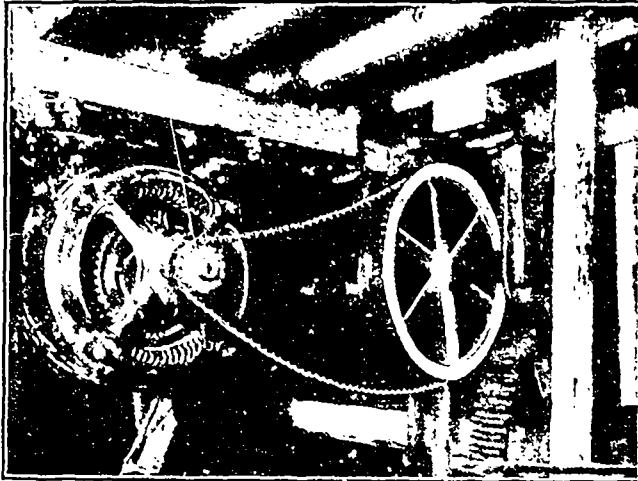
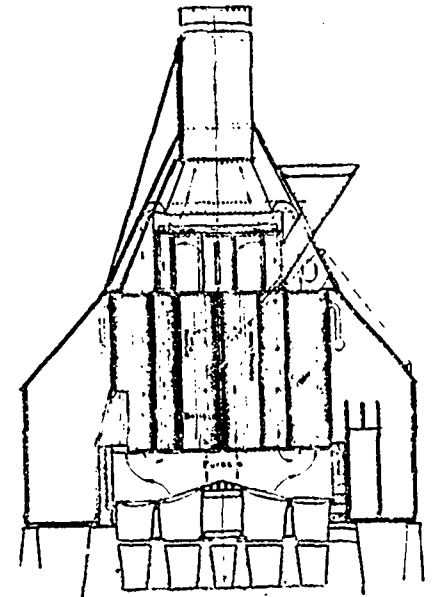
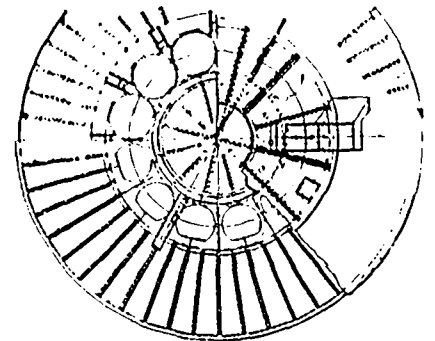


FIG. 2.—A TYPICAL APPLICATION OF THE SCHMITZ DRIVE CHAIN.

of at the pivots, and the links are straight. The pull of the chain therefore exerts only a tensile stress in the link and has no tendency to bend the links and alter the pitch, even under excess or suddenly applied load. For a given load the chain can consequently be made lighter, which is believed to contribute to a higher efficiency. The chain may be applied to a wheel of almost any size, since the angles of the faces of the teeth are sufficient to cause them to clear the corners of the wheel teeth. The holes in the links are of the same size as the pins, and not larger, so that there is a large bearing surface, which does away with excessive wear in a new chain, as it is not necessary for the pin to wear itself to a full seat.

A novel and interesting means is employed for retaining the pins. The pins are not riveted, but are held by special edge links, called retaining links. These are thinner than the chain links and have one round hole and one key-shaped hole, as shown in Fig. 1.

circular groove in the end of the pin. The round hole may then be slipped over the next pin, and the second retaining link, being put on in the same way as before, overlaps and holds the end of the preceding link. To make the assembling endless it is begun and ended with a separable link, such as the one shown in Fig. 2, the two parts of which are held together with a split cotter pin. It is usual to insert a number of these separable links particularly in a long chain, so that it is not necessary to take off more than a few of the retaining links to replace a pin or load link in any part of the chain. The use of the separable links has no effect on the strength of the chain since the retaining links play no part in carrying the load, but serve only to prevent the pins from working out. As the pins are not riveted, their ends do not require annealing; the pins therefore have no soft spots and resist wear equally their full length.



PLAN AND ELEVATION OF MORAN COMPANY'S UNIQUE BOILER PLANT.

working pressure is 135 pounds per square inch.

Inside the battery is a circular combustion chamber 14 feet 6 inches in diameter and 18 feet high. The top of this chamber is

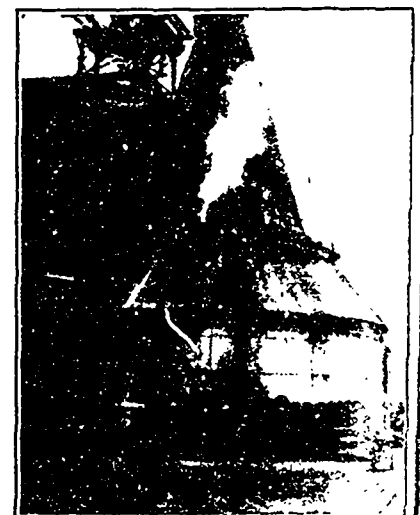
## Unique Boiler Plant for a Saw Mill.

BY H. COLE ESTEP IN POWER.

One of the striking features of large saw mills in America is the refuse pile. It is customary to burn the sawdust and some of the refuse of the mill under the boilers, but the rest of the refuse, which is considerable, is usually piled in a heap outdoors and burned, as it is considered cheaper to dispose of it in this way than to make provision for handling and firing, under ordinary boilers, the miscellaneous material that comes from the refuse conveyer. Thus the refuse pile (a place where dollars are burned) is considered by most mill men to be a necessary evil. Some of them, however, have attempted to prevent this dissipation of more or less useful material, and one company at least seems to have solved the problem. This is the Moran Co. of Seattle, which, in addition to a large sawmill, operates the largest steel and wood shipbuilding plant north of San

Francisco, and which has installed specially designed boilers under which to burn all of the refuse from the sawmill, including slabs, sap-wood, split ends of boards, etc., which come from the mill in all sizes and shapes.

The power plant, which operates the sawmill by steam and the shipbuilding shops by electricity, includes two 1,000 h.p. vertical compound condensing engines, one 400 and two 125 h.p. high-speed automatic condensing engines, with a total normal capacity of 2,650 h.p. There are 12 vertical multi-tubular shell boilers, of 225 h.p. each, set touching each other in a circle 19 feet 8 $\frac{1}{2}$  inches in diameter, as illustrated in Fig. 2. Each boiler is five feet in diameter and 18 feet long. They are set snugly together and the external sections are heavily coated with magnesia boiler covering. Each boiler is individually supported on the concrete foundation and due allowance has been made



MORAN COMPANY'S UNIQUE POWER PLANT.

closed by a sheet-iron dome 15 feet in diameter and six feet high. Completely covered by this dome and flaring to the outer edge

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## Cost Keeping for the Foundry.

ADDRESS BY R. V. McDowell.

In this paper I will only attempt to outline a system of a general nature, showing the main features of foundry costs accounting in as plain and simple a manner as possible. The subject of foundry cost keeping has become of far greater interest to foundrymen than formerly, owing partly to the improvements that have been made in methods and appliances, making it necessary to keep the methods in the office up to standard of those in the foundry, but due to greater extent to the keen competition of recent years which has made it necessary for the foundryman to know just what his product is costing and how to reduce this cost if possible. The only way that he can obtain this information is through an accurate and reliable system of cost records, the rough estimates that served the purpose in former years being practically worthless. A cost keeping system for a foundry is neither as difficult to handle nor as complicated as might be imagined. Like the accounting for any other line of manufacturing business, it is based on four main elements of expense—namely: Material, labor, factory expense, including such items as lubricating oil, maintenance of machinery, flasks, etc., and general expense, including taxes, insurance, etc. The system should be gotten up with a view to obtaining these items with accuracy and with little trouble. It should be arranged to run in harmony with the general accounting system, being in fact a part of the latter. Special columns should be provided in the books of original entry to take care of the various items mentioned above, from which they may be obtained for the cost sheet. It is better to figure costs by the month, and not to attempt to obtain the various items of expense, outside of material and labor, daily. These may,

the circular row of boilers is a conical sheet-iron shell 26 feet in diameter at the bottom, eight feet at the top, and 18 feet 6 inches high. The steel stack, eight feet in diameter, fits into the top of this conical shell. Underneath the boilers is a circular furnace 24 feet 10 inches in diameter. The grates are supported at the center by a steel pier four feet 4 1/2 inches in diameter, and 6 feet 5 1/2 inches high. The combination of grates forms a flat cone, with its apex two feet above the base. Not including the boiler house, the plant looks very much like an enormous, upright, dry-engine boiler.

The refuse conveyer from the mill dumps the material into a sheet-iron hopper situated 40 feet above the floor level. From the hopper the refuse falls into a square chute, two feet six inches by three feet, which leads into the circular chamber under the dome. Here the fuel strikes the deflection plates and falls in a fairly even layer on the grates below.

The chamber under the dome, into which the refuse falls, is usually half full of burning fuel and subjected to intense heat, much of which is absorbed by the adjacent boiler shells. After combustion, the hot gases pass up through the tubes in the ordinary manner and come out in the conical chamber surrounding the interior dome; from here they pass through the spark arrester and find their way up the stack. The top of the stack is 140 feet above the floor level, so there is ample natural draft.

A seven inch header in the form of a ring surrounds the 12 boilers, from each of which is tapped a four inch copper pipe leading into the header. Inasmuch as the upper ends of the boilers and a portion of the tubes are subjected to heat from the combustion chamber, the steam delivered into the header is materially superheated, so that the boilers easily attain normal economy. The feed-water connections screw into special cast-iron fittings at the lower ends of the boilers. Each boiler has its individual safety valve, gages, blow-off and other fittings. The ashes drop into a circular pit containing the ash conveyer, which carries them out and deposits them in the bay. The boiler house (Fig. 1) is of sheet-iron, circular. There is a space of eight feet three inches between the boilers and the inside wall of the house.

These boilers are as nearly automatic as can be in a plant of this size. One man on each shift operates the battery easily and efficiently. If repairs are required on any boiler it is not necessary to shut down the whole battery while the defect is being remedied, but the pipe connections are unfastened and with a nearby derrick the boiler is removed bodily, the hole left in the combustion chamber being temporarily bricked up. This has been accomplished in a single night without causing one hour's operating delay.

The plant is operated very cheaply, the cost being but a little above the labor expense, and at the present Pacific-coast prices for coal more than \$100 per day is saved in fuel alone.

The Gananoque Bolt Co., Gananoque, Ont., contemplate building an extension to their present factory and utilizing same for the manufacture of wood screws. They are now negotiating for the necessary machinery in the United States.

DAILY CUPOLA REPORT.				
Date <u>Feb. 15, 1907</u>		No. <u>38</u>		
Kind of Iron	Pile No.	No. lbs.	Per C.	Ck.
Pig. No. 1	24	10580	17	
Pig. No. 2	31	21110	34	
Pig. No.				
New Scrap Grade A	7	18191	28	
New Scrap Grade				
Machine Scrap	11	4215	6.4	
Shop Scrap		819	1.2	
Bad Castings, Heat of <u>2/3/05</u>		2060	3.2	
		5737	8.7	
Remelt, Heat of		7622	11.6	
Total Iron to Cupola		165100	100	
Coke <u>8130</u>				
Flux <u>560</u>				
Blast on <u>12:50</u> off <u>4:50</u> Time of Heat <u>4 hours</u>				
No. lbs. Iron melted per ton of coke <u>799</u>				
Good Castings	<u>51620</u>	Total Iron Melted	<u>165100</u>	
Bad Castings	<u>1947</u>	Deduct Result of Heat	<u>6175</u>	
Remelt	<u>8112</u>	Melting Loss	<u>2111</u>	
Total	<u>61739</u>	Percent	<u>37</u>	
Remarks.				

Form 1

years which has made it necessary for the foundryman to know just what his product is costing and how to reduce this cost if possible. The only way that he can obtain this information is through an accurate and reliable system of cost records, the rough estimates that served the purpose in former years being practically worthless.

A cost keeping system for a foundry is neither as difficult to handle nor as complicated as might be imagined. Like the accounting for any other line of manufacturing business, it is based on four main elements of expense—namely: Material, labor, factory expense, including such items as lubricating oil, maintenance of machinery, flasks, etc., and general expense, including taxes, insurance, etc. The system should be gotten up with a view to obtaining these

however, be obtained monthly direct from the general account books.

In operating a cost system one can do no better than to follow the rule given in an article on manufacturing accounts by Kenneth Falconer. It is as follows: "The keystone of factory accounting is a rigid adherence to the rule that no work shall be put in hand, expenditure incurred or goods or material delivered without written authority emanating from the office, and that all papers and records referring to or reporting such work must bear the number of the order authorizing the same." This may be adapted to any line of cost accounting.

### MATERIAL.

Iron being the most important item of the material used, the reporting of it will first be

considered. Each day's heat is reported on a blank similar to Form 1. This report would be impossible, so that the only method to pursue is to report them correctly.

number up of each molder. This is entered on the production sheet, and the sheet made up in as many copies as required. It is completed when the weigh-master's copy giving the result of the heat comes into the office.

The time book or pay roll is shown in Form 7. This is arranged in very much the usual manner, with the exception of the provision which is made for separating productive and nonproductive labor for convenience in figuring costs. When the plant is arranged by departments, one or more pages of this book may be allowed for each department.

IRON REPORT FOR MONTH OF _____ 190__						
Kind and Grade of Iron	Weight	Total	Perct.	Price	Amount	
Fig No. 1	2 7 4 5 6 0		16 1/2			
Fig No. 2	5 3 2 1 8 0		3 1/2			
Fig No. A	3 1 9 4 6 3		19 1/2			
Scrap, Grade B	1 6 1 1 9 4		5 1/2			
Machine Scrap	1 1 1 1 3 4		8 1/2			
Total New Iron		14 0 1 5 4 1	53 1/2			
Shop Scrap	1 4 0 6 3		4 1/2			
Dad Castings	5 2 5 9 4	7 1 5 7	5 1/2			
Total		14 7 4 0 8	87 1/2			
Add Remelt		1 4 6 8 2	12 1/2			
Total Iron to Cupola		16 2 0 9 0	100			
Cost of Iron						
Coke	2 0 5 7 0					
Flux	1 1 9 1 0					
Total						
Coal Castings	1 2 5 8 6 0					
Dad Castings Defect	5 1 6 1 4					
Remelt	1 9 7 3 4 6					
Whole House	1 5 0 7 9 2 0	5 0 7 9 2 0				
Loss		1 6 3 0 2 0	10 1/2			
Net Cost of Iron						
Cost of Coke, Flux, etc.						
Whole Cost						

Form 2.

**FACTORY AND GENERAL EXPENSE—THE COST SHEET.**

Special columns for recording factory and general expense should be run in the journal cash book, and purchase book or voucher record of the regular account books. In this way all expenses incurred during the month are classified in the regular books and are in the most convenient form for posting to either the main ledgers or the cost sheet, and it is thus assured that no expense items will be omitted in making up the cost sheet. A shop order is issued monthly for keeping track of all repairs, all material and labor used for this purpose being charged up against this order. A page of the purchase book is shown in Form 8, showing the arrangement of the special columns. In case of the plant

may, if so desired, be arranged to show the amount of each charge by arranging a column for each kind of iron and leaving a line for each charge. These reports should be made up with care and measures should be taken to see that they are accurate at all times. A monthly report, Form 2, is made up from the daily reports, showing the total quantity of iron used during the month, together with the cost. Coke and flux are also included in this report.

Sand and similar materials are reported daily on a slip like Form 3. A method of checking these slips should be provided so as to insure accuracy. Molding and core sand

DAILY MATERIAL REPORT		
Kind of Material	Quantity	Check
No. lbs. Molding Sand		
No. lbs. Core Sand		
No. lbs. Parting		
No. lbs. Flour		
No. lbs. Chaplets		
No. lbs. Fire Clay		
No. Gals. Lined Oil		
No. Gals. Core Compound		
No. Gals. Molasses		
No. Quarts Carbon Oil		
Scrap Iron		

Form 3.

should be brought in on trucks of large capacity, each truck load being weighed as it passes over the scales. Other materials which are of convenient bulk for keeping in the storeroom are obtained by means of requisitions. The ideal method of keeping track of material would be to keep it all in the storeroom and let nothing go out without a requisition having been made out for it, but in the case of iron, coke, sand, etc., this

RECORD OF MATERIAL										No.
Name of Material				Where kept.						
Received				Used				Balance		
Date	Order	Amount	Total	Date	Order or Req.	Amount	Total	Date	Amount	

Form 4.

Stock records should be kept, and whenever any material runs low an inventory of it should be taken and the stock record checked with it. Besides proving the records this saves a great deal of time at the close of the year, as it will not be necessary to take a full inventory of all materials. A convenient form of stock record is shown in Form 4.

**LABOR.**

The next expense item is the labor. There are a number of methods of keeping track of the labor in a foundry, all of which have their own advantages, and it depends largely on what proportion of the labor is paid for by the day and what by the piece as to what method should be employed. But in the opinion of the writer the best method is found in the use of one of the modern time recorders. The time of each man is thus kept on a card similar to Form 5 for any desired period. The illustration shows a card gotten up for bi-monthly pays. The time of molders working on piece work is taken from the production sheet, Form 6. The exact arrangement of this sheet will depend largely upon the classification of the product, but the form shown gives a good idea of about what will be required. It may be made up from cards turned in by the molders, or a report may be made up daily by the time keeper or factory clerk going from floor to floor and taking down the name, number, pattern and

ORDER No.	DATE	EMPLOYEE No.	ARTICLE		
OPERATION					
DATE	IN	OUT	IN	CUT	TOTAL
1:10					
2:17					
3:16					
4:12					
5:20					
6:21					
7:22					
8:23					
9:24					
10:25					
11:26					
12:27					
1:28					
2:29					
3:30					
31					
TOTAL HOURS					
RATE					
AMOUNT					

Form 5.

being divided into departments, columns are allowed for each department also. The cost sheet is shown in Form 9. Ma-

the special columns in the regular books, and repairs as shown by the shop order. The total of these items gives the net cost

as machinery or any other equipment, for the reason that they are not an actual factor in the cost of getting out the product any more than the cupola is. One would hardly charge up the cost of the cupola against the cost of the first month's production, and it is scarcely more reasonable to charge up expensive patterns against the cost of production of the month in which they were made, when these same patterns will be used for many other months to come, in a great many cases, and if such items are included a false cost per pound of the finished product is the result. Therefore a distinction should be made between the cost of production and the cost of operating for a given time, and patterns should be included in the latter division, but not in the first.

If so desired, the sheet may be arranged according to departments, and this arrangement is desirable in a large plant, but it is not so shown in the illustration, as this is intended to illustrate a general system.

The forms shown here are intended to represent and illustrate the simplest possible forms and methods of foundry cost accounting, and, of course, would have to be modified considerably for the requirements of any special line of foundry work. In this form, however, they are more easily adapted to the needs of any one wishing to design and operate a cost system on these lines.

PRODUCTION SHEET FOR \_\_\_\_\_ 190\_\_

Name	No.	Name of Casting	Pattern	Order	Sh. Up	Sh. Dn	Good	Wt. L.P.	Wt. Shd.	Wt. Used	Ch. Prt.	Classification

Form 6.

PAY-ROLL FOR HALF MONTH ENDING \_\_\_\_\_ 190\_\_

Department	Name of Employee	Rate	Days	Hours	Rate	Total	Other	Total	Notes

Form 7.

PURCHASES FOR MONTH OF \_\_\_\_\_ 190\_\_

Repairs	Iron	Refractories	Labor	General Expense	Fuel	Factory Amort.	Expenses	Repairs	General	Overall	Total	Name	Total	Remarks

Form 8.

terial other than iron is obtained from the "used" division of the stock records and figured at cost value. The cost of iron is transferred from the monthly iron report. Productive and nonproductive labor are

of production. To this total is added freight, office expense, patterns and special expense, giving the whole cost of operating for the month. It is customary with some foundries to charge up the expense of producing

PLUMBING FIRM SECURE VERDICT.

Messrs. W. J. McGuire & Co., plumbers, have secured a verdict for \$600 in an action against the Cobban Manufacturing Co., to enforce payment of the balance of an account for installing fire-extinguishing apparatus in the latter firm's factory.

The defendants resisted payment, alleging that the contract on which the claim was based was void, as the plumbing firm had entered into an illegal conspiracy to prevent competition among the tenderers.

Sums amounting to \$4,000 had already been paid to the plumbing firm by the defendants, and they filed a counterclaim asking for the return of the \$4,000 or some part of it.

The case for the defence arose out of the recent Police Court conviction against the Plumbers' Association as being an illegal combine in restraint of trade, but his Lordship refused to admit general evidence about the Plumbers' Association and the Plumbers' Supply Company as part of the defendant's case, saying that evidence of a general conspiracy had nothing to do with the particular contract in dispute, and that unless the evidence showed that the tenderers for this particular contract compared their tenders he could not admit the evidence. The evidence therefore was not put in.—Toronto Globe.

NEW FACTORY INSPECTOR FOR NOVA SCOTIA.

The agitation for a factory inspector has borne fruit, and the announcement was made last week of the appointment to the newly created office of Philip Ring.

Mr. Ring was one of the principal agitators for the much needed innovation. As president and secretary of the Trades and Labor Council he has taken a prominent part in the industrial life of the community and his appointment to the new position will be met with favor.—Halifax Herald.

Cost Sheet for month of \_\_\_\_\_ 190\_\_

Expense Items	Cost	Extension	Total	Last No.	Differ.
Iron					
Coke					
Flux					
Molding Sand					
Core Sand					
Lamp Oil					
Other Material					
Sundries					
Total Material					
Productive Labor					
Non-productive Labor					
Repairs					
Factory Expense					
General Expense					
Fuel and Light					
Foreman's Wages					
Net Cost Production					
Patterns					
Office Expense					
Freight					
Special					
Total Cost of operating					
Good Castings					
Machine Work					
Sundry Jobs					
Total					
Product Cost					
Profit					

Form 9.

then obtained from the pay roll, and then the factory expense, general expense, fuel and light and sundry expense, taken from patterns against the cost of the regular product, but the belief of the writer is that they should be treated in the same manner

# Conditions and Prospects of British Trade in Canada.

A Review of Report by Mr. Richard Grigg, Special Commissioner of the British Board of Trade.

FROM THE CHAMBER OF COMMERCE JOURNAL.

A most exhaustive and valuable "Report upon the Conditions and Prospects of British Trade in Canada," by Mr. Richard Grigg, Special Commissioner of the Board of Trade, has just been published. It is a report which reflects the greatest credit upon the author, and cannot fail to be the means of developing trade between the Mother Country and Canada. For this reason we hope the report will have the widest publicity on this side, and will be carefully studied by merchants and manufacturers alike. In his letter to the Board of Trade transmitting the report, Mr. Grigg acknowledges the ready assistance given to him in his mission by everybody in Canada, and briefly describes the course of his journeys in the Dominion, where among all classes there undoubtedly exists a strong desire to buy goods from British sources whenever possible. He alludes to the belief prevalent in Canada that the reason why British goods are not sold in larger quantities to Canada is because British manufacturers and merchants are "too conservative," whereas, in addition to the geographical advantage of our American rivals, they are "more aggressive in trade methods, spend more money in selling their goods, are more careful to supply exactly the article required, are quicker to make any suggested change in pattern, smarter in business methods and in design of goods, quicker in delivery (even when due allowance is made for difference in distance), and advertise more fully and with greater judgment." If British industry is to claim its fair share of the market it will be necessary for heads of firms themselves to visit Canada. Determined efforts could substantially enlarge British exports to Canada of most articles and largely increase the aggregate trade. Mr. Grigg adds:—"I wish to express my indebtedness for the great courtesy and assistance rendered by the London Chamber of Commerce, the Canadian Section of which passed a most appreciative resolution which was incorporated in a letter addressed to a large number of Boards of Trade (Chambers of Commerce) in Canada. These were of great help to me. It may be of interest to say that while everybody knew of the London Chamber of Commerce, a great many people had never heard of H.M. Board of Trade, and came to the conclusion that the mission was sent out by the London Chamber of Commerce, until it was explained that in Great Britain the title of Board of Trade did not describe a Chamber of Commerce (as in Canada), but a Ministry of Commerce, and was therefore an important department of the Imperial Government." The report is a book of 117 pages (with map of the trans-continental railways) and the first part deals with questions of population, manufactures, mining, railways, canals, electric power, general characteristics of the Canadian market, import trade and foreign competition, the preferential tariff, transport, wages, bounties, etc. etc. From the point of view of foreign competition it appears possible to divide the imports into Canada, of a kind

which the United Kingdom could supply, into three broad groups, as follows:—

## BRITISH GOODS STILL PREDOMINANT.

(1.) Goods in regard to which British manufactures are still predominant, and so far have not been seriously affected by foreign rivalry. Textiles form the strongest and most secure part of British trade with Canada, and amongst them woollens are pre-eminent. In all branches of woollen manufactures, except ready-made woollen clothing (of which a slightly larger proportion comes from the United States and Germany), the United Kingdom is supreme. The same remark applies to manufactures of linen and to cotton fabrics (bleached, printed dyed or colored), and to cashmere hosiery, velvets and cotton curtains. These three textile groups—woollens, cottons and manufactures of flax, hemp and jute—account for a little over 44 per cent. of the total of manufactured imports from the United Kingdom into Canada. Other commodities in regard to which the United Kingdom has a long lead, and appears to be maintaining it, are carpets, laces (except some special kinds of Continental manufacture), oilcloth and linoleum (of which it supplied \$708,000 out of \$735,000 worth imported in 1906), whisky, certain kinds of earthenware and china (about three-fifths of the total imports under this head were drawn from the United Kingdom in 1906), common glass and pickles and sauces.

## BRITISH GOODS MEETING ENERGETIC FOREIGN COMPETITION.

(2.) Goods in regard to which British manufacturers have to encounter from foreign countries an energetic competition which has already, or is fast obtaining a preponderance. This group includes certain textile goods, such as hats, caps and bonnets, of which the United States supply about one-half of the total imports, though in respect of felt hats British manufacturers have recently improved their position greatly; cotton hosiery, in regard to which Germany has a good share of the trade; woollen dress goods, largely obtained from France; ribbons, which are supplied largely from Switzerland and France; the silk fabrics, of which the United Kingdom supplied in 1906 \$1,263,000, as against \$1,396,000 from France, Switzerland and Japan—the imports from the two last named countries have increased very rapidly in recent years. In gloves and mitts of all kinds there is severe competition from France and Germany. The group also includes a few metal manufactures, such as coated and flat galvanized sheets, of which the United Kingdom supplied in 1906 two-thirds, but the imports from the United States, had increased from \$189,000 in 1902 to \$606,000 in 1906; rolled iron or steel sheets; iron rails (a declining import), of which the United Kingdom supplied rather more than one-half in 1906; and cutlery, in which the British imports amounted to four-sevenths of the whole, the remainder coming

in almost equal proportions from Germany and the United States. Of furs and manufactures thereof (including partially dressed furs) the United Kingdom sent \$507,000 worth in 1906, as compared with \$320,000 from Germany, \$315,000 from the United States, and \$172,000 from France.

## BRITISH GOODS DEFEATED BY FOREIGN COMPETITION.

(3) Goods in regard to which British trade has either been entirely defeated by foreign competition, or retains only a small and relatively insignificant share of the market. At the head of this class stand the whole group of metal manufactures, of which the United Kingdom supplies less than one-fifth of the total imports into Canada—by far the greatest part of the trade goes to the United States (\$43,685,000 in 1906, as against \$11,081,000 from the United Kingdom). American supremacy is especially marked in machines and machinery, agricultural machinery and implements, tanning, wire fencing, tools and implements, mining and smelting machinery, portable engines, iron and steel bridges, general builders' hardware, copper and manufactures thereof, and brass and manufactures thereof. In the supply of electrical apparatus to the United States (\$3,461,000 in 1906) are well challenged. Of chemicals, dyes and drugs and of cement, the British share is less than a quarter, of the whole group of glass and glassware it is only slightly more than a quarter; of the imports of paper, and manufactures thereof it is rather less than one-fifth. In regard to furniture and cabinet ware, rubber goods of all kinds, leather goods (especially boots and shoes and miscellaneous articles), musical instruments, electro-plate, and gilded ware, jewellery, clocks and watches, and such miscellaneous goods as perfumery and soaps, brooms and brushes, medical supplies and toys, the British share of the Canadian import trade is quite unimportant.

## CONCLUSIONS.

Mr. Grigg's conclusions are clearly set forth in the following form:—

It remains to endeavor to set out the conclusions which appear to be derivable from the survey which has now been made of the general conditions under which British trade with the Dominion of Canada is carried on, and also from the examination of the separate branches of that trade in the second part of this report. They may be stated as follows:—

I. The geographical position of Canada is evidently a severe handicap to British trade with the Dominion, and a great advantage to the manufacturers and merchants of the United States. The distances from the industrial centres of the United States to the Canadian markets are comparatively small; the time occupied in transit is therefore much less and the charges for freight correspondingly small; there is great rapidity of communication, and cheapness of business communications; and, most important perhaps of



there is the fact that the social and economic conditions of two adjacent countries present so many resemblances that the manufacturers of the United States can almost regard the Dominion as being in many of its requirements only an extension of their own home market, and, therefore, as not calling for any specialized lines or methods of production, such as British manufacturers would in many cases have to undertake in order to secure any reasonable Canadian trade.

#### ADVANTAGES OF "PREFERENCE."

II. These advantages accruing to the United States from the geographical position of Canada are so great that it is inevitable that a proportion of the Canadian trade should fall to that country. On the other hand, the United Kingdom is Canada's principal customer, with the result that there is a great tonnage moving eastward and providing comparatively low freights for that tonnage on its return to the west. British products enjoy preference both in goodwill and tariff, but it is obvious that the first of these factors, in a business subject to close competition, cannot do more than turn an even, or nearly even scale. A preference, however, amounting to a reduction of one-third of the duty is of undoubted value to British imports given equal skill and energy in business conduct.

The statistics appear to show that the establishment of preferential treatment for British goods has to a considerable degree checked the previous decline in the hold of the British manufacturer upon the Canadian market, though it is probably also true that some portion of the credit for this result must be ascribed to the awakening of the British manufacturer to the need of more vigorous action.

#### COMPETITION OF HOME MANUFACTURERS

III. It is further of importance to observe that the Canadian home manufacturer is now becoming a serious competitor alike with the United Kingdom and the United States. The output is increasing rapidly, the efficiency of the Canadian works is rising fast, the industrial resources of the country are great, the tariff policy of Canada is largely directed towards the maintenance and promotion of home industry, and it may not unfairly or unreasonably be assumed that before many years have passed the most serious competitor with the United Kingdom in the Canadian market will be Canada itself. Between Canada on the one hand and the United States on the other, it is self-evident that only most strenuous and persistent efforts can maintain (to say nothing of extend) the British trade with the Dominion. The Americans have both obtained controlling interests in works in Canada and built branch factories to an important extent. While Canadians regret that capital other than British should be so employed, they can do no other than welcome a proceeding which helps to build up the country by offering employment and so increasing population. I venture to suggest that British manufacturers should consider the placing of branch factories there; such a course would not only gratify Canadians, and so enlarge sales, but it would give manufacturers a more intimate acquaintance with the market than anything else could do, and enable them to maintain stocks there more easily. It is obvious that in some

lines at least such factories could receive partly finished materials from home works, completing the work upon them in Canada exactly as the Americans are doing.

#### INVESTMENT OF CAPITAL.

It will be seen from the quotations from the report of Mr. Pepper that reference is made there to the large employment of United States capital in the building up of Canadian industries, and that the estimates of such capital invested in Montreal alone vary from \$25,000,000 to \$75,000,000. Inquiries are said to have been made by the Illinois Manufacturers' Association, the result of which shows that 122 of the leading concerns in the United States have established branch plants in Canada. I have a list of no less than 36 manufacturing firms in Hamilton alone, of which I am assured a substantial part of the capital (and, in some cases, all the capital) is contributed from United States sources. It is not possible to make any estimate of the actual amount of capital transferred to Canadian enterprises in the purchase of mineral lands, timber properties, and railway estates, but American investments are in increasing evidence, and one constantly hears that the British investor is slow, and that as a consequence the business is done by the American. I think there is no reasonable doubt that there has been a very large and rapid increase in the American investments in Canada, and that this will continue unless the development of British interest in Canadian enterprises proceeds at an even more rapid pace than it is at present doing.

IV. Nevertheless, though the problem is beyond all doubt a difficult one, much could be done to enable British traders to strengthen their hold and even increase it upon the Canadian market, and the following suggestions arise naturally from what has already been set out, and from the detailed examination of particular branches of trade which constitutes the second part of this report:—

#### DEVELOPMENT OF TRANSPORT AND COMMUNICATION.

(a) Efforts should be made to promote and encourage facilities for quick and cheap transportation and communication. A large part of Canada's trade undoubtedly goes to the United States, not because of the superiority of the United States products, but because the goods required can be obtained more rapidly and promptly from that country than from the United Kingdom. Every effort, therefore, must be made to render the transport of goods between the Mother Country and the Dominion as rapid as possible; the advantages which the United States enjoy cannot be entirely overcome, but it will be possible to diminish them by such means. A cheapening of telegraphic communication is also desirable.

#### BRITISH MANUFACTURERS MUST STUDY THE MARKET.

(b) British manufacturers should study Canadian conditions for themselves, and not depend so much as they have done in the past upon merchants or agents. They must follow the example of their American and German competitors in entering as much as possible into direct communications with Canadian buyers and must turn their attention more than they have done, as a rule, in

the past to the problem of distribution under the new trade conditions which prevail today. If they will grapple with this problem with the same courage and energy with which they have dealt with the problem of production, there need be no fear as to the result.

(c) It follows from this that the British manufacturer must either visit the market himself—and this is the most desirable course—or he must be prepared to select the very best men obtainable, to pay them well, and thereby enable them to meet and fight the American commercial travellers on their own lines; and further, he must not expect to make each particular journey pay for itself, or to establish a connection (one or two visits; he must be prepared to carry on the cultivation of the market, with a small gain (possibly even with a loss) for some considerable time.

#### BRITISH MANUFACTURERS MUST CATER FOR CANADIAN DEMAND.

(d) It follows again from this that the British manufacturer must cater for the Canadian demand and produce the goods that are required by Canada. However good an article may be it will not sell in Canada, or for that matter in any other market, unless it coincides with local wishes, and, it may be, local prejudices. If the demand is for cheap articles, it is futile to offer even a better article at a higher price. The Canadian buyers know their business; they know what they want; and if British manufacturers will not meet them, naturally they will turn elsewhere. To some extent British manufacturers are hampered by their good qualities. They produce commodities which are sometimes too good for the particular market, and, laudable as a high standard of workmanship may be and is, it does not necessarily always mean that the commodities sell.

#### STANDARDS.

(e) A point of importance in this connection is the question of standards, particularly in regard to iron and steel. Canada has adopted American standards, engineers and architects are familiar with them, and if British manufacturers wish to sell in the Canadian market they must adopt for goods destined for that market the same standards also. They must be ready to accept and adhere in all cases to the exact terms of the Canadian specifications, even though it should involve in some cases the establishment of a special plant. To this may be added the adoption, for business with Canada, of Canadian currency and weights and measures, which it will be remembered are similar to those of the United States.

#### CATALOGUES AND ADVERTISING.

(f) With respect to catalogues and advertising, it is the general opinion in Canada that not nearly all is done by British manufacturers which might be done. Catalogues should be fuller and more detailed—should contain much more complete information as to the articles making up the catalogue—weights and measures should be those of Canada, and prices should be specified always, either in Canadian currency or in that and sterling. With respect to advertising, greater care appears to be desirable in the selection of journals and papers in which advertisements are inserted, and Canadian

advice should be taken on this subject. There are in Canada established firms dealing only with newspaper advertising, and intimately acquainted with almost every town and newspaper in the country. Organized advertising is a very important matter. It is hoped that the recent postal changes may do something to promote the circulation of English trade and other journals where hitherto the United States publications had the field very largely to themselves.

#### NEWSPAPER POSTAGE.

These changes include a reduction on newspapers, magazines, and trade journals from the United Kingdom from 1d. for 4 oz. (the old rate) to 1d. for 16 oz., and came into operation on the 1st May, 1907, while on the 8th of May, 1907, an amendment to the Canadian United States Convention made the charge from the United States 1 cent. for each 4 oz. or fraction of 4 oz. A remarkable result is shown in the quantity of printed matter received from the United Kingdom direct by Canadian steamers. In June, 1906, the number of newspaper sacks received at Winnipeg was 191, and in 1907, for the same month 798 bags—an increase of 318 per cent. At London, Ontario, the increase was 306 per cent., at Toronto 184 per cent., at Ottawa 197 per cent., at Montreal 235 per cent., at Medicine Hat and Nelson 181 per cent., at Calgary and Vancouver 272 per cent. The increase of mail bags via New York, although very considerable, was not so large.

#### ADOPTION OF AMERICAN TRADE METHODS.

(g) The adoption of the methods employed by United States manufacturers and their agents to keep acquainted with the standing and financial position of Canadian firms may well be recommended to English traders, since it may enable the latter to meet (more than they have done in the past) Canadian wishes in respect to terms of credit, etc. This is largely a question of efficient commercial travellers, since these may often be able to judge of the position of firms, and to advise as to the terms of credit which should be given them, and thereby to render possible a greater elasticity in this respect than has hitherto prevailed amongst English manufacturers and merchants dealing with Canada.

#### NATIONAL TRADE REPRESENTATION.

V. Finally, there is undoubtedly a need for what may be called national trade representation in Canada. There can be no question as to the substantial services which had been rendered to the United States' trade as a whole by the Consuls who are scattered throughout Canada; at present the United Kingdom is totally without any representation. Consular advice and information can never take the place of efficient trade representation, but, unquestionably, if the right men are available, it can render substantial service, and it is generally believed in Canada that such service has been done to the trade of the United States by its Consular representatives in the Dominion. The appointment of British Consuls, in the ordinary sense of the term, in Canada, is obviously unnecessary. What is generally felt to be desirable is the appointment of competent commercial representatives, who, not having to deal with much of the ordinary work of Consuls, would have the more time to devote to the trade interests of the country which they represent.

The appointment of Commercial Correspondents, such as is now contemplated by the Board of Trade, is welcomed as an important step in the right direction, and a proceeding likely to be ultimately of substantial advantage.

In this connection it may be added that it is highly desirable that all possible steps should be taken to enable the industrial and commercial organizations of the United Kingdom and Canada to keep acquainted with the general economic and trade conditions which prevail in the two countries. The Canadian Boards of Trade—the equivalent of the United Kingdom Chambers of Commerce—are kept well supplied by the United States Government with its publications, and thus have constantly exhibited before them the spectacle of the commercial and industrial greatness of the United States, whereas from the United Kingdom they receive practically nothing. A wider distribution in the Dominion of British publications relating to trade and commerce (both official and other), and of Canadian publications in this country, would be extremely beneficial.

#### SUMMARY.

It may be convenient finally to summarize very briefly the conclusions which have thus been reached.

(1) The geographical position of Canada, and its contiguity to the United States, give American trade very great advantages, and impose correspondingly severe handicaps upon British trade.

(2) The preference enjoyed by the United Kingdom, both in goodwill and in tariff treatment, is helpful in neutralizing to some extent the geographical advantages which the

United States enjoy, but is insufficient by itself to do more than check the decline in the United Kingdom's share of Canadian trade. The preference gives substantial aid to the United Kingdom in competition with European countries, but may be diminished at any time through the adoption of the newly established Intermediate Tariff.

(3) Both British and American trade in Canada have to encounter the growing rivalry of Canadian industries, which, however, offer great opportunities (hitherto comparatively little used) for the investment of British capital.

(4) Much could be done to promote British trade with the Dominion by

(a) The promotion of rapid and cheap transit and communication between the United Kingdom and Canada;

(b) More careful study of Canadian conditions by British traders;

(c) Improvements in the representation of British merchants and manufacturers in Canada;

(d) Greater adaptability and exactness in meeting the wishes of Canadian buyers;

(e) The adoption of Canadian standards, weights and measures and currency, for specifications and price quotations;

(f) Better advertising and catalogues, and cheaper postage rates;

(g) More elasticity in terms of credit (rendered possible by fuller knowledge of local circumstances).

(5) It is highly desirable to promote mutual knowledge of commercial and industrial conditions by a system of British Commercial Correspondence in Canada, and the wider distribution of commercial and trade reports, both official and other.

## A Fireproof Woodworking Factory.

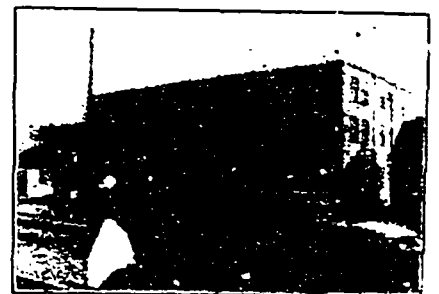
By GEO. H. HAWLEY.

Manufacturers would do well to consider the advantage of fireproof construction of their factories. Herewith are two illustrations, showing exterior and interior views of school furnishings factory owned by W. F. Vilas, Cowansville, Que.

This factory is designed with view to economy of labor and expense in getting out material as well as to eliminate insurance costs. The goods turned out, from the time the lumber is unloaded from the car in the rough state till it is again placed in the car for shipment, is handled and rehandled the least possible number of times.

The buildings are entirely of concrete and steel. Not a bit of wood is to be found except the sash and iron-covered doors; even the stairs are composed of the same material as the rest of the building. The roof is also concrete, covered with three thicknesses of tar roofing, and gravelled; it slopes in to the center of the building, discharging the water into sewer. The building being of concrete, has enabled the placing of the dry-kiln where it is wanted, without consulting the fire insurance companies and being obliged to place it where they want it. It is so placed that the stock-cutter at the swing saw may open the kiln, and, unaided, push out a truck containing 3,000 feet of hardwood lumber, being only obliged to push it 6 feet to place it right at the swing saw, where he

may drop the boards from the truck right onto the cutting-up table, without three or four men being required to get a truck out



EXTERIOR VIEW OF W. F. VILAS' FACTORY.

of the kiln and transfer the lumber to the stock saw.

A private railway siding, which is quite an extensive one, passes along one side of the building, and from this lumber is unloaded directly from the cars onto the kiln trucks. Coal is unloaded into the bins, and material of all kinds is discharged directly into the factory without any unnecessary handling. Finished material is loaded into cars in a most convenient manner; it may be loaded from the elevator directly into the car as it comes down from the packing room; the sidings

placed that the car door is within two feet of the elevator as it comes down with its load. There are also two other doors within two



INTERIOR VIEW OF W. F. VILAS' FACTORY

feet of car doors, in case it is desired to load more than one car at a time.

The shafting in this plant is entirely fitted with Chapman double ball bearings, and is entirely free from friction or hot boxes, although not a drop of oil is ever put into the bearings. This factory also has a most

effective shavings and dust collector, which keeps the place clean and so free from dust that a man can stay right among the machines for an hour with a dress suit on and not get it dusty. The machinery is all placed on the ground floor, this floor being of concrete, 6 inches thick, built on several feet of stone. There is no more jar or vibration when the machinery is all running than if it were standing still. The floors above are supported by pillars of solid concrete, 16 inches square, with steel bars running through them. These have for their base large piers of solid concrete running down deep into the ground. The bearings for the line shafting are bolted to these large pillars, thereby insuring a line that runs without vibration and can never get out of line, as there is no "settle" to these posts.

Not a cent of insurance is paid on this plant; it has nothing in its construction that can possibly burn. No watchman is employed in the building, thereby saving in this item alone the interest on half the entire cost of the building. The insurance premiums saved by this construction pay the interest on the cost of the whole plant. Speaking authoritatively, the first cost of erecting a plant like this is about 25 per cent. more than the sort of building most generally built as a slow-burning or fireproof factory, but this 25 per cent. will be cleared in about six years, at the end of which time the ordinary building will be in condition for extensive repairs, while the concrete factory will never require the outlay of a single dollar in repairs, for instead of deteriorating with age, it grows better.

## Incandescent Petroleum Lighting.

By ARTHUR KITSON.

In no branch of artificial illumination has so great a revolution been achieved during the past ten years as in oil lighting. Whilst the cost of electric lighting has been reduced during this period perhaps 30 per cent., and that of gas lighting 45 to 50 per cent., the cost of oil lighting has fallen at least 90 per cent. The effect of this remarkable improvement has been to place that much despised illuminant, oil, in the front as a keen rival in brilliancy to the electric arc light, whilst in cheapness it claims to outclass both electric and gas lighting.

Long ago it was known that the "wick" method of burning oil was extremely crude and wasteful, and many attempts were made to convert the luminous into a non-luminous smokeless flame on the bunsen plan, and employ this to raise some refractory substance to incandescence. The first successful attempt was made by me in the years 1884-5.

The following is given in the *Encyclopædia Britannica*:

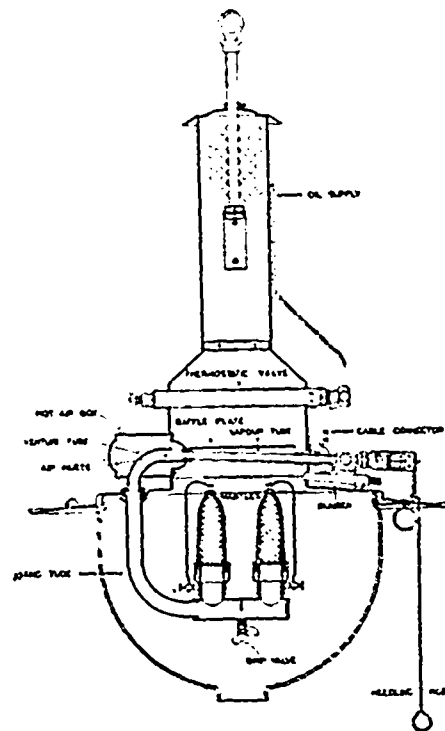
"As early as 1885, Mr. Arthur Kitson attempted to make a burner for heating purposes by injecting oil under pressure from a fine tube into a chamber where it would be heated by the waste heat escaping from the flame below, the vapor so produced being made to issue from a small jet under the action of the initial air pressure and the expansion in the gasifying tube. This jet of gas was led into what was practically an

atmospheric burner, and drew in with it sufficient air to cause its combustion with a non-luminous blue flame of great heating power. At the time when this was first done the Welsbach mantle had not yet reached the period of commercial utility, and many attempts were made to use this flame for the generation of light by consuming it in a mantle of fine platinum gauze, which, although giving a very fine illuminating effect during the first few hours very soon shared the fate of all platinum mantles—that is, carbonization of the carbon surface took place, and destroyed its power of light emissivity. It was not until 1897 that the perfecting of the Welsbach mantle enabled this method of consuming the oil to be employed. The Kitson lamp has given results which certainly ought to ensure its future success."

During the past few years various other systems have been more or less successfully introduced, but almost all of them—except the Empire lamp—are based upon the Kitson principle of vaporizing the oil under pressure by the waste heat of the mantle or burner, mixing the vapor with air automatically by the escape of the vapor through a small needle hole into a mixing tube which is open to the atmosphere at the point at which the vapor issues into it, and finally burning the mixture in a burner supporting a mantle.

A complete installation comprises: (1) the oil reservoir; (2) the lamp; (3) the

tubing connecting the lamp to the tank; (4) the oil supply valve; and (5) the pump for giving the necessary air pressure to the oil supply. The normal pressure for the oil is 50 pounds, but this depends somewhat on the distance the oil has to be conveyed. It is possible to have a reservoir a distance of a mile or more from the lamps. This is provided with an ordinary pressure gauge and a valve for shewing the level of the oil. The pressure may be given either by a hand pump, a rotary pump, or in some cases carbonic acid gas is used. The lamp consists essentially of a vapor tube in which the oil is converted into a vapor, a venturi tube through which air is induced by the escape of the vapor on the well-known injector principle, a mixing tube for conveying the mixture of vapor and air to the burners and finally the mantles for producing the light. The vapor tube is an ordinary steel tube of  $\frac{3}{8}$  inch diameter, and from 6 inches to 9 inches in



SECTIONAL VIEW OF KITSON LAMP.

length. One end of the tube is connected to the oil supply, and the other end contains a plug with a very fine hole of about 2-1000th of an inch diameter. The main difficulty which one has had to contend with in lamps of this nature has been the clogging of this very fine hole since the smallest particle is readily conveyed to it, and checks the escape of the vapor. The original Kitson lamp gave a considerable amount of trouble and necessitated constant attention. Indeed the history of this light, like that of all other inventions, is a series of constant attempts to overcome difficulties that have presented themselves from time to time. An invention may give excellent results upon its first trial, but it is only after months, and sometimes years of use that the real difficulties are discovered. The first Kitson lamp required constant needling, that is to say, the vapor tube hole had to be cleaned very frequently from an accumulation of carbon in the vapor tube.

It is well known that in the conversion of oil into gas or vapor a deposit of carbon is always formed, and the amount of carbon precipitated depends upon the way in which the oil is vaporized. If oil is suddenly conducted into a tube at red heat, the vaporization is accompanied by a very large deposit. On the other hand if the oil is heated gradually through a long length of tubing where the temperature is gradually raised to the point of vaporization, the deposit is much less. The construction of a lamp for commercial purposes necessarily limits the length of the vaporizing tube, and therefore it is impossible to obtain the degree of perfection in the vaporizing process that would be possible in a gas works for instance. With a view to overcoming these difficulties, a Hungarian mechanic conceived the idea of causing the oil to travel through the vapor tube in a circuitous route, so that the oil had a very much greater length to travel, and was heated more gradually than in the ordinary tubes. By a series of checks and baffles placed in the vapor tube, we now find that the lamps which required to be needed every four or five hours will now burn for 30 to 40 hours without the clogging of the vapor tube hole.

This question, is, of course, of enormous importance to the system for street lighting where the lamps have to be left to burn for 12 to 15 hours on the longest winter nights. The difficulties that were encountered in the lighting of London streets some three years ago by the Kitson system were largely due to this formation of carbon. Since this Hungarian invention, however, a still greater improvement has been made which enables us to dispense altogether with the needling device and lamps can now be used which will burn for 150 to 200 hours without any attention. This invention is embodied in what is known as the Empire lamp, and which is constructed on a different principle to the Kitson light. In the Kitson light the vapor tube is heated by the escaping products of combustion and the vapor tubes are placed above the mantles. In the Empire light, the vapor tube is below the mantle and is heated by a portion of the gas after it is formed in the vapor tube. This gas is baffled down two vertical vapor tubes, and burns through small orifices in the tubes which are placed parallel with the vapor tube, this being held in a vertical position. The result is that the heat is more regular on the vapor tube than in the Kitson lamp, and the results are undoubtedly more reliable. The Empire light has displaced a great number of electric and gas lamps for the lighting of engineering works, shops, foundries, and similar places, and is now in use in the machine shops and locomotive sheds of the Great Central Railway at Neepsend, Sheffield.

Although the Kitson light was the first of all petroleum incandescent lamps, it has, I regret to say, not made the advances in this country which it should have done.

This is due to the fact that the company owning the British patents seem to have been satisfied with the original types of lamps, and do not appear to have taken up the improvements which have been embodied in the lamp manufactured abroad.

A section of a completely equipped Kitson lamp with the thermostatic valve is shown in diagram. The lamp is arranged with electric

ignition. The gas being turned on to the bunsen, a spark from an ordinary battery ignites the gas flame and so starts the operation of the lamp.

The oil that is employed is the ordinary safety test oil, such as is used in the ordinary wick lamps, and under the rules laid down by the fire insurance companies, installations are now generally sanctioned. It is claimed that the incandescent oil lamp is a better illuminant than the electric arc, owing to the fact that it is more diffusive and less dazzling. The light from the electric arc is produced from a very small surface, the rays from which are very powerful, whilst the source of the incandescent oil light occupies several square inches of surface and gives a vastly greater number of rays but of much less power. There is, therefore, an absence of the very black shadows which the electric arc occasions, and the effect is much more pleasant and the light softer

and more pleasing, and far less injurious to the eyes than any other artificial light.

In the iron and steel foundries the light has been eminently successful. It is therefore black shadows are particularly objectionable, and it was a common complaint among foundrymen that the electric arc lamp did not allow them to see to the bottom of the moulds.

Some of the large oil lighting installations are provided with gas ignition so that a group of lamps can be lighted simultaneously. By the aid of the small pilot jet the bunsen burners of one hundred or more lamps may be operated at one and the same time, and the oil turned on the whole installation at once thus saving the time that would otherwise be required to light each lamp separately.

Among the users of this light may be mentioned many of the large engineering works in the Midlands and the North of England and Scotland.

## The Alberta Workmen's Compensation Act.

PROVISIONS OF BILL RECENTLY INTRODUCED IN ALBERTA LEGISLATURE.

The Compensation Bill introduced in the Alberta Legislature by Hon. Mr. Cross on Thursday, the 6th inst., is largely the outcome of the Coal Commissioners' investigation last year. If the bill becomes law, as seems altogether probable, its provisions take effect on September 1 this year.

The act provides for compensation to workmen for injuries suffered in the course of their employment. The bill is quite similar to the English Compensation act, so frequently referred to by witnesses during the coal commission, says the Edmonton Bulletin. It is an advanced measure of legislation in the interests of workmen. Some details of the act are given here.

The act applies only to employment on, in or about a factory, railway, mine, quarry or engineering work, in or about any building which exceeds forty feet in height and is either being constructed or repaired by means of a scaffolding, or being demolished or on which machinery is driven by steam or water, or other mechanical power is being used for the purpose of the construction, repair or demolition of the building.

The term workman in the act includes every person engaged in these employments to which the act refers, whether at manual labor or otherwise, but does not include any person employed otherwise than by manual labor whose remuneration exceeds \$1,200 a year, nor to a person whose employment is of a casual nature, nor to out-workers.

### LIABILITY OF EMPLOYERS.

In case of injury to a workman the employer shall not be liable in respect of any injury which does not disable the workman for a period of at least two weeks from earning full wages at his work.

When the injury was caused by the personal negligence or wilful act of the employer or of some person for whose act or default the employer is responsible nothing in the act shall effect any civil liability of the employer, but in that case the workman may either claim compensation under this act or take proceedings independently of the act.

If it is proved that the injury to a workman is attributable to the serious and wilful misconduct of that workman, any compensation claimed in respect of that injury shall unless the injury results in death, be disallowed.

A certain time limit is provided for in the act for taking proceedings under this act, and if after that time has expired action should be brought independently of the act to recover damages, and the court should decide in that action the employer is not liable, but that he would have been liable for compensation under the act, the action shall be dismissed. But the court may, if the plaintiff choose, proceed to assess such compensation.

The time for taking the first proceedings is as soon as practicable after the accident and before that workman has voluntarily left the employment in which he was injured. Then a notice in writing of the accident must be sent in.

Proceedings shall not be maintainable if the claim for compensation in case of accident has not been made within six months of the occurrence of the injury; or, in case of death, within six months from the time of death. The notice of the accident to be served upon the employer or employees must be delivered at their residence or sent by registered mail.

### AMOUNT OF COMPENSATION.

If a workman dies as a result of injuries on the work and for which the employer is liable under the act, if he leaves dependants wholly dependent on his earnings, the amount of compensation shall be a sum equal to his earnings in that employment during the three years preceding the injury. There is a sum of \$1,000 to be paid the dependants, though it must not exceed the sum of \$1,500. If the man has not been three years working for this employer, then his earnings for the three shall be deemed to be 156 times his average weekly earnings during the period of his actual employment.

If the man, dead from injury at his work for which employer is liable, leaves no dependants, the compensation will be the ex-

case for medical attendance and burial expenses not exceeding \$100.

When an injury has resulted in total or partial incapacity a weekly payment shall be made after the second week, not exceeding 50 per cent. of his average weekly earnings, such weekly payment not to exceed \$10. A workman receiving weekly payments of this nature after an injury shall, if required by the employer, submit himself from time to time to medical examination by a qualified practitioner, provided and paid for by the employer.

If a workman receiving a weekly payment ceases to reside in the province he shall no longer be entitled to the weekly payment, unless a medical referee appointed under the act certifies that the incapacity resulting from the injury is likely to be of a permanent nature. These weekly payments may not be assigned, attached, or pass to any other person.

**ARBITRATION PROVIDED.**

Arbitration is provided for by the act in some cases, and for these purposes if any committee representative of the employer and his workmen exists with power to settle matters under the act, the matter shall be settled by this committee, unless either party concerned objects and sends notice in writing to this effect before the committee meets.

If either party so objects, or there is no committee, or if the committee fails to settle the matter within three months of the date of the claim the matter shall be settled by a single arbitrator agreed on by the parties or by the court.

In cases where it is ascertained that a scheme of compensation, benefit or insurance for the workmen of an employer exists and

that it provides a favorable scale of compensation, and it is ascertained by ballot that a majority of the workmen are in favor of this scheme instead of the regulations of the Compensation act then the employer shall only be liable in accordance to the act. A certificate to this effect may be given that firm for a period of five years by the attorney general, and it may be renewed with or without modifications.

**SUB-CONTRACTING.**

In cases of sub-contracting the principal employer is held liable for any compensation to the workman, which he would have had to pay if the man had been directly employed by him. Where the principal is liable in cases of this kind he shall be entitled to be indemnified by any person who would have been liable to pay compensation to the workman independently of the section on sub-contracting in the act.

Provision is also made by the act in cases of insolvency of the employer. Any contract existing when the act goes into force whereby a workman relinquishes any right to compensation arising out of and in the course of his employment shall not be deemed to continue.

The act is a thorough one, entering into every detail, and the debates upon it will likely be followed with interest. It will come before the House again on Friday, February 14, when Hon. Mr. Cross will speak at some length upon the act in introducing it for its second reading.

D. G. Loomis & Sons, Montreal, may build a sash and door factory in Cote St. Paul, Montreal, next summer.

**CANADIAN TRADE IN WEST INDIES.**

**EDITOR CANADIAN MANUFACTURER:**

Dear Sir,—Now that Canadian manufacturers are making an effort to extend their markets in the British West Indies, it is to be hoped they will look into the possibilities of the much bigger markets of Cuba and Mexico—countries which have a population of about 16,000,000, or nearly ten times the population of the British West Indies. A few years ago the Elder Dempster Co. entered into a contract to maintain a monthly steamship between Montreal or Halifax, and Cuba and Mexico, —a service which has been the biggest factor in developing the Canadian-Mexico trade from less than \$100,000 to over \$2,000,000 a year.

So far Canadian manufacturers have not made much effort to extend their markets in that direction, though manufacturers of railway supplies, cement, paper, tinware and sewing machines are rapidly increasing their sales in both Cuba and Mexico. Our manufacturers should follow the example of Germany and England, and send out experts to study the needs of these big markets. They will find the Latin Americans more anxious to do business with Canada than with the United States. It is a significant fact and one that does not reflect much credit upon our enterprise—that Mexico has sent more trade delegations to this country than Canada has sent to Mexico. C.M.

Montreal, January 23, 1908.

Laporte Martin & Cie., Limited, wholesale grocers, Montreal, will move into their new building, 561-570 St. Paul Street, about March 1.

**The Canadian Manufacturer**

Covers a field quite different and distinct from that covered by any other publication in Canada.

Reaches owners, managers and superintendents of machine shops, foundries, rolling mills and other metal working shops; furniture factories, wagon and carriage builders; piano and organ factories, saw mills, planing mills and other wood-working plants; knitting factories, carpet factories, weaving and other textile plants; paper and pulp mills, cement works and clay working plants; electric light and power companies.

Has been frequently called "The Power Paper of Canada."

Has been thoroughly re-organized in the last two years; its circulation has been doubled and the advertising carried increased over 50 per cent.

It is the only semi-monthly industrial paper in Canada.

Its rates are exceptionally low, being based on its circulation and the purchasing power of its readers five years ago.

In short THE CANADIAN MANUFACTURER reaches "The Men Who Buy" for the factories and mills of Canada, the most important purchasing class in the country. The capital employed in these works, including buildings, plant, land, etc., is \$846,585,000.

MCCILL UNIVERSITY LIBRARY

## New Premises of Berg Brick Machinery Co.

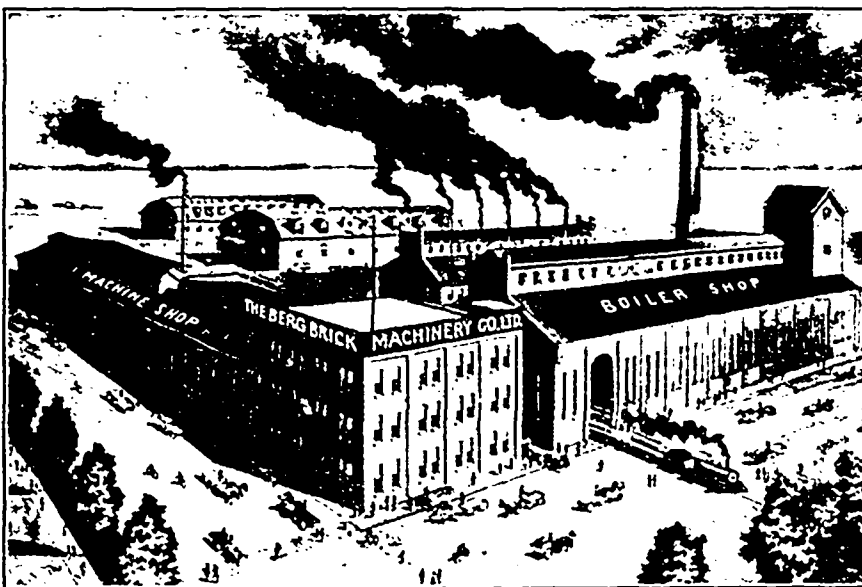
LARGE LINE OF MACHINERY WILL BE MADE BY THIS COMPANY.

In our last issue mention was made of the fact that A. Berg & Sons had purchased the large works in Toronto, lately operated by the Canadian Shipbuilding Co., and before that by the Bertram Engine Works.



Mr. ANTON BERG.

The plant consists of machine shop, foundry, pattern shops, smith shop and boiler shop, with railway sidings throughout buildings and yard. There is also splendid water frontage.



THE PLANT NOW OCCUPIED BY THE BERG BRICK MACHINERY CO., TORONTO.

The Berg company have secured a new charter under the style of the Berg Brick Machinery Co., Limited. With Mr. Anton

Berg and his sons are affiliated some of the wealthiest and most influential business men in Canada, the company having a capital of \$250,000.

Mr. Anton Berg has had about twenty years experience with the highest grade of brick machinery, and is a mechanical engineer of high standing, being the inventor of the "Berg" brick press, which has a world wide reputation. He is a Norwegian by birth and is about 52 years of age.

Mr. John Berg, the eldest son, has always been a valuable assistant to his father and is a person of great mechanical ingenuity, though but 25 years of age.

Mr. Severen Berg, the junior member of the firm, has learned his trade as a machinist and mechanical engineer, and is about 23 years of age.

The Berg Co. have been manufacturing the "Berg" press with all equipment for the last three years and have sold and installed 21 of their plants in Canada, the capacities ranging from 20,000 to 60,000 in day of ten hours. The success of these plants have made the present large developments possible.

In the new premises, of which they took possession three weeks ago, they will be equipped to manufacture the "Berg" press for all kinds of pressed brick work; stiff mud machinery, sewer pipe machinery, and paving brick machinery, including dry pans, pulverizers, rolls, etc.; all sizes of Corliss engines from 75 to 300 h.p.; all sizes of slide valve engines from 35 to 200 h.p., also boilers, gas producers, gas and gasoline engines.

Already considerable stock has been ordered and the plant is being rapidly put into shape for manufacturing. It is expected that from 200 to 300 men will be employed in the near future, but when the plant is working to its capacity, it will employ about 500, which,

machinery manufactured partly in the plant they now occupy and partly in the John Inglis Co., Limited, while their office has always been located in Manning Chambers. After March 1 they will transact all business at their commodious office building at the works, Niagara and Bathurst Streets, Toronto.

The Berg Brick Machinery Co. Limited, contemplate and are negotiating to man-



Mr. JOHN BERG.

ufacture mining machinery, which of course will work fairly well with brick machinery, engines, and boilers.

It is well known that the money struggle has been a factor in business conditions throughout Canada, unfortunate for some, but fortunate for others, for the Bergs at a big snap. It is, however, well deserved for they have always done their best to produce in Canada the highest grade of machinery and have tried to satisfy all customers.

This purchase has been premeditated by A. Berg & Sons has been economical, striving to attain this end, and all with which they have done business wish them every possible success which they so well deserve in their venture.

### FIVE BUSINESS MAXIMS.

To secure promotion, a young man should do something unusual, and especially this should be beyond the strict boundaries of his duties.

Aim high. I would not give a fig for a young man who does not already see himself as the partner or head of an important firm.

Begin early to save. No matter how small it may be possible to save, save it.

Look out for the boy who has stepped into work direct from the common school, and who begins by sweeping out the office or store.

Business is a large word and covers the whole range of man's efforts. The principles of thrift, energy, economy, and brains win success in any kind of business.—Andrew Carnegie.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

# WHAT'S IN A NAME?

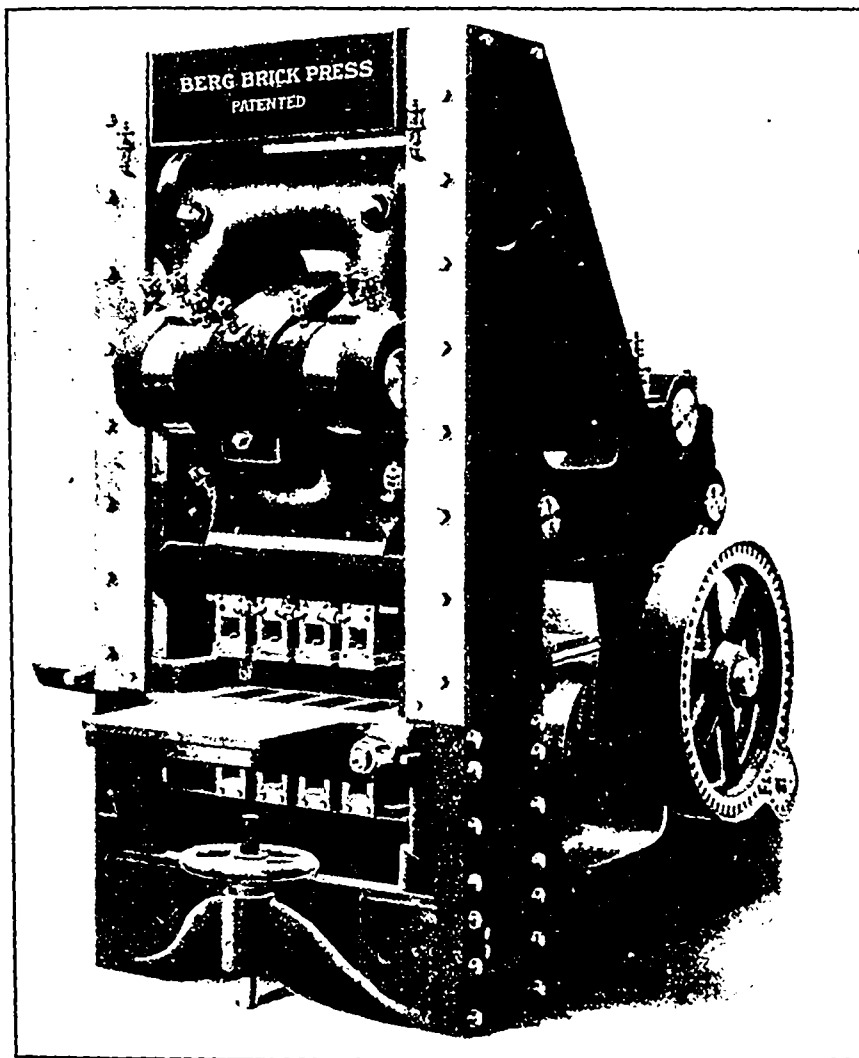
SIMPLICITY  
**B**  
 STRENGTH  
 DURABILITY

ACCESS  
**E**  
 TO ALL  
 PARTS

GREATEST  
**R**  
 PRESSURE

BEST  
**C**  
 PRODUCT

The "Berg Press" is The Highest Development in the Art of Brick-making Machinery, so Pronounced by the U.S. Government.



Improved Berg Brick Press.

Cut Gearing, and many other steps forward in Improvements, and built of the Highest Grade of Material and Workmanship. Fully Guaranteed as to its Success.

Manufactured by its inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick and Fire Brick. Correspondence solicited.

**A. BERG & SONS,** Manning Chambers  
 TORONTO, CANADA

THE BERG PRESS EXCELS  
 for  
 Shale Pressed Brick.  
 Clay Pressed Brick.  
 Sand-Lime Pressed Brick.  
 Sand-Cement Pressed Brick.  
 Fire Brick.

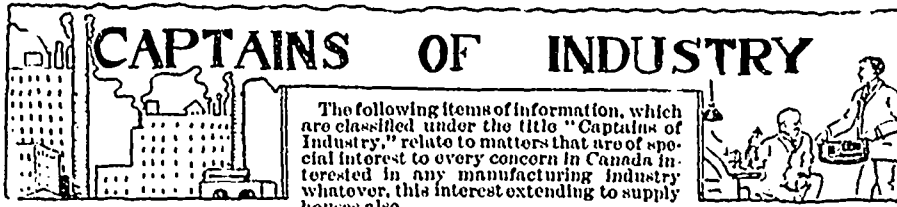
THE BERG PRESS  
 Gives THREE Distinct Pressures:  
 Result is,  
 No Granulated Centers.

THE BERG PRESS  
 HAS ALL WORKING PARTS ABOVE  
 Clay Line.

THE BERG PRESS  
 is fitted with "THE BERG PATENTED  
 MOLD BOX"—the DELIGHT of brick  
 makers, and which many OTHERS  
 have tried to IMITATE.

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

The Berg Brick Machinery Co., Toronto, have been incorporated with a capital of \$250,000, to manufacture brick machinery, etc. The provisional directors include A. Berg, J. Berg and S. Berg, Toronto.

The new factory of the Stratford Mfg. Co., Stratford, Ont., is nearly completed. The building is a compact, two-story brick structure and is equipped with hardwood floors, which are strongly reinforced to carry the heavy machinery to be installed. The new company will manufacture ladders, swings, hay sling carriers, etc.

Messrs. Shultz Bros., Brantford, Ont. have been awarded the contract for the erection of the public buildings at Delhi, Ont. The contract price is about \$30,000.

The Wolverine Brass Factory, Chatham, Ont., commenced operations February 10. President L. A. Cornelius and architect S. E. Osgood took over the factory a couple of weeks ago.

The Nelson Telephone Co., Lowville, Ont., have been incorporated with a capital of \$10,000, to carry on the business of a telephone company. The provisional directors include T. G. Ramshaw, J. H. Hilliker and J. Jardine, Nelson Township, Ont.

Tenders will be received until February 29, for plans, specifications and tenders for the erection of a steel bridge, with stone or cement abutments or an arch stone or cement (reinforced with steel) bridge-span about 60 feet at Newburg, Ont. B. G. Hamm, chairman of roads and bridges, Odessa, Ont.

The Department of Railways and Canals, Ottawa, invite tenders up to March 12 for the construction of section No. 3 of the Trent Canal.

The Department of Public Works, Ottawa, invite tenders up to March 2, for the construction of three steel tugs.

The Intercolonial Development Co., Toronto, have been incorporated with a capital of \$150,000, to carry on a mining, milling and reduction business. The provisional directors include F. A. Drake, W. A. Gordon and F. Rielly, Toronto.

The Grand Trunk Railway Co. are extending their yards and making additions to their freight sheds at Owen Sound, Ont.

The Toronto, Hamilton & Buffalo Railway Co., are going to build a new bridge at Cainsville, Ont., on the Brantford and Hamilton road. The bridge will be a steel one with heavy concrete abutments.

Tenders will be received up to February 29, for the construction of a bridge over the mouth of Jones Creek, Brockville, Ont.

The Canada Southern Oil & Gas Co., Tilbury, Ont., have been incorporated with a capital of \$100,000, to manufacture oil, gas, etc. The provisional directors include J. A. Tremblay, B. Ballard and H. Callwood, Tilbury, Ont.

The Department of Public Works, Ottawa,

invite tenders up to March 2, for the construction of a new entrance to the Harbor, Toronto.

Messrs. A. Hill & Co., Mitchell, Ont., have been awarded the contract for the construction of the steel bridge at Wingham Ont., the contract price being \$7,000.

The Standard Implement Co., London, Ont., have been incorporated with a capital of \$75,000, to manufacture farm implements, etc. The provisional directors include J. B. Donald, C. P. Heal, London Ont., and E. C. Greenlee, Chicago, Ill.

The Commissioners of the Transcontinental Railway, Ottawa, invite tenders up to March 10, for the following:—District "D"—From a point designated on the plans of the Commissioners about eight miles west of the Abitibi River crossing, in the Province of Ontario, westerly for a distance of about 100 miles. District "E"—From a point designated on the plans of the Commissioners about 19½ miles west of the crossing of Mud River, near Lake Nepigon, in the Province of Ontario, easterly for a distance of about 75 miles.

The buildings of the Ontario Powder Co., near Tweed, Ont., were destroyed by a terrific explosion on February 4. Loss about \$25,000.

Bedlington's, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture goods, wares and merchandise. The provisional directors include H. Bedlington, M. R. Bedlington and C. G. Locke, Toronto.

The new isolation hospital at St. Catharines, Ont., has been completed, and handed over to the city.

The Hobbs Hardware Co., London, Ont., will become manufacturers.

The council, London, Ont., have passed a by-law for \$75,000, for the site and building of an isolation hospital.

A refinery which will cost \$15,000, will be built in connection with the mint at Ottawa.

The elevator at Goderich, Ont., is being enlarged so as to hold 1,000,000 bushels.

A waterworks system will be installed at the Beach, Hamilton, Ont., at a cost of about \$16,000.

The directors of the Maple Leaf Flour Mills Co., have decided not to rebuild the mills which were destroyed by fire recently, at Kenora, Ont., but to erect new mills at Port Colborne, Ont.

The premises of the new Merrick building, Athens, Ont., were destroyed by fire February 13. Loss about \$12,000.

The Watson Carriage Co., Ottawa, Ont., have been incorporated with a capital of \$40,000, to manufacture carriages, vehicles, etc. The provisional directors include R. E. Watson, J. T. Moxley and "A. G." Acres, Ottawa.

W. M. Drader, Chatham, Ont., is considering the erection of a large factory for the manufacture of boxes.

The Brass & Steel Goods, Limited, have recently established a branch at Belleville, Ont.

The Canadian Steel Rolling Mills Co. will build a branch at Campbellford, Ont., at a cost of about \$60,000. In return the town has granted a free site, exemption from taxes and electric power at \$10 per h.p. The company will manufacture sheet and hot steel.

The Sanitol Chemical Laboratory Co., a United States concern, will establish a factory at the corner of Bathurst and King Streets, Toronto. The company will manufacture all kinds of toilet preparations and expect to have their plant in operation about the beginning of April.

The Sterling Bank, Toronto, will make alterations to their building at a cost of about \$4,000.

An addition to the building of the Children's Aid Society, Toronto, will be erected this year at a cost of about \$9,000.

The hospital governors, Hamilton, Ont. have decided to build another story to the hospital, at a cost of about \$10,000.

The Queen City Construction Co., Toronto, have been incorporated with a capital of \$50,000, to carry on a general contracting and constructing business. The provisional directors include J. P. Holden, J. A. Jackson and W. E. Denise, Toronto.

The Bank of Ottawa will open a branch at the corner of Queen Street and Pop Avenue, Toronto.

The ratepayers of Berlin, Ont., vote favorably on a by-law to raise \$30,000 to extend the street railway system and electric light plant.

It is stated that the Bell Telephone Co. are contemplating extensive improvements to their Ontario lines, and that the bulk of the money recently received by the company in connection with the deal with the Manitoba Government is to be expended in and around Toronto as the centre of the province.

Samuel Trees & Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture harness, saddlery, whips, etc. The provisional directors include S. Trees, D. Trees and C. F. Trees, Toronto.

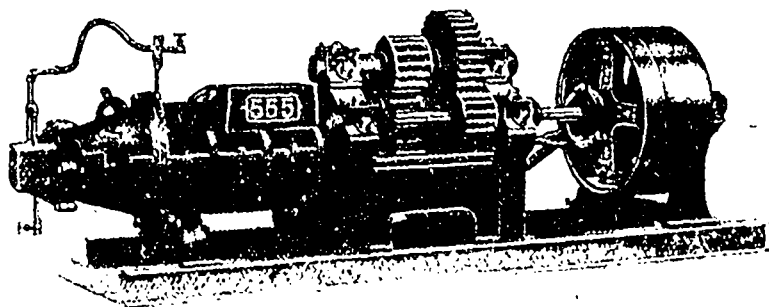
The ratepayers of Goderich, Ont., have approved a by-law to guarantee \$150,000 the bonds of the Ontario & West Shore Electric Railway Co.

Morrisburg, Ont., is to vote on a by-law to fix an assessment of \$2,000 upon a certain storage property owned by Scott, Ash & Co., on the consideration that it will be equipped with mechanical refrigeration and that they are paying the town the established rate therefor 50 h.p. electric power.

The Kaministiquia Power Co., Fort Williams, has recently supplied Port Arthur, Ont. with 500 h.p. of electric power, the municipal plant being weakened by scarcity of water.

The Monarch Brass Co., Port Colborne, Ont., were compelled to close down early this month because of a shortage of gas. Manager Sherlock insists that the government should take immediate steps to prevent the exportation of gas, claiming that Canada



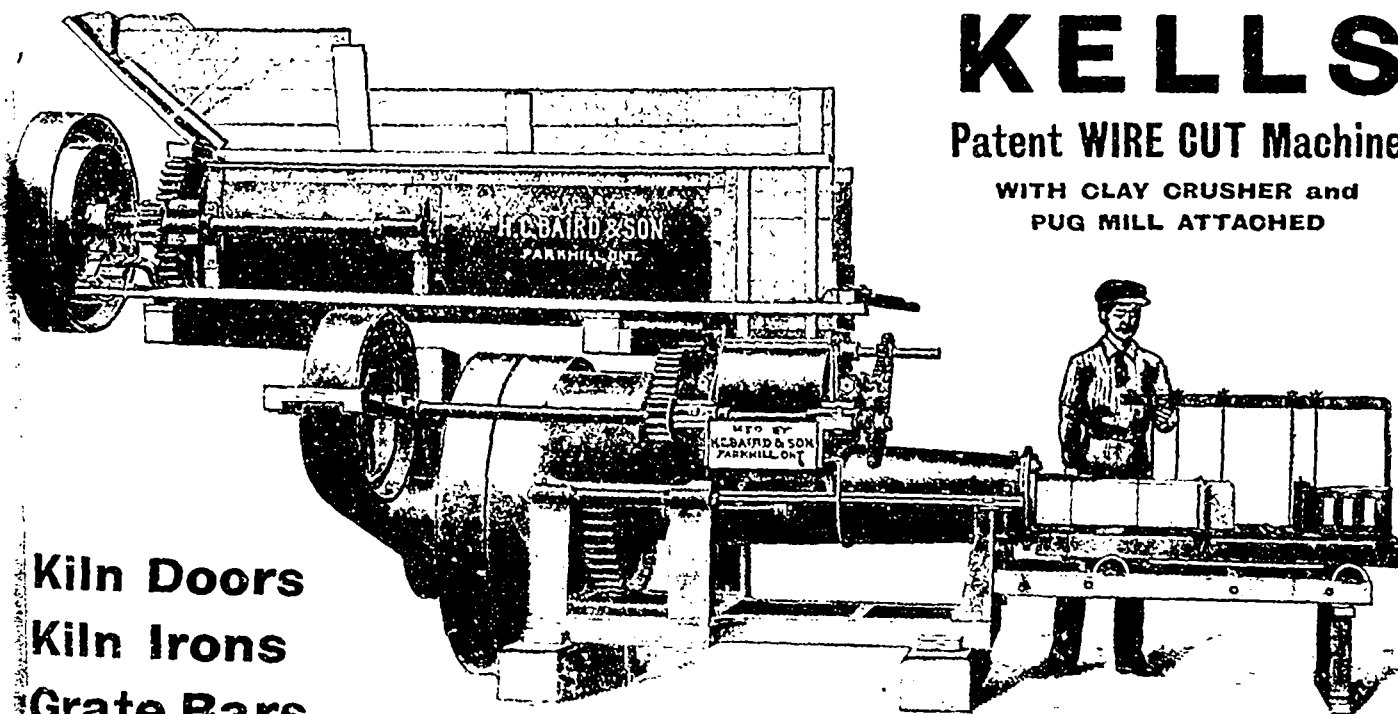


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industries were being starved for the benefit of those in Buffalo.

According to the Windsor Record, Detroit capitalists are interested on a project for several large enterprises at Sandwich, Ont. A pulp mill and a pig iron plant are included in the project.

At the annual meeting of the Dominion Copper Co., Phoenix, B.C., it was stated that between 850 and 1,000 men are on the pay rolls of the company. About 3,000 tons of ore a day are produced. The following officers were elected: President, Warner Miller; vice-president, H. H. Melville; secretary-treasurer, Leopold Herrmann; managing director, Samuel Newhouse; consulting engineer, M. M. Johnson.

The Bank of Nova Scotia have secured a building in Brantford, Ont., and will remodel it for an office at a cost of about \$7,000.

The American Drummer Cobalt Silver Mining Co., Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include J. B. Bartram, F. Rielly and W. A. Gordon, Toronto.

The new three story Gamey Block, Gore Bay, Ont., was damaged by fire, February 9. Loss about \$10,000.

The tobacco factory of G. Jaspersen, Kingsville, Ont., was destroyed by fire, February 9. Loss about \$20,000.

The premises of the King Edward Hotel, the Alexander Hall, the Empire Lumber Co., the post office, and several other buildings, Latchford, Ont., were destroyed by fire, February 9. Loss about \$100,000.

The Schram Automatic Sealer Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture sealers, jars, bottles, etc. The provisional directors include J. Arnold, E. J. Wills and C. M. Kirby, Toronto.

The premises of the Clifford Hotel, Dresden, Ont., were destroyed by fire, February 17.

The Metropolitan Bank have opened a branch at Markham, Ont.

The Royal Bank have secured the McMurray Block at Welland, Ont., and will have it remodelled for an office.

Mr. A. J. Lindsay, Toronto, is installing one of his belt transmitters in the shoe factory of the Laidlaw-Watson Co., Toronto.

The Dominion Heating & Ventilating Co., Hespeler, Ont., have sold a complete dry kiln outfit to Mr. Samuel Rogers, Barrie, Ont., and have a number of other contracts on the way.

Among the concerns who have bought pumps from the Smart-Turner Machine Co., Limited, Hamilton, Ont., are D. Morton & Sons, Hamilton; T. McAvity & Sons, St. John, N.B.; the Parisian Laundry, Toronto; Seaman, Kent & Co., Meaford, Ont.; E. Long Mfg. Co., Orillia, Ont.; Fowler's Canadian Co., Hamilton; the Grand Trunk Railway system at Tiffin; the Bankhead Coal Co., Bankhead, Alta., and Chadwick Bros., Hamilton.

An attempt will be made by Owen Sound capitalists to organize a company to build and operate a dry dock at that place. W. P. Telford, M.P., is interested.

The Dunnville, Ont., Consolidated Tele-

phone Co., are issuing first mortgage gold bonds to the extent of \$24,000, bearing interest at 6 per cent. for the purpose of extensions in the territory already operated.

The Hamilton Steel & Iron Co., Limited, Hamilton, Ont., has issued a circular to its shareholders, announcing that pursuant to an arrangement entered into with the directors, a new company, identical with the old one, has been formed with a capital of \$5,000,000; the shareholders being entitled to shares in the new company pro rata with their previous holdings.

It is reported from Brantford, Ont., that the Grand Valley Railway (electric) are in the market for several cars, and possibly an electric locomotive.

The Chaudiere Basin Power Co., Montreal, have been incorporated with a capital of \$150,000, to manufacture electrical power, machinery, etc. The charter members include H. Manley, J. F. McKenzie and T. F. Sibbald, Montreal.

The Gallimard Simplex Turbine Co., Montreal, have been incorporated with a capital of \$250,000, to manufacture Simplex turbines, tools, machinery, mechanical devices, etc. The charter members include P. Gallimard, J. B. Monier and E. Leclerc, Montreal.

The Rideau Shoe Co., Maisonneuve, Que., have been incorporated with a capital of \$100,000, to manufacture boots, shoes, leather goods, etc. The charter members include I. Lanjel, J. Laurin and J. B. Adam, Maisonneuve, Que.

The Canadian Crocker-Wheeler Co., Montreal, have been incorporated with a capital of \$250,000, to manufacture machine tools, engines, motors, air compressors, boilers, pumping machinery, car trucks, metals, etc. The charter members include F. J. Bell, Westmount; H. Helden, Montreal, and F. E. Lovell, Coaticook, Que.

La Cie Vichy-Canada, Montreal, have been incorporated with a capital of \$49,000, to manufacture mineral waters, etc. The charter members include J. N. St-Arnaud, D. Disilets and A. Guilbault, Montreal.

P. Lafrance & Cie, Montreal, have been incorporated with a capital of \$49,000, to manufacture dry goods, furs, millinery, etc. The charter members include P. Lafrance, A. Lafrance and H. Dion, Montreal.

Lyman, Limited, Montreal, have been incorporated with a capital of \$1,000,000, to manufacture drugs, chemicals, spices, medicines, etc. The charter members include H. H. Lyman, A. Lyman and W. E. Lyman, Montreal.

St. Johns Temagami Gold & Silver Mining Co., St. Johns, Que., have been incorporated with a capital of \$795,000, to carry on a mining, milling and reduction business. The charter members include L. Langlois, C. Poutre and J. B. Comeau, St. Johns, Que.

The St. Lawrence Lumber Co., recently incorporated at Sherbrooke, Que., have acquired a tract of land in Quebec containing in the neighborhood of 500 square miles of timber limits.

The directors of the Montreal Cotton Co., at the meeting previous to the annual meeting increased the rate of dividend to 8 per cent., an advance of 1 per cent.

The wholesale hardware house of Gervais Freres and the boot and shoe shop of C. A. Papineau, St. Johns, Que., were destroyed by fire, February 5. Loss about \$25,000.

The wholesale fur manufactory of J. C. Bessette, Notre Dame Street, Montreal, was damaged by fire, February 10. Loss about \$25,000.

P. D. Dodds & Co., Limited, Montreal, whose offices on McGill Street, were destroyed by fire recently, are fitting up new offices at 280-286 St. Patrick Street, Montreal.

A quarterly dividend of 1 3/4 per cent. on preferred stock was declared by the Montreal Steel Works, Limited, for the quarter ending December 31, 1907, while a dividend of 4 1/2 per cent., making a total of 7 per cent. for the year was paid on common stock.

The L. C. Prime Co., St. John, N.B., have been incorporated with a capital of \$99,000 to manufacture lumber, timber, boats, saws, etc. The provisional directors include L. B. Knight, F. R. Taylor, St. John, N.B., and J. C. Prime, Westfield, Ont.

The Department of Public Works, Fredericton, N.B., invite tenders up to February 24, for (1) The metal superstructure for the St. Jacques bridge. The bridge is of two span, each 160 feet. (2) The metal superstructure for the Black River Mouth bridge at Wellington. The bridge is three spans, each 63 feet. (3) The metal superstructure for the Eel River Bar bridge at Dalhousie. The bridge is to be three spans, each 117 feet. (4) Broadway bridge at Grand Falls. The bridge is to be two span, each span 86 feet.

Rhodes, Curry & Co., Amherst, N.S. have decided to establish a large steel foundry at Moncton, N.B., for the manufacture of steel castings and general railway appliances. The company will probably occupy the old Intercolonial Railway shops at that place.

The St. Maurice Lumber Co., Three Rivers, Que., who recently purchased the property on the Restigouche River, operated by the Dalhousie Lumber Co., Dalhousie, N.B., have decided to expend \$150,000 for a new mill.

Fire destroyed the saw mill of the Louis Lumber Co., at Jacquet River, N.B., on the 1st inst. The loss is believed to be about \$20,000.

H. L. & J. T. McGowan, St. John, N.B., have been incorporated with a capital of \$24,500, to manufacture paints, oils, varnishes, wall papers, glass, etc. The provisional directors include H. L. McGowan, J. McGowan and J. J. Trainer, St. John, N.B.

Moncton, N.B., Council refused to give inducements to Rhodes, Curry & Co., Amherst, N.S. to erect a branch plant there.

A telephone company is being organized in Debec, N.B., with a capital of \$5,000, for the purpose of installing and operating a telephone system in York and Carleton counties, N.B.

The Dominion Government has decided to build a wharf at St. John, N.B., extending from the end of the wharf now being built to the city to the harbor line, and northwards along the harbor, at an estimated cost of \$300,000. Tenders will be invited for work at an early date.

A new post office will be erected in Halifax, N.S.

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January outputs from the collieries of the Dominion Coal Co., Glace Bay, N.S., surpassed all winter monthly records in the history of that organization, totalling 312,358 tons. In January, 1907, the output was 252,248 tons, and in 1905, 160,061 tons. Open weather permitted shipments to be much larger than usual.

The Dominion Iron & Steel Co., Sydney, N.S., received \$1,223,212 in bounties in 1907, getting \$313,573 on pig iron; \$497,212 on steel; \$412,417 on wire rods. This was far and away the largest amount paid, the Algoma Steel Co., Sault Ste. Marie, Ont., coming second with \$556,268.

The premises of the Dominion Coal Co., Dominion, Glace Bay, N.S. were damaged by fire February 4. Loss about \$25,000.

The W. A. Russell Co., Portage la Prairie, Man., have been incorporated with a capital of \$50,000, to manufacture dry goods, leather goods, trunks, valises, furniture, chinaware, clocks, watches, paints, oils, wagons, sleighs, machinery, etc. The provisional directors include W. A. Russell, G. E. Bona and W. P. Rundle, Portage la Prairie, Man.

The Jackson Engraving Co., Winnipeg, Man., have been incorporated with a capital of \$60,000, to carry on an engraving and printing business. The provisional directors include H. Jackson, A. E. Teskey and G. F. Darbey, Winnipeg, Man.

The city council, Winnipeg, Man., have recommended the acceptance of the tender of the Canada Iron & Foundry Co., Fort William, Ont., for the supplying of water pipes and specials to the city, on the condition that the pipe be delivered only in such quantities as may be required from time to time and payments made accordingly. The amount of pipe to be purchased is 1,634 tons and 70 tons of specials. The amount of tender is \$66,994 for the pipe and of \$4,060 for the specials, making a total of \$71,054. The tender has also been recommended of the Canadian Fairbanks Co., for the supplying of six and eight inch hydrants, the amount of tender being \$8,437.50.

Messrs. Foley Bros. & Larson, Winnipeg, Man., have been awarded by the Grand Trunk Pacific the contract for the construction of 126 miles of line east of Edmonton, Alta.

The S. C. Hill Co., Winnipeg, sub-contractors for bridge work on the Grand Trunk Pacific, have secured the contract for bridges at Cross Lake and Green Lake, Man.

The piers for the Grand Trunk Pacific bridge across the Assiniboine River at Portage la Prairie, Man., have been completed.

Plans are being prepared in the office of H. C. Stone, architect, Winnipeg, Man., for the new theatre, to be situated at the corner of Princess Street and Notre Dame Avenue. Tenders will be called shortly and work will commence on the excavations early in March. The structure is to cost \$100,000.

Several buildings in the business part of Carberry, Man., including the Bazaar building, were destroyed by fire February 6. Loss about \$16,000.

The congregation of the Congregational Church, Winnipeg, Man., will erect a new edifice.

The elevator of the Ogilvie Milling Co., at Winkler, Man., was destroyed by fire

recently. About 10,000 bushels of grain were destroyed. Loss about \$45,000.

The Canadian Brick Co., Medicine Hat, Alta., have been incorporated.

Regina, Sask., will receive tenders to February 24, for the construction of a reinforced concrete bridge and dam on Wascana Creek, Regina.

At a meeting of the Edmonton city council, held on the 4th inst., a contract with the Canadian Machine Telephone Co., for an automatic telephone system, was cancelled, the reason given being failure to live up to agreement re delivery.

Building operations in Prince Albert, Sask., promise to be extensive this coming summer. The Imperial Bank purpose erecting a new block; the new \$90,000 High school and the St. Albion's school for girls to cost \$20,000 are to be built this year. The bridge of the Canadian Northern Railway now under construction will also be completed.

The new building being erected for the Canadian Bank of Commerce at Nokomis, Sask., has been completed.

The Saskatoon Milling and Elevator Co., Saskatoon, Sask., have authorized the raising of capital by mortgaging their property and it is reported an application will be made to increase the company's capital and to erect three new elevators.

The Wilson Leslie Co. recently organized at Saskatoon, Sask., propose to erect a flour mill and elevator at that city.

Cushing Bros., sash and door manufacturers, Edmonton, Alta., have moved into new premises.

The Vancouver Board of Trade wants to have a public elevator constructed there.

The Eastern British Columbia Railway Co., Victoria, B.C., are applying for permission to build a railway from Crow's Nest Pass to Eastern Kootenay.

The Vancouver, B.C., Board of Trade recently passed a resolution endorsing an application to the Dominion Government, favoring the establishment of a telephone line between Vancouver and Point Atkinson. It has also been in communication with W. H. Kent, manager British Columbia Telephone Co., with a view of the company constructing such a line. The proposal, the Board was informed, was under the consideration of the directors.

The power and milling equipment of the Blue Bell mine, on Kootenay Lake, is now complete. A 200 ton mill has been built and water has been flumed for several miles. The mine is a lead and zinc producer. Upon the completion of the new zinc reduction plant at Nelson, B.C., shipments will be made there by the Blue Bell.

Geo. A. Walkem & Co. are erecting a new warehouse and storage platform on False Creek, Vancouver, B.C. The warehouse is 100x50 feet, while the platform is 150x100 feet.

The Lamb-Watson Lumber Co., Arrowhead, B.C., have placed an order with the Schanke Machine Works, of New Westminster, B.C., for a complete set of marine engines for a new stern-wheel steamer.

Three new schools will be erected in South Vancouver, B.C., at a cost of about \$16,000.

The Hillcrest mines at Hillcrest, near Frank B.C., are in operation as they have a contract with the Canadian Pacific Railway for the total output of the mines, and have an arrangement whereby they are allowed to dump the coal on the railway company dump if cars cannot be had.

P. Lund, of Wardner, B.C., is building at Marysville just north of Cranbrook, B.C., a new circular saw mill that will have a capacity of about 40,000 feet per day. It is understood that much of the output of this mill will be railroad ties. The entire machinery equipment has been supplied by the Waterous Engine Works, of Brantford, Ont.

The Brunette Saw Mills Co have completed the improvements to their mill at Sapperton, B.C.

The new mill being erected by the Nicola Valley Lumber Co., at Canford, B.C., is nearing completion. This plant will have a capacity of about 500,000 feet per day. The mechanical equipment consists of a log jack, circular saw frame, three-block carriage, four-saw edger, two-saw trimmer, swing cutoff saws, sawdust and refuse conveyors, live rolls, etc., all supplied by the Waterous Engine Co. The power plant consists of an 18 inch by 24 inch Waterous engine and two boilers, 60 inches by 16 feet, of the same make, with steam pressure of 125 pounds.

J. R. Murphy, sash and door manufacturer, Vancouver, B.C., has been succeeded by the Fairview Mfg. Co.

W. E. Simpson, of Iowa Falls Iowa, and other American associates, organized as the North American Timber Co., have acquired large timber holdings on Vancouver Island and elsewhere on the coast, and will enter upon the construction of a large saw mill this season at Kennedy Lake, B.C.

The British Canadian Wood, Pulp & Paper Co., of Vancouver, B.C., have nearly completed the erection of their large pulp mill at Howe Sound, B.C. As soon as the pulp mill is completed they will commence the construction of a paper mill.

Robert Hamilton & Co., Vancouver B.C., have recently secured an order from the Fraser River Saw Mills, Limited, for sixteen new boilers, each 72 inches by 18 feet, of Goldie & McCulloch manufacture.

It is expected that the plant of the Nelson Electric Smelting Co., Nelson, B.C., for the handling of zinc ore will be in operation in the latter part of March or early in April.

The Perry Creek Hydraulic mine near Cranbrook, B.C., has been sold to the Illinois Steel Co., of Chicago for \$900,000, the original owners retain a \$100,000 interest in the mine.

The January building permits in Vancouver B.C., totalled about \$300,000.

The Canadian Pacific Railway Co. will expend about \$50,000 this coming spring on new trackage, freight sheds and other improvements at Fernie, B.C.

The percentage paid the city of Vancouver by the British Columbia Electric Railway Co. for 1907 under the terms of its agreement amounted to \$16,378. In 1906 the amount received from this source was \$10,000, an increase for last year being over 60 per cent.

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A 70 mile extension of road will be built by the Spokane International Railway from Eastport to Fernie, B.C., where it will connect with the Canadian Pacific Railway.

Plans are now being prepared and construction will be started within the next few months of a new tipples for the Crow's Nest Pass Coal Co., Michel, B.C. The structure when completed will cost about \$200,000.

Several additions and changes will be made to the city electric plant, Victoria, B.C.

The Canadian Pacific Railway Co. have begun the construction of their new steel bridge across the river at Mission City, B.C.

Messrs. A. Guthrie & Co., Vancouver, B.C., have taken over the contract from the British Columbia General Contract Co. for the building of the Great Northern from Cloverdale to Abbotsford, B.C., as the result of the assignment of the British Columbia General Contract Co.

The Canadian Fish & Cold Storage Co., Prince Rupert, B.C., will erect a cold storage plant at a cost of about \$250,000.

The first shipment of coal from the Diamond Vale coal and iron mines, of Coutlee, B.C., has been received at the Pacific coast. This company spent \$100,000 in 1907 for buildings and equipment. The coal is bituminous and high class.

J. Leckie & Co., Vancouver, B.C., will erect a brick warehouse at a cost of about \$80,000.

The machinery for the new Grand Trunk Pacific steamer, which will ply on the Skeena River, will be furnished by the Polson Iron Works, of Toronto. The construction of the new boat will be done by Alex. Watson, of Victoria, B.C., the total cost being about \$30,000.

It is understood the Canadian Pacific Railway will build a road from Vancouver, B.C., to Seattle, Wash. The ground has recently been surveyed for the company.

Herbert S. Ashton, London, England, is organizing a company in Victoria, B.C., for the purpose of manufacturing Rami goods. Rami is a fibre imported from China, India, and Mexico, which, when woven into yarn, is said to be several times as strong as either cotton or silk.

A school-house will be erected at Burnaby, B.C., at a cost of about \$12,000.

The Hutton Electric Co. have just installed at the Arlington mines, near Slooan city, B.C., a complete electric lighting plant, including a 25 k.w. 500 volt water driven dynamo.

The Vancouver Furniture Co., Vancouver, B.C., have recently opened their new factory in that city.

Kelly Bros. & Mitchell, who are operating large stone working yards in Vancouver, B.C., have recently purchased from Allis-Chalmers-Bullock, at Vancouver, a large sized belt driven Ingersoll-Sergeant air compressor with unloader and receiver. This will considerably increase the capacity of their plant, which, up to the present, has been operated from a 16½ inch by 18 inch belt driven Ingersoll-Sergeant air compressor. Both compressors are driven by Allis-Chalmers-Bullock induction motors.

The British Columbia Electric Railway Co., of Victoria, B.C., are installing a complete water system for fire protection, using

standard hydrants and nozzles, on their properties in that city, and have purchased from Allis-Chalmers-Bullock at Vancouver an eight inch two-stage Worthington turbine pump direct connected to a 150 h.p. 2,200 volt, three phase, 60 cycle Allis-Chalmers-Bullock induction motor, also an electric driven dry vacuum pump. This outfit will readily handle 1,000 imperial gallons per minute and salt water will be used throughout the system.

#### G.T.P. WESTERN LINES MAY OPEN NEXT FALL.

Mr. F. W. Morse, general manager of the Grand Trunk Pacific, is rushing work on the line from Edmonton to Thunder Bay, the Lake Superior terminus, in the hope of having it ready in time to participate in moving next year's crop. The branch line from Thunder Bay to the main line will, it is expected, be built by its contractors, Foley Bros. & Larsen, much earlier than was expected and earlier than the contractors, McArthur & McDonald, can complete their portion, 275 miles east of Winnipeg to this junction. An effort will be made to induce McArthur & McDonald to put on a larger force of workmen or to accept the assistance of Foley Bros. & Larsen to complete this link. If this can be done, it is believed the road will carry grain to Port Arthur this fall.

#### WONDERS NEVER CEASE.

The power line of the Ontario Power Co. to the Portland Cement Works will be completed this week, and when the juice is turned on it will make a new epoch in the history of Port Colborne. This line was brought up the canal on the government lighting poles, which is itself a wonderful thing. Time was when an Ontario Power line could not come within sight of the canal, without having an injunction thrown in its face.—Welland Telegraph.

#### REGINA BOARD OF TRADE.

At the annual meeting of the Regina Board of Trade on the 5th inst., the following officers were elected: President, A. E. Whitmore; vice-president, H. W. Laird; 2nd vice-president, W. McCausland; secretary-treasurer, H. C. Lawson.

In the report of the Council a strong protest is made against the discrimination in freight rates in favor of Winnipeg. Reference is made to the fact that a clearing house will be established there by the banks at an early date; to the completion of the Canadian Northern from Brandon; to the opening of several hotels needed for accommodation to travellers; to the fact that building permits totalled \$1,982,000, and that building prospects for 1908 are bright; to the fact that railway traffic and post office receipts and customs returns in Regina show material increases; to the fact that two new banks, one new public school, a new auditorium for live stock exhibits and many fine warehouses were built last year.

The electric light plant shows in a marked manner the growth and improvement of the city. The number of services have increased from 304 in 1905 and 495 in 1906, to 900 in

1907. Although a considerable reduction was made in the rate, and we have a rate of nine cents per 100 kilowatt hours, as compared to the 15 cents of Winnipeg and the same rate at Moose Jaw, the plant is being operated at a fair profit and after writing off a sufficient sum for the depreciation of the plant the electric light service and the city water works are being maintained in a state of great efficiency without costing the taxpayer a single cent.

#### WILL DEVELOP IRON MINES.

The Dominion Iron & Steel Co., Sydney, N.S. have leased the iron properties at Le. Precux, N.B., owned by the New Brunswick Iron Co. Under the terms of the agreement the Dominion Iron & Steel Co. are to carry on continuous operations to the full capacity of the plant unless prevented by the weather or some unforeseen reason. The equipment is to be supplied by the Steel company and on all ore mined the New Brunswick company are to receive a royalty of 35 cents a ton.

A Bessemer steel plant may be established at the mines. The property is about 2½ miles square and is on both sides of the New Brunswick Southern Railway. It is close to Bay of Fundy.

#### AN INTERESTING PATENT FOR SALE.

Manufacturers who are in position to manufacture sectional steam or hot water boilers will be interested in the advertisement of "Manufacturing Rights for Sale," in the condensed advertisement column on page 9. This is an improvement in the manufacture of such boilers, whereby all flat surface between the sections is omitted, preventing the accumulation of rust during the summer months or when the boiler is not in use, damp basements. This is to prevent the trouble, with which all steam-fitters are familiar, of rust forcing the sections apart and eventually causing them to leak at the joints or breaking the sections, in either case causing expense and annoyance.

#### WANT NIGHT TELEPHONE RATES INCREASED.

A meeting of the Board of Railway Commissioners was recently held at the office of the Bell Telephone Co. to consider the application of that company and the American Telephone & Telegraph Co., to abolish the present half rates at night on through business between Canada and the United States.

The application was made on the ground that the volume of business and the work involved so taxed the resources of the companies as to make it unprofitable to continue the half rates which were originally put in force in order to encourage night work to keep the lines employed.

The two main witnesses examined were Mr. Joseph L. Van Meter and Mr. Charles F. Sise, jr.

The cement plant of the Western Canadian Cement and Coal Co., Exshaw, Alta., has been put in operation. The works are a mile from the Canadian Pacific main line at Exshaw, which is but a few miles farther from the head of the river than the mill. All the ingredients for the manufacture of cement are adjacent to the mill, which is under most favorable auspices.

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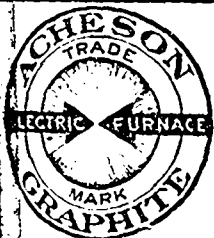


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## Practical Hints for the Factory or Mill Superintendent.

There are so many excellent technical publications issued throughout the world that even the most ambitious superintendent could not afford to read them all to get the cream of their articles. We propose in these pages to give some of the most practical hints and suggestions which appear in the technical press in all countries.

### An Interesting Use of Thermit.

From *Industrietidningen Norden*.

Thermit, as our readers may recollect from former references made to this subject, is a welding process, invented in Germany, in which a mixture of aluminum and iron oxide is employed for welding. When the aluminum, which is introduced in a pulverized form, is ignited, it takes oxygen from the iron oxide, thereby producing aluminum oxide, and free iron. By this an enormously high heat is developed, estimated to be over 5,000 degrees F., so that the iron is easily melted, and this makes it possible to employ this means for welding. A new and peculiarly interesting example of the use of thermit has been proposed by the German inventor, Mr. Hasenkamp. In iron structures, particularly in the case of bridges where several members are in tension, it often happens that some of the members do not take their full share of the stress, or, in other words, that they would need to be shortened so as to take their share of the load. For correcting this, in many cases, the members have been taken down, and adjusted as to length through forging in an ordinary blacksmith shop. This way of doing the work takes a long time, is expensive, and, at the same time, it makes it necessary to stop the traffic on the bridge while this work takes place, to prevent any accident from failure of the remaining members. These difficulties are avoided by bringing the members to a red heat while in place, by means of thermit, at several points between their ends. In order to prevent the member from lengthening while it is hot, clamps are provided which are fastened at both sides of the place which is heated. These clamps are connected with one another by means of bolts, and these bolts take the stress while the member itself is brought to a high heat, at which time, of course, the member would be unable to take any stress, without increase in length. Adjusting the bolts connecting the clamps shortens the member to the desired degree and when the member cools off, it will remain short, the adjustment required having been effected. The process can be carried out in a few minutes, and stoppage of the traffic is unnecessary.

### Selling for the Foundry.

Address by E. A. Kehler.

While much has been written recently on the importance of finding the cost of work produced in the foundry, the absolute necessity of knowing the approximate cost of castings before bidding on the work has not been sufficiently dwelt upon. It is too much the

custom of foundrymen to glance at a bunch of blue prints, and if they appear similar to work which has been done before, the price is made the same as was obtained for the other work, and too often, when it is put in the foundry unexpected difficulties appear which add much to the cost. While it is often difficult to have a careful estimate made in advance by reason of lack of time or insufficient data, if a foundryman absolutely refuses to quote until he has made an estimate he will find in nearly every case his customer will allow him sufficient time to make figures, and that profits at the end of the year will be much increased.

To sell satisfactorily a foundryman must know that his estimates are correct, for this will give him a confidence in the price at which he is offering his castings that cannot be obtained in any other way; in fact, an estimate which is not afterward verified by the actual cost is of but little value. As an instance of this, a foundry which based its quotation on an estimate sheet compiled by its superintendent in consultation with his foreman adopted one on which the detailed actual cost was also entered after the work was completed, so that at a glance the correctness of each item in the estimate could be seen. When this new form was first used the estimates were found to have been very unreliable, but after the differences between the cost and estimates had been rigorously pointed out the superintendent and his assistants were educated by this so that they could correctly estimate. To show the value of this, an estimate for 300 castings was made showing that a molder and helper would make one casting in two days; knowing that this must also be shown by the actual cost, the length of time taken in making the first few was figured up, and it was found that, instead of two, a casting required three days' labor. Knowing they would be censured for the error in their estimate, the foundry people by changing their tools were able to bring their cost below their estimate, which certainly would not have been the case if the check on the estimate was not being made.

A very serious mistake is made by some foundrymen who base their quotations on the prices named by others. A mill whose castings, while apparently similar to those of other plants, were really much more expensive to make "worked" the foundries beautifully getting its repairs for the first year at less than cost, and continued doing so by placing its orders for succeeding years with different foundries at approximately the same price by showing the bidders the figures which had been paid in preceding years. Unless a foundry knows by actual experience or can figure the costs of the repair required during, say the last six months, it is very dangerous to take an indefinite order like the above unless a large margin of profit is allowed. These yearly repair contracts are also

unsatisfactory for this reason: if prices of castings advance the mill may stock up to pair parts, while on a falling market the repairs are often inconsiderable.

As the profits vary on different classes of castings, a foundry salesman should keep constantly before him the desirability of securing orders which will yield the most profit, as his value to the company largely depends on this. One foundry keeps a careful record of this, so that a salesman who a smaller tonnage obtains more returns appreciated more than a man who fills the shop on orders which show but little profit. If this is carefully followed up, it is found that the foundry gradually replaces the manufacture of castings which give a little profit and runs its shop on the most profitable work.

Too often foundrymen are not alert to secure orders for work which they had previously made, or for which their castings might be used. A foundry salesman, one hearing the president of a company tell his purchasing agent that some steel work which they were using was rusting out, suggested the substitution of cast iron, and thus secured large orders from this plant and others for a class of work which heretofore had never been made in a foundry.

### SALESMAN MUST KNOW HIS LINE.

A decided change has taken place in the selling of material, and now to be a good foundry salesman a man must not only be a good talker, but must be thoroughly conversant with the class of castings he is selling and often must know how they should be made to get the best results. As the buyer relies on the representations of the seller, it is absolutely essential that the latter be honest in his statements if he wishes to hold his trade. A first order often hinges on a very consideration. Recently a buyer in the market for some material, and who showed the bidders that he wished the material to have a certain peculiar character. He placed his sample order not with the man who flatly stated that their material would be as specified, for the buyer knew that the requirement was an unknown one, but with the salesman who frankly told him that he could not promise to fill the bill, but would sell him subject to a sample which would be tested.

The modern salesman must also be able to advise what can be used successfully under various conditions, for if he should supply a casting no matter how good, which could not be used to advantage in the customer's work, a better order need not be expected. He must keep in touch with the requirements of his customers, for by so doing he may be able to convince them that it is to their advantage to purchase material which under certain circumstances would be made in their works. For instance, a seller has shown how to dispose of a round block of material by

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he had learned, even before its president, that owing to an accident a company's production of this raw material had been cut off.

## The Reliable Engineer.

FROM THE PRACTICAL ENGINEER.

The reliable engineer is nearly always a man of thoughtfulness, and in taking charge of a steam power plant with its important responsibilities, he realizes that he is taking charge with an almost independent trust of property and life. His quickness of apprehension will enable him to make proper deductions and reason logically. He will at once make himself familiar with the boilers and attachments, including all pump and piping. He will find out the smallest details to ascertain the practical workings of them. He will continue his close observation throughout the plant, and after this thorough examination, if he finds any part in bad condition, caused by neglect or inattention by the former engineer, it will be a duty to himself and employers to report the facts. He can then assume direct charge of all the boilers and machinery. If he finds that there is much work to be done in the way of stopping leaks or pounding engines, it will be advisable to search for the trouble and not attempt to remedy it too soon, but repair them, until you have gone over all the defects.

The next thing to be done is to see that the plant is economical in its operation. This is where the engineer comes in contact with all the smallest and largest details, minutely inspecting each individual part of the plant. He should exercise his authority with caution and deliberation, and must never over-estimate his own ability. Assisted by his previous experience, he will in a very short time feel right at home with his new position.

## Graphite Around a Power Plant.

BY J. C. H. IN THE PRACTICAL ENGINEER

I have met a great many engineers who do not seem to realize the importance of graphite as a lubricant around the power plant. In my plant graphite is considered to be of as great importance as oil. I have a

can in which I mix one part graphite and three parts valve oil, and in replacing the manhole and handhole plates, after washing the boilers, the gaskets are painted with it. This makes a tight joint and a gasket will last a long time when painted with this mixture.

At one time we had considerable difficulty in getting the packing to hold on the plungers of our outside packed feed pumps, when pumping against a pressure of 150 pounds steam, with water at 208 F. The square flax we were using would get hard and had to be screwed very tight to hold, causing excessive friction, and would only last a few days, although the plungers were in good shape. I bought some sectional rings of standard steam packing and put them in with a liberal supply of graphite and oil, and our packing trouble with the plungers was ended. The valve-stems, rods and plungers on the pumps, and the valve-stems and rods on the engine are swabbed three or four times a day with the graphite and valve oil mixture, and they have that glossy finish that all engineers like to see.

Graphite is also a benefit to scored rods, as it helps to fill up the scores and lubricate the packing, thus making it wear longer. As often as convenient the cylinder heads on my engines are removed and the walls given a coat of graphite and oil. The valve seats, wrist and crank pins and main bearings also get their share and I have found the graphite and oil especially beneficial when used on warm bearings. In the making of pipe joints it will be found to be better than lead, as it does not cause the gasket to stick, but will make a steam-tight joint.

Care should be exercised not to use too much of the graphite at a time, as it will bake and fill the oil grooves on the bearings; but if used with oil it will not do this but will fill in the small holes and form a good bearing.

## A Waterproofing Process.

From the Textile World Record.

A French process of waterproofing, specially adapted for hangings and decorative fabrics, has recently been patented in this country. It is described by the inventor as follows: The back of the fabric is covered with a coating composed of a mixture of whitening, or Spanish white and zinc white,

half raw oil and a drier. For this purpose the fabric, wound on a warp beam, is passed between two pressure rollers, and received between the warp beam and the roller. The composition in any suitable manner by hand or mechanically. The thickness of the coating which is variable at will is regulated by a movable guide or scraper which is arranged between the point where the composition is poured on the fabric and the pressure rollers. The fabric immediately after having been passed between these rollers, conveyed into a stove heated to about 100° where it remains 12 to 24 hours.

On emerging from the stove, the fabric is rendered absolutely waterproof and is nevertheless not changed the appearance of its front face which has remained flexible while possessing great strength. The fabric is now ready for use, but generally receives an oil decoration by printing or in any other manner. This decoration is facilitated owing to the greasy coating applied to the back of the fabric, and which has wholly or partially impregnated the latter. Instead of applying the decorated waterproof fabric it may be varnished on the front face by means of a greasy, dull, varnish having a spirit base which renders it washable, but this latter operation is not indispensable.

## To Find Percentage of Cotton.

An Answer to an Enquiry.

Editor Textile World Record.—How do I determine the percentage of cotton and wool in mixed goods? (Seneca 948).

Answer.—Weigh a sample of the fabric, then boil for twenty minutes in a 1 per cent. solution of caustic potash of 5 per cent. This treatment removes the wool and a percentage, possibly 5 per cent. of the cotton. Rinse, dry and weigh the residue, add 5 per cent., and the result is the weight of the cotton in the original sample. It is well to wash the sample in a small sack of cheesecloth while boiling it in order to prevent loss of cotton.—Textile World Record.

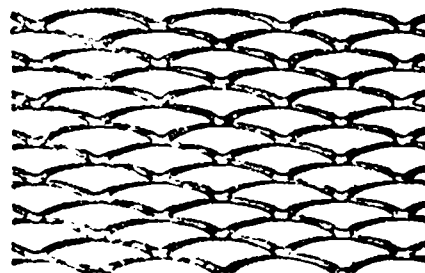
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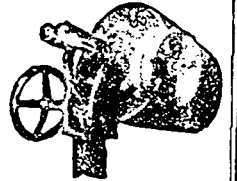
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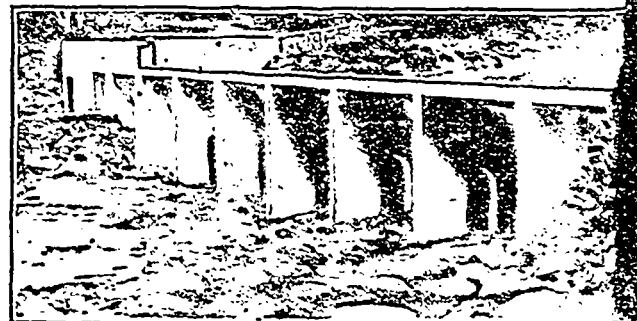
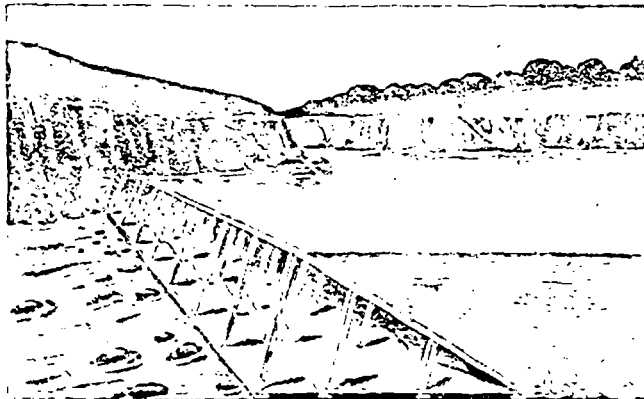
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# INDEX TO ADVERTISEMENTS.

ifo..... Inside front cover.

ibe..... Inside back cover

obo..... Outside back cover.

A	PAGE	A	PAGE	A	PAGE
Abbott, Wm., Montreal.....	9	Canada Iron Furnace Co., Montreal.....	4	Electrical Construction Co., London, Ont.....	13
Agriculture, Ontario Minister of, Toronto.....	44	Canada Paint Co., Montreal.....	14	Elk Fire Brick Co., St. Mary's, Pa.....	37
Albert Mfg. Co., Hillsborough, N.B.....	ibe	Canadian Billings & Spencer, Limited, Welland, Ont.....	7		
Algonia Steel Co., Sault Ste Marie, Ont.....	4	Canadian Boomer & Bosohert Press Co., Montreal.....	21	F	
Amburn-Hydraulic Construction Co., Montreal.....	44	Canadian Copper Co., New York, N.Y.....	35	Factory Inspectors, Ontario.....	44
Armstrong Mfg. Co., Bridgeport, Conn.....	41	Canadian Economic Lubricant Co., Montreal.....	14	Factory Locations.....	41
		Canadian Fairbanks Co., Montreal.....	11	Fell, I. C. & Co., Toronto.....	14
		Canadian Iron & Foundry Co., Montreal.....	39	Fensom, C. J., Toronto.....	15
		Canadian Manufacturer Pub. Co., Toronto.....	11	Fetherstonhaugh & Co., Toronto.....	obo
		Canadian Office & School Furniture Co., Preston, Ont.....	11	Forman, John, Montreal.....	12-41
B		Canadian Rand Co., Montreal, Que.....	43	Fyfe Scale Co., Montreal.....	14
Babcock & Wilcox, Limited, Montreal.....	44	Cassella Color Co., New York and Montreal.....	43		
Bank of Hamilton, Hamilton, Ont.....	39	Chapman Double Ball Bearing Co., Toronto.....	8	G	
Baird, H. C., Son & Co., Parkhill, Ont.....	31	Continental Iron Works, New York, N.Y.....	13	Galt Art Metal Co., Galt, Ont.....	42
Barber, Wm. & Bro., Georgetown, Ont.....	14	Crocker-Wheeler Co., St. Catharines, Ont.....	13	Gartshore, J. J., Toronto.....	14
Barrett Mfg. Co.....	31			Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.....	39
Bechtels, Limited, Waterloo, Ont.....	31	D		Globe Machine & Stamping Co., Cleveland, Ohio.....	44
Bell Telephone Co., Montreal.....	35	Darling Bros., Montreal.....	41	Globe & McCulloch Co., Galt, Ont.....	3
Berg, A. & Sons, Toronto.....	33	Dixon, Joseph, Crucible Co., Jersey City, N.J.....	41	Goldie & McCulloch Co., Galt, Ont.....	3
Bertram, John & Sons Co., Dundas, Ont.....	obe	Dodge Mfg. Co., Toronto.....	10	Goldschmidt Thermit Co., Montreal.....	14
Best Steel Castings Co., Montreal.....	6	Dominion Belting Co., Hamilton, Ont.....	9	Greeping, B., Wire Co., Hamilton, Ont.....	39
Best Inspection and Insurance Co., Toronto.....	obe	Dominion Heating & Ventilating Co., Hespeler, Ont.....	3	Greer, Wm. & J. G., Toronto.....	9
Burns-Fuller Co., Cleveland, Ohio.....	4	Dominion Oil Cloth Co., Montreal.....	9	Gutta Percha & Rubber Mfg. Co., Toronto.....	43
Burman & Connor, Toronto.....	15	Drummond, McCall & Co., Montreal.....	4		
Bushnets, Toronto and New York.....	15	Dun, R. G. & Co., Toronto.....	37	H	
Butcher, C., Montreal.....	15	Dunbar Fire Brick Co., Pittsburg, Pa.....	37	Hamilton Facing Mills Co., Hamilton, Ont.....	obe
Castrol Co., Waterbury, Conn.....	obe			Hamilton Steel & Iron Co., Hamilton, Ont.....	5
Chas. E. Mond & Co., Northwich, England.....	15	E		Harbison-Walker Refractories Co., Pittsburg, Pa.....	11
Chas. Hanbury A., Montreal.....	ibe	Eccles & Rae Machine Co., Toronto.....	9	Hay, Peter, Knife Co., Galt, Ont.....	11
Charnfield & Co., Rock Island, Que.....	ibe			Hore, F. W. & Son, Hamilton, Ont.....	9
				Horsburgh & Scott, Cleveland, Ohio.....	14
				Hunt, Robert W. & Co., Chicago, Ill.....	15
C					
Chas. Bernard, Toronto.....	9				
Chas. Chemical Mfg. Co., London, Ont.....	43				
Chas. Foundry Co., Toronto.....	12				

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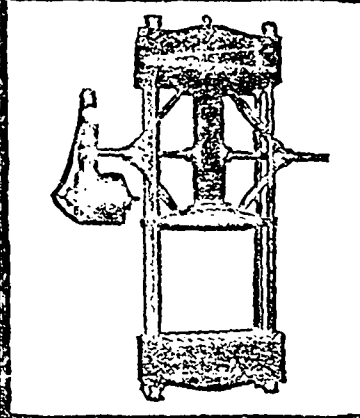
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INDEX TO ADVERTISEMENTS (Continued).

	PAGE	Mo	PAGE	R
<b>I</b>				
Imperial Oil Co., Petrolia, Ont.	11	McArthur, Corneille & Co., Montreal.	obe	
International-Acheson-Graphite Co., Niagara Falls, Ont.	39	McCullough-Dalzell Crucible Co., Pittsburg, Pa.	35	Remington Typewriter Co., Toronto.
		McDougall, John, Caledonian Iron Works Co., Montreal.	40	Robb Engineering Co., Amherst, N.S.
<b>J</b>		McGuire, W. J. Limited, Toronto and Montreal	16	Roll and Paper Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.	6	McKenzie D., Guelph, Ont.	11	
Johnson, C. H. & Sons, St. Henry, Que.	15	McKinnon Dash & Metal Works Co., St. Catharines, Ont.	obe	<b>S</b>
Jones & Moore Electric Co., Toronto.	13	McLaren, D. K., Limited, Montreal and Toronto.	41	Sadler & Haworth, Montreal.
Jones, J. L. Engraving Co., Toronto.	42			Senator Mill Mfg. Co., Galt, Ont.
				Shantz, I. D. & Co., Berlin, Ont.
<b>K</b>		<b>N</b>		Sheldons, Limited, Galt, Ont.
Kahn, Gustave, Toronto.	15	Neff, A. C. & Co., Toronto.	15	Simon Bros., Watton, Ont.
Kaye, Joseph, & Sons, Leeds, Eng.	41	Nichols Chemical Co., of Canada, Montreal	43	Smart-Turner Machine Co., Hamilton, Ont.
Kelly's Directories, Toronto and London Eng.	41	Northern Aluminum Co., Shawingam Falls, Que., and Pittsburg, Pa.	6	Smith's Falls Malleable Castings Co., Smith's Falls, Ont.
Kerr Engine Co., Walkerville, Ont.	5	Nova Scotia Steel & Coal Co., New Glasgow, N.S.	4	Spence, R. & Co., Hamilton, Ont.
				Standard Bearings, Limited, Niagara Falls, Ont.
<b>L</b>		<b>O</b>		Sterne, G. F. & Sons, Brantford, Ont.
Laurie Engine & Machine Co., Montreal	ife	Oakey, John & Sons, London, England.	41	Stevens Mfg. Co., Galt, Ont.
Legg Bros., Engraving Co., Toronto	obe	Ontida Community, Niagara Falls, N.Y.	16	Storey, W. H., & Son, Acton, Ont.
Leslie, A. C. & Co., Montreal.	obe	Ontario Lame Association, Toronto.	9	Stowe-Fuller Co., Cleveland, Ohio.
Lindsay, A. J., Toronto.	15	Ontario Wind Engine & Pump Co., Toronto.	14	Syracuse Smelting Works, Montreal and New York.
London Rolling Mill Co., London, Ont.	45	Orford Copper Co., New York, N.Y.	35	
Lowell Crayon Co., Lowell, Mass.	15	Otis-Fensom Elevator Co., Toronto.	46	<b>T</b>
Lysaght, John, Limited, Bristol, Eng., and Montreal.				Toronto & Hamilton Electric Co., Hamilton, Ont.
				Toronto Paper Mfg. Co., Cornwall, Ont.
<b>M</b>		<b>P</b>		Toronto Pottery Co., Toronto.
Marion & Marion, Montreal.	15	Packard Electric Co., St. Catharines, Ont.	13	Trussed Concrete Steel Co., Toronto.
Metal Shingle & Siding Co., Preston, Ont.	33	Park Bros., Chatham, Ont.	9	
Metallic Roofing Co., Toronto.	15	Parke, Rodrick J., Toronto.	15	<b>U</b>
Metcalf Engineering, Limited, Montreal.	11	Parmenter & Bulloch Co., Garmesque, Ont.	14	Union Drawn Steel Co., Hamilton, Ont.
Millen, John & Son, Montreal.	35	Pennsylvania Fire Brick Co., Beech Creek, Pa.	37	
Miller, W. L. & Co., Montreal.	9	Perrin, William R., & Co., Toronto and Chicago, Ill.	45	<b>W</b>
Mitchell, Charles H., C.E., Toronto.	15	Phillips, Eugene F., Electrical Works, Montreal.	12	Williams, A. R. Machinery Co., Toronto.
Monongahela River Consolidated Coal & Coke Co., Buffalo N.Y.	37	Pullan, E., Toronto	9	Winn & Holland, Montreal.
Montreal Fire Brick & Terra Cotta Works, Montreal.	15			Wire & Cable Co., Montreal.
Morris Machine Works, Baldwinsville, N.Y.	5			
Morrow, John, Serow, Limited, Ingersoll, Ont.	35	<b>Q</b>		
		Queen City Oil Co., Toronto.	obe	

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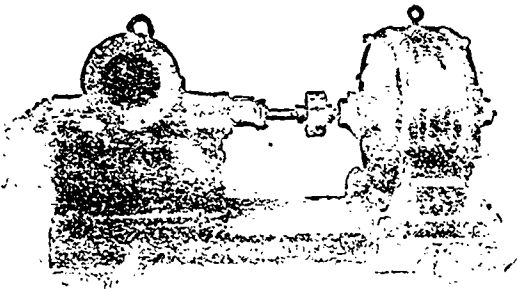
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