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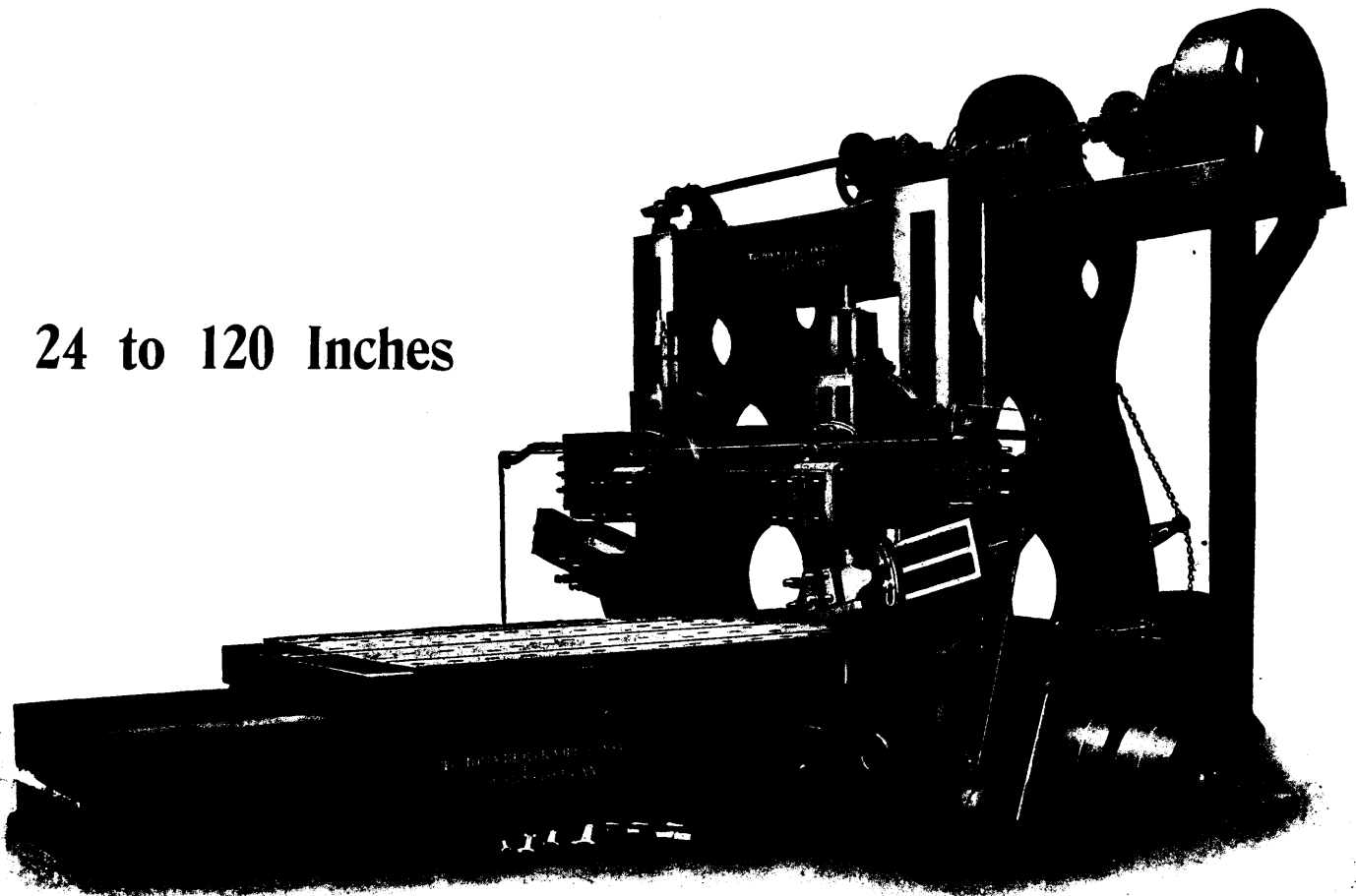
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TORONTO, NOVEMBER 1, 1907.

No. 9.

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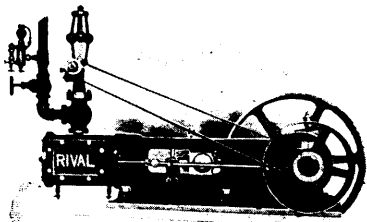
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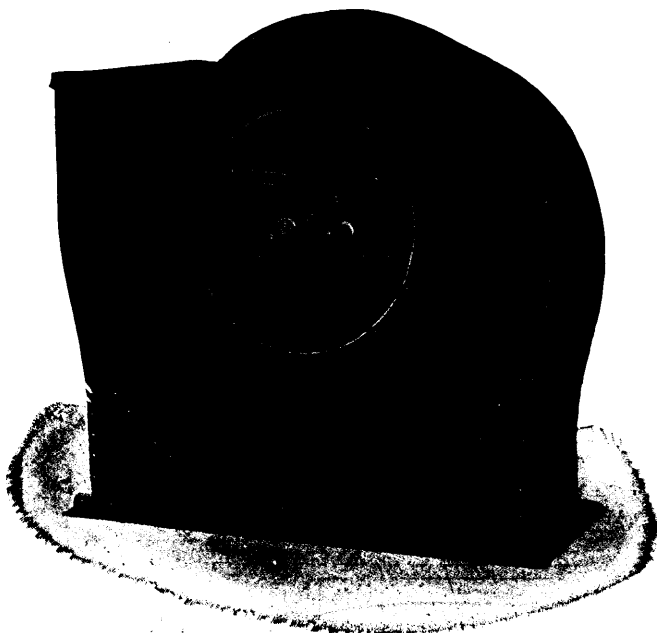
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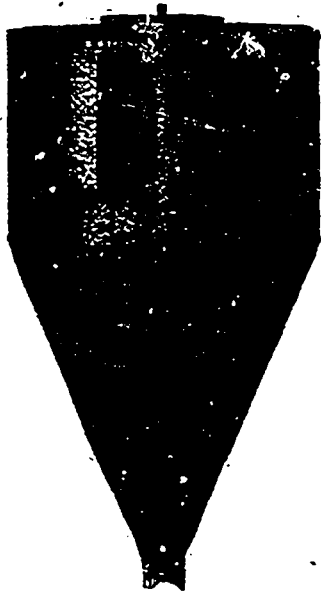
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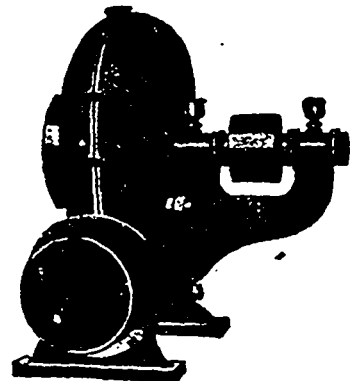
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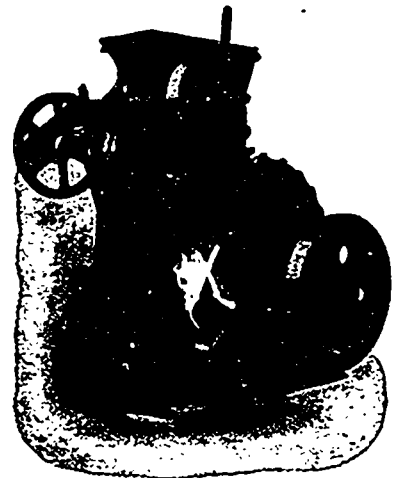


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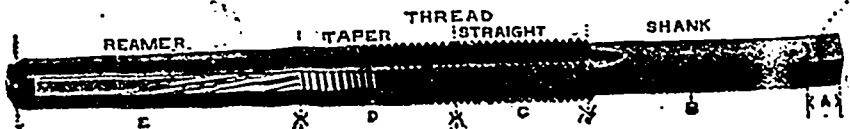


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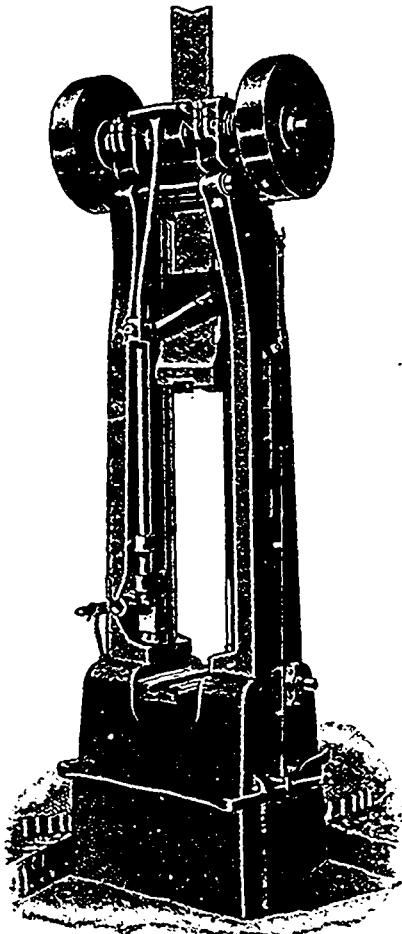
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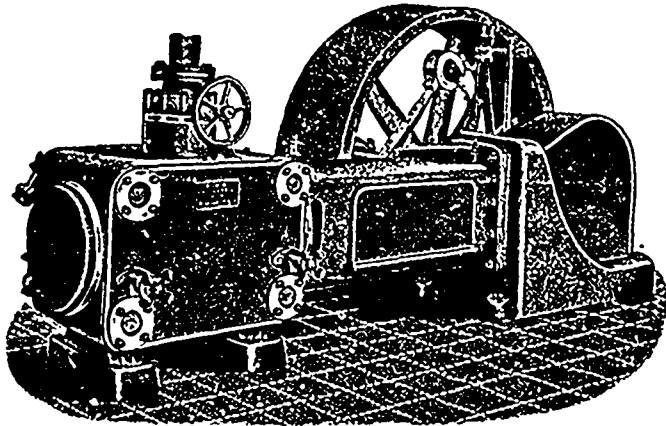


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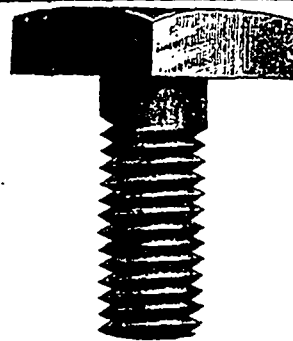
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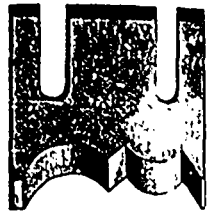
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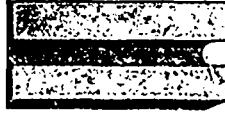
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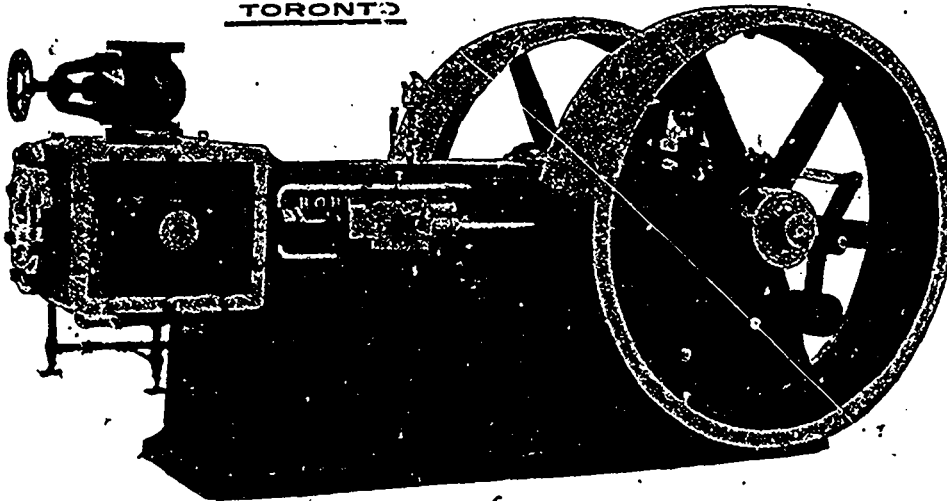
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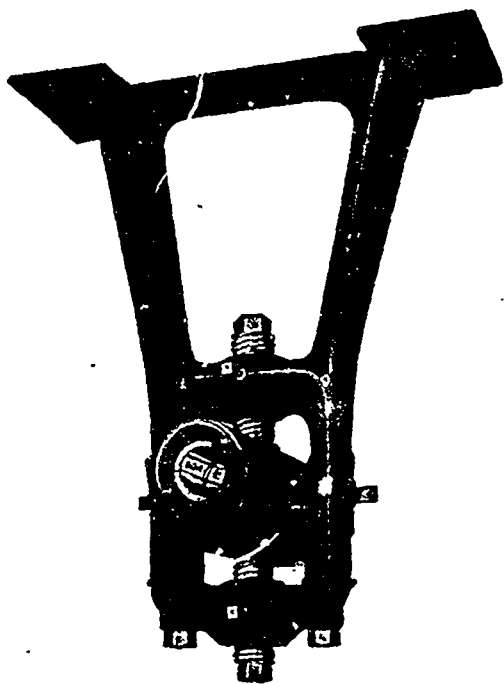
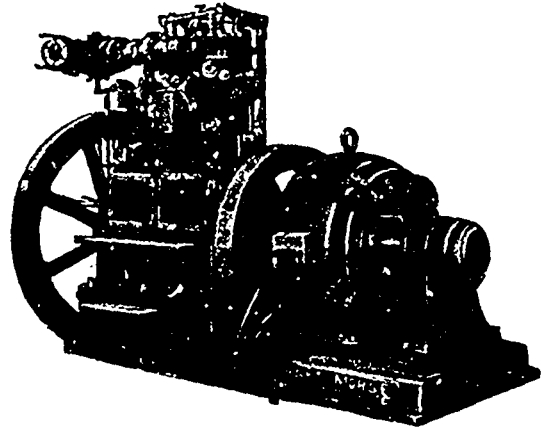
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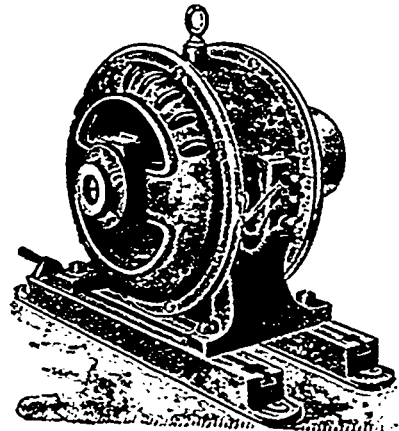
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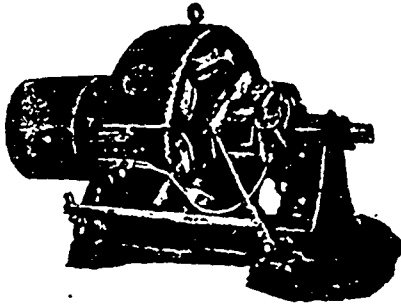
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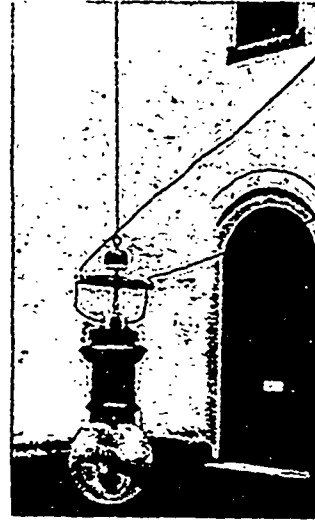
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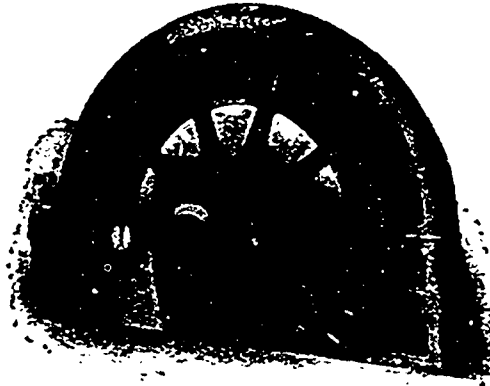
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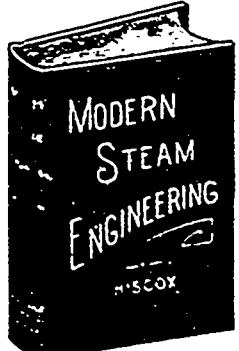
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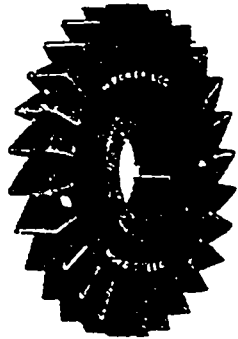
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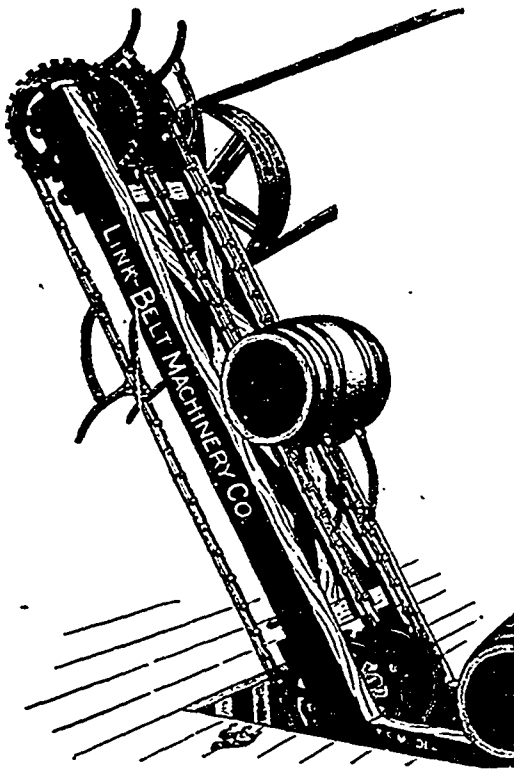
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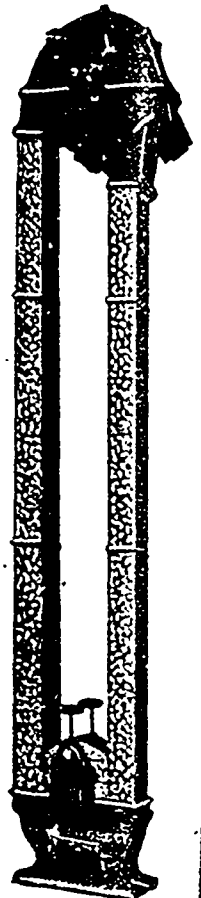
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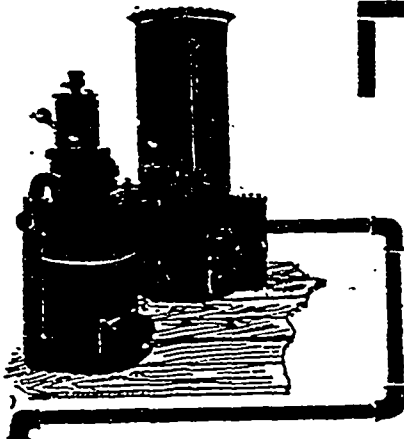
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A CANADIAN PROTECTIVE TARIFF LEAGUE.

An important election was held in Canada twenty years ago, in February, 1887, in which Sir John Macdonald was returned to power by a large and substantial majority. It was the third time that the people of Canada had endorsed the National policy of protection. Next to the tariff issue, perhaps The Globe should have been credited with contributing most to the success of Sir John, certainly in Ontario. The general conduct of that paper during the campaign was simply a disgrace to journalism, and thoroughly disgusting to the more intelligent men of its own party, even as it is at this time. Reasoning gave place to scurrility, and discussion to wild and unsubstantiated assertions. But the spirit of tariff protection prevailed.

Before the election a section of the Reform party in Ontario stoutly maintained that protection was not an issue, while another section of that party in the Maritime Provinces just as assiduously contended that a return to a revenue tariff would result in the leader of the parliamentary opposition being called upon to form a government.

The great divergency of opinion regarding protection on the one hand and the complete unanimity on the other on this question, was a matter for serious consideration by manufacturers and others favorable to fostering the desire of home production, and when it was felt that a general election was fast approaching, a number of the most prominent manufacturers met in the office of THE CANADIAN MANUFACTURER and organized an Industrial League with the avowed object of doing battle for the conservation of a policy which was so soon

again endorsed by a large majority of the people of Canada.

The part then taken by the League is a matter of history. Its plan of campaign included the publication and free distribution of tariff literature, the dissemination of lithographic cartoons exemplifying in most forcible manner the benefits of protection to the community at large, and by holding under the auspices of the League, series of public meetings at which the national policy was the central and principal theme of discussion. Regarding the influence of the League in that election a prominent Toronto daily paper said:

"The Conservative party was wise in choosing the national policy as their chief issue, artfully separated from politics, and Industrial League meetings and cartoons carried the Toronto constituencies. . . . The same methods in other constituencies had the same effect."

To the president of the League, Mr. W. H. Storey, the treasurer, Mr. Charles Knees, and to Messrs. George Booth, Edward Gurney, Samuel May and W. K. McNaught, of the executive committee, the thanks of the manufacturers were due, and were duly acknowledged. These gentlemen devoted a great deal of time to the cause in which their energies were enlisted.

In defense of their interests the manufacturers were forced to fight, and they did fight, and no doubt they will again fight when the time again comes for them to do so.

MR. GURNEY OF THE OLD GUARD.

We quote from the report of The Globe the proceedings of the first day of the recent convention of the Canadian Manufacturers' Association:

The desirability of dissociating their attitude on the question of protection from party politics was the pivot upon which the discussion of the Tariff Committee's report turned at the convention of the Canadian Manufacturers' Association yesterday. The report recommended that the question should be removed from party politics and dealt with along business lines, but the first member to take part in the discussion moved that the suggestion with regard to party politics should be eliminated. Mr. Edward Gurney, of Toronto, in a frank speech maintained that the tariff question was inseparable from politics, and charged the Association with having been pusillanimous and mean in its attitude on that subject. He declared himself in favor of a tariff "High as Haman's gallows." The motion to delete the reference to party politics was defeated, as was also a motion to cut out a clause reflecting on the courage of the Government in carrying out their tariff policy. The effect of the report, which was adopted without alteration, and of the discussion, was that the committee should get to work immediately to secure a tariff which would furnish relief to industries at present said to be suffering from unequal competition.

Mr. Gurney, who proclaimed himself an independent in politics, declared that one of the most foolish things in his business experience was the statement that the tariff should be taken out of politics. Would they tell him what in Canada was distinctive in politics outside the tariff? It was the one thing of any significance. Nothing was so important to the country as the keeping of men of first-class ability in the country, and they could not expect to do it if they said that the tariff was not in politics. Every man in the Association should take sides on the question, and the Association should adopt an unequi-

vocal position and declare that they were a high tariff body. They should look down the tariff schedule, find out what industries were hurt, go to Ottawa and never let up until these industries were taken care of. The attitude the Association had adopted was pusillanimous, mean and not worthy of business men. What they wanted to do in future was to instruct the Tariff Committee that until every industry in the country was adequately taken care of the politics of the Association would be tariff.

Mr. Jas. Kendry, of Peterboro, made a vigorous plea for greater support of the woolen industry in its efforts to obtain protection. His politics, he said, were the interests of Canada. In the matter of preference he was a Canadian first, and he urged the Tariff Committee to make a strong representation to the Government to protect the woolen industry.

Mr. Wm. Robins, of Walkerville, moved the deletion from the report of the sentence to the effect that if the Government had realized the necessity of more adequate protection they had not had the courage to put such a policy into effect. He pointed out that there was a distinction between politics and party politics.

Mr. J. F. Ellis opposed the suggested change.

A member hoped that Mr. Gurney's remark about the Association being a high tariff body would not be misconstrued.

Mr. Gurney—I would make it as high as Haman's gallows if it is to keep the Yankee out.

Mr. R. J. Younge, Toronto, said they wanted to be Canadians first and politicians afterwards, and he maintained that if they stood together against any Government which did not do justice to Canadian interests they would remove the question from the party arena.

Mr. J. Ransford, of London, said he did not call himself a Liberal-Conservative, because he regarded that as a subterfuge. He preferred the old fashioned term Tory. But he did not care what Government was in power; he would loyally support the one that protected the interests of the country. He hoped the Tariff Committee would get into the field of practical results.

Mr. George, the chairman of the committee, agreed that the association should lend every assistance towards securing protection for the industries that were suffering under present conditions.

Both motions proposing alterations of the text of the report were defeated, and the report was adopted as it stood.

Those who are familiar with the circumstances of the formation of what is now the Canadian Manufacturers' Association know that those who were foremost in the organization did not go into it as Tories or Grits, or as adherents of any political party, but as manufacturers simply, and for no other purpose than of cultivating the sentiment of tariff protection to their industries. They were successful in what they undertook; and the Association as such was faithful to its object, and persistent and consistent in carrying it out until the reorganization of 1901.

The "Old Guard" of the Association, like Mr. Gurney, were independent in politics—that is, they might have been adherents of the Grit party or the Tory party in anything or everything that distinguished the principles of the one from the other except in the matter of tariff protection, and in that they were all of them protectionists first, last and all the time; and that fact is proven by referring to the names of some of the "Old Guard" who,

for many years were independent in politics as Mr. Gurney says, but the backbone and mainstay of the Manufacturers' Association. Some of these "Old Guard" have fought their fight on earth and have gone to their reward, but most of them who yet remain are as loyally protectionist in their views as ever. Included in the "Old Guard" who did so much for the industrial prosperity of Canada, first in the organization of the Manufacturers' Association and for many years afterwards, we recall the names of Edward Gurney, R. W. Elliot, Frederic Nicholls, George Booth, W. H. Storey, Thomas Cowan, Samuel May, James Watson, William Bell, Joseph Simpson, Adam Warwick, Wallace Millichamp, Bennett Rosamond, George Pattinson, Daniel Lamb, Isaac Waterman, Charles Shirley, John Taylor, M. B. Perine, B. Greening, John R. Barber, John Fensom, H. M. Baird, Henry Bickford, John Elliott, William Christie, James Kendry, J. B. Armstrong, Charles Raymond, W. F. Cowan, J. S. Larke, Theodore Heintzman, Herman Heintzman, H. A. Massey, D. R. Wilkie, P. Freyseng, Emil Boeckh, F. Crompton, C. A. Birge, Charles Boeckh, T. D. Craig, William Chaplin, H. E. Clark, W. K. McNaught, Julian Sale, James Morrison P. W. Ellis, Robert Hay, Charles Knees, William Stahlschmidt, F. F. Dalley, F. J. Phillips, James Goldie, Alexander Gartshore, and a host of other equally prominent manufacturers whose names may be readily recalled. These were the men who brought the Association into existence and preserved its usefulness for so many years—men who, as far as protection was concerned, put all other issues aside and gave a zest and prestige to "the good old N.P." that did so much for them.

A great deal of uneasiness has prevailed among manufacturers ever since the present government came into power that, notwithstanding the assurances given that no change would be made in the tariff that would be harmful to them; but such changes are constantly being made. Manufacturers hoped for the best, and the belief or at least the hope prevailed that as on previous occasions, the Manufacturers' Association would, as in duty bound, watch with jealous eye every move of the party in power looking to any lowering of the tariff, and any abatement of the principles of the national policy, the defence of which was the sole object of its organization. Unfortunately, however, under the new organization, they forgot the God of their fathers, and wandered away and went into the service of strange gods. They declared that the tariff was not in politics, nor ought it to be, and forthwith got up a pilgrimage to Great Britain where they immediately meddled in the political affairs of that country, in the cause of Chamberlainism; and a declaration in favor of a preferential tariff in favor of British manufacturers has been a feature of every annual meeting of the Association since the reorganization. No wonder Mr. Gurney charged the Association with being pusillanimous and mean in its attitude on the tariff question. It was the one thing of any significance in the aims and objects of the Association. Every man in it should take sides in its behalf, and the Association should adopt an unequivocal position and declare that

it was a high tariff body. The advice of Mr. Gurney was that of an "old guard" still on duty, determined to die at his post rather than surrender to open foe or mistaken friends.

ENTANGLING ALLIANCES BY TREATY.

Upon the occasion of the recent visit to Europe Mr. Fielding, Canada's Finance Minister, and Mr. Brodeur, Postmaster General, visited the capitals of France, Germany, Italy and other countries in the interest of the trade and commerce of this country. In due course information came from Paris that the Minister had entered into a treaty with the French authorities, which had been assented to by the British Government, by which our trade with France would be affected, by which we mean that France would reduce her duties upon certain Canadian products, and Canada would in consideration thereof reduce her duties on certain French products. The particulars of this treaty have not yet been made public, nor will they be until it is presented for ratification by the Canadian Parliament.

When the Ministers returned home in October they landed at the city of Quebec, where they were given a grand reception, at which the ministers were present with an address by Mr. George E. Amyot, president of the Board of Trade and a prominent member of the Canadian Manufacturers' Association. Mr. Amyot congratulated the ministers upon the success of their mission, which meant, he said, the commercial emancipation of Canada, since the treaty they had negotiated was claimed to be the first treaty of commerce concluded with a foreign country by Canadian statesmen.

Mr. Fielding made the principal reply. He said it was not quite exact that the present treaty was the first negotiated by Canadians directly with a foreign power. One was so negotiated with France 14 years ago, and while he did not condemn it, seeing it was a step in the right direction, yet it was not altogether equitable. It was true they might have asked for its renunciation. This might have prejudiced the entente cordiale between England and France, however, and they preferred to meet the French government and reason the matter out with them.

He did not pretend that they had scored any great point against the French government, and told his auditors not to expect anything sensational when the details of the treaty were laid before parliament, where they must first become public, but he believed that no interest in Canada had been prejudiced by anything they had done, while much had been accomplished towards proving that Britain has given us complete freedom in the negotiation of commercial treaties, and towards the maintenance of the entente between England and France, and so of the peace of the world.

A few days later Mr. Fielding was accorded a similar reception at Halifax, at which Sir Wilfrid Laurier participated. Responding to the address which had been tendered him Mr. Fielding said in part:

"You have referred to the work upon which, in conjunction with my friend, Mr. Brodeur, I have recently been

engaged. in the negotiation of the new treaty between France and Canada. There are sound diplomatic reasons which prevent for the present the publication of the terms of that treaty. But there is no reason why I should not explain the circumstances under which the treaty was negotiated and the general line upon which we deemed it necessary to act. At the last session of the Canadian Parliament we introduced a new feature into our tariff policy. We provided three tariff columns—first, the British preferential tariff; second, an intermediate tariff, and third, a general tariff. The British preferential tariff was to apply to the mother country, and to some other portions of the empire. The general tariff was to apply to countries with which we have no particular commercial arrangement. The intermediate tariff was designed to be the instrument for negotiation with such foreign countries as we might wish to deal with in the interests of an extension of Canadian trade.

"There was, however, a further reason which was entitled to some weight. Our chief competitor in foreign markets must always be the enterprising country to the south of us—the American Republic. Our American friends already have a treaty with France, and it was within our knowledge that they were seeking a much broader one. It seemed desirable, therefore, that we should open up negotiations with the French authorities with a view to obtaining, as far as possible, favorable consideration in the French markets for the produce of Canada. In entering upon these negotiations there were several principles which we endeavored to keep in view. In the first place we desired to retain for the industries of Canada whatever advantage was accorded to them by the tariff policy of last session. In the next place we desired, as far as might be possible, to retain for British industry the advantages accorded to it by the difference of rates under the preferential and intermediate tariffs. I think it will be found that we have adhered pretty closely to these governing principles, and that, while securing reasonable concessions from our French friends, we have given them only fair and reasonable concessions in return. No negotiations of this character could be carried on successfully unless there was on both sides a disposition to give and take, to grant favor for favor. It was in this spirit that we approached the French government. It is due to them that I should say that they met us in the same good spirit. The best transaction in ordinary business or national business is that in which both parties feel that they have made a satisfactory arrangement, where there is an advantage to both in the transaction. Our belief is that this will be found to be the case in the new treaty when its terms are made public. It will, we believe, be a good treaty for France, as well as a good treaty for Canada. The treaty itself, we hope, will be found to be one of importance and of value. But the manner in which the treaty has been negotiated is in itself of much interest, and perhaps I might say of much importance.

"Never before was the fiscal freedom of Canada so fully recognized as it has been in the negotiations. A Canadian agent, it is true, had a part, as I pointed out,

in the treaty of 1893; but that treaty was a very modest one, covering very little ground, and, therefore, did not command much attention. The present treaty is one which is much broader in every way, and must take a place amongst the important treaties of his Majesty. In times past complaint has sometimes been made that Canada was not as free as she should be in negotiations touching her relations with foreign powers. I shall not stop to consider how far that criticism has been justified. But whatever may have been thought and said of past international negotiations, I am glad to be able to say that no Canadian can find the slightest fault with the attitude of the British government in connection with the recent negotiations. On the contrary, we have every reason to feel grateful that his Majesty's government have recognized so fully and so frankly the right of Canada to determine for herself her commercial relations.

"Of course, the making of a treaty with a foreign power is and must be an Imperial matter. It is the sovereign power in every country which makes treaties, and the sovereign power of Canada, as we are all proud to acknowledge is his Majesty King Edward. The Imperial government had its part to play in the business, but it was a part which was taken, not to embarrass us, not to restrict us, but to assist us at every point. My colleague, Mr. Brodeur, and I went over to Paris as Ministers of Canada. But we were more than that, we went also as the accredited representatives of his Majesty the King, authorized in the fullest manner to represent him in the negotiations concerning his Dominion of Canada. It seems to me that this is a fine example of the liberty which Britain so generously extends to her self-governing colonies—a liberty which, undoubtedly in the case of Canada, has conferred much happiness on our people and at the same time bound them more closely than ever to the throne and person of our Sovereign."

Neither Sir Wilfrid Laurier nor Finance Minister Fielding have publicly stated that other countries than France are to be benefited to the extent that France is to be by the treaty—that is a feature of it that will be made known at the forthcoming meeting of Parliament. But we are told in *The Globe* that "the new Franco-Canadian treaty will affect Canada's tariff duties on imports from Japan and from other nations included in the most-favored-nation clause. Under that clause all British countries, Argentina, Austria-Hungary, Bolivia, Colombia, Corea, Denmark, France, Algeria and French colonies, Japan, Siberia, Morocco, Persia, Sweden, Salvador and Venezuela are entitled, in return for trade and tariff granted Canada to the tariff rates granted the most favored nations.

With these special trade favors to be shown France and other countries under the treaty, it is not to be supposed that that great rival of France, Germany, will quietly submit to the sur-tax now imposed on imports from that country, and we already hear that a trade treaty similar to that with France is in course of formulation between Canada and Germany—that Germany is to be accorded by Canada most favored-nation treatment. Why not? In fact the result of this French treaty, if not the in-

attention, will be to allow almost every country of the world to the privileges of the ground floor tariff. It does not appear that in the arrangement the United States is to be included, but why not? Great Britain and the United States are on exceedingly friendly terms, and if the British government insists upon it the reduced rate will no doubt be granted the Yankees also.

When will the tariff complication stop? We know that both Sir Wilfrid and Mr. Fielding are free traders at heart, and have promised to give us the same sort as they have in Britain. Sir Wilfrid inaugurated his government first by reducing the general rate of duties and the granting Great Britain a discount of 33½ per cent. reduction on them, in which the Canadian Manufacturers' Association most heartily concurred, and a most cordial invitation was extended to all British possessions to come in and accept what we had to offer. The plea for doing this was that Canada was a part and parcel of the British Empire, all parts of which are akin. But in that light we are not akin to France, nor Germany, nor Japan, nor any other of the countries who are to enjoy our tariff concession under the French and German treaties. The peculiar advantages that Great Britain has enjoyed under the preferential tariff are to disappear and sink out of sight through Canada becoming a nation and flinging our doors wide open to the countries of the world on the plea of being most-favored nations. These entangling alliances, this intricate and far-reaching amateur statesmanship, is at the expense and sacrifice of Canadian manufacturing industries.

THE AUSTRALIAN TARIFF.

In the October 18 issue of *THE CANADIAN MANUFACTURER* we published in full an authentic copy of the new Australian tariff, which was introduced in the Commonwealth House of Representatives on August 8 last, and which went into effect on that day. It is to be considered in detail by the Commonwealth Parliament, and may be altered during its progress through that body. The Australian Parliament is constituted very much the same as the Dominion Parliament; and while the new tariff in the Australian Parliament went into effect immediately on its introduction, as in Canada, it must be discussed and ratified before it becomes law permanently, the same as in Canada. Of course, the Government has a sufficient backing of adherents in the House to pass the bill as it was presented; and it is not probable that any material or important changes will be made in it. Unlike the Canadian tariff it is protectionist throughout, and intended to build up the manufacturing industries of the country.

There are 444 items included in this tariff, divided into 16 divisions, each relating to articles of similar general character.

There are three columns of tariff rates, the first giving the rates mentioned in the previous tariff, same as published in the issue of this journal of May 7, 1907, under which there was no tariff preference to any country. The second column shows the new rates of the general tariff, applicable to all countries except Great Britain;

and the third column shows the tariff on goods the produce or manufacture of the United Kingdom.

The previous tariff contained but 139 numbered items, but many of these referred to many different articles, the classification and location of which in many instances have been changed in the new tariff, hence the increased number of items. Each of the 444 items enumerated in the new tariff shows what the condition of the article was in the old tariff. If it was dutiable the rate of duty is given; whether it was not tariffed, or if no special provision was made for it. Under that arrangement it is shown that of the 444 items enumerated in the new tariff, under the previous tariff 214 items were free of duty; while in the new general tariff, but 119 free articles are enumerated, the free list extending to 196 items on goods the produce or manufacture of the United Kingdom. In other words, in the new general tariff there are 95 fewer free articles than there were in the old, and as applied to British goods, only 18 fewer.

EDITORIAL NOTES.

An important alteration has become effective in the Imperial penny postage scheme, and the following are now the rates of postage on letters:—Canada, the United States, Mexico, Egypt, the United Kingdom and British colonies, except Australia and Rhodesia, 2c. per ounce; other postal union countries, 5c. for the first ounce and 3c. for each additional ounce or fraction thereof.

The postage on letters to Great Britain, Egypt and all parts of the British Empire has hitherto been 2c. per half ounce or fraction thereof, but, as stated, will in future be 2c. per ounce or fraction thereof. Since Australia and Rhodesia have not yet signified their adhesion to this change in the unit of weight, the rate of letters to these colonies will be as hitherto, 2c. per half ounce or fraction thereof.

The postage on letters to all postal union countries, with the exception of Great Britain and the British colonies mentioned in the foregoing paragraph, and of the United States, Mexico and Egypt, will be 5c. for each letter weighing one ounce or less. On letters weighing more than one ounce the postage will be 5c. for the first ounce and 3c. for each subsequent ounce or fraction of an ounce. This rate supersedes the former postal union rate of 5c. per half ounce.

The Sydney, N.S., Chamber of Commerce has passed a resolution pointing out that foreign Governments are undermining British trade. The resolution calls for a preference. It is a significant circumstance that all reports of the ruin of British trade and manufacture emanate from the protection colonies.—The Globe.

It is a significant circumstance that The Globe does not seem to know what it is talking about. It should read the many reports that have been published by the British Tariff Commission about the forlorn conditions of the manufacturing trades in Great Britain, and the similar information constantly being published in the best and most reliable newspapers in that country. With the exception of The Globe, the reports published in the protectionist colonies regarding the decadence of many British industries, emanate from respectable journals.

A special despatch published in The Globe a few days ago says:

Mr. J. P. Knight, of Sydney, N.S.W., is at present visiting Montreal. His mission to Canada is to do what is possible to increase trade between New South Wales and the Dominion. He points out that the new Australian tariff provides for a strong preference for the products of British workshops in the Commonwealth, and his people are anxious also to trade with Canada. In speaking of the matter he said:—"The policy adopted by the Deakin government is that Australia does not want to import anything that can be produced there, and that duties should be fixed to prevent such importations. But if it is necessary to import anything, then we would prefer to import it from the other countries of the empire, and, therefore, the duties are so arranged as to give a decided preference."

The "strong preference" amounts to 5 per cent. we believe, in favor of British goods entering Australia, and if that preference is not increased, and if the general tariff is high enough to afford adequate tariff protection under all circumstances, Australian manufacturers will be successful. Unlike Canada, Australia seems inclined to avoid entangling alliances. Even 5 per cent. is a generous donation to the decadent manufacturers of the Mother Country.

Adequate protection is no longer talked of by Mr. Borden. His platform now is "reasonable protection." Isn't that already in force?—Kingston Whig.

Reasonable protection, or adequate protection is not in force in Canada. According to recent census bulletins there were some 200 different manufacturing industries in operation in Canada in 1900 and also in 1905. Of these some 66—or about one-third, produced goods of a less value in 1905 than in 1900. There was not only a smaller value of products, but they gave employment to a less number of hands, and a smaller amount of wages. Perhaps the Kingston Whig is unaware of the fact, but if adequate protection, or reasonable protection had not been denied the result would be different.

The first Australian blast furnace for the production of steel has been started at Lithgow, in New South Wales. The State abounds in deposits of iron ore, and coal being plentiful, there is every prospect that a great industry will be developed.

A press telegram from London a few days ago says: Two hundred and fifty arsenal workers from Woolwich are sailing for Canada on Tuesday, making nearly 3,000 who have gone to the colonies, principally to the Dominion.

The workmen at the Woolwich arsenal are and were of the best and most skilled artisan in the world, their occupation being the manufacture of arms and ammunition for the British Army and Navy. Why should nearly 3,000 of them from one arsenal alone, become exiles from their native land? The fact is there is not enough work for them and thousands of other equally skilled artisans in free trade Britain, and these are the ones who must either starve, go to the poor house or seek and find occupation in protectionist countries.

Steam Power Plant for Electrically Operated Works.

THE MCGREGOR-GOURLAY CO., OF GALT, ONT., INSTALL NEW PLANT.

Every year the power problem looms up larger and larger and becomes one of greater importance for the manufacturer to deal with. With the increase in the cost of fuel resulting in additional annual expenditure to be placed against the power outlay, the general manager is brought more and more to face the

aries with all the attraction that low power costs have to offer. In Canada where for several months buildings have to be artificially heated, the steam engine will always have a host of followers, apart from the fact that of late years the efficiency of this prime mover has been greatly increased. In many instances, producer gas plants have been installed with satisfactory results, where it is claimed that much lower fuel consumption per power unit is assured. For some years past these have had a wide application in England and on the continent, but as yet have seen no general

ning side by side with the power it is assured that steam-driven units will always have their following throughout the entire Dominion. In building new plants or making changes and modernizing old ones the power problem is one of the first to demand attention from the fact that it is all important. Operation must be continuous under all conditions, efficiency a maximum for the type of plant used and operating costs as low as possible. Power users everywhere have come to a realization of this fact, and it is worthy of comment that some of the finest power plants to be

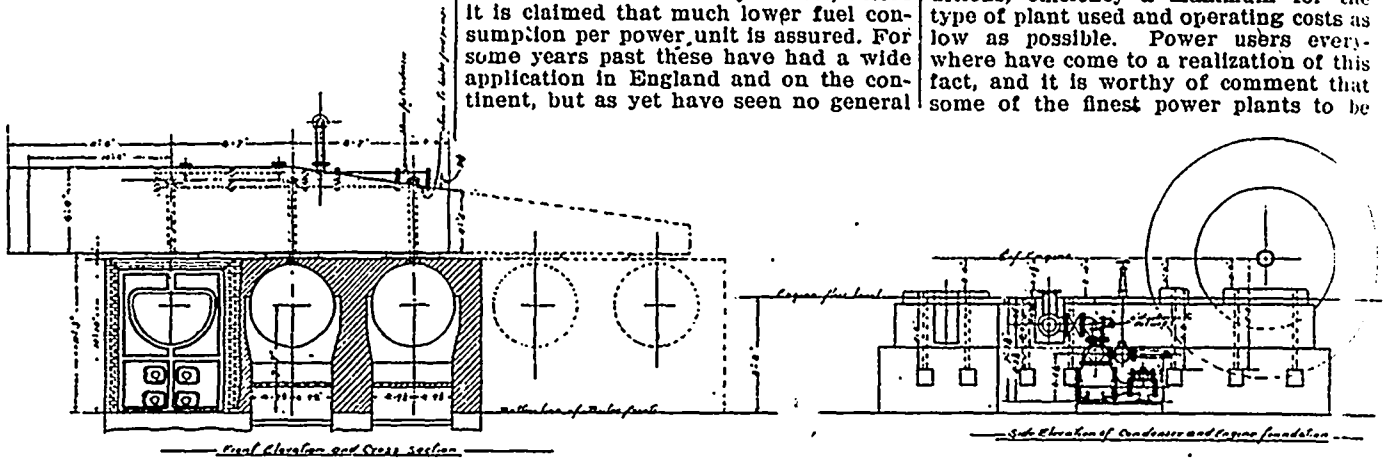


FIG. 1—POWER PLANT MCGREGOR-GOURLAY CO.—TWO SECTIONAL VIEWS SHOWING BOILERS AND CONDENSER AND ENGINE ROOM.

fact that the power house is a place where the utmost economy must be effected with a maximum of efficiency. Inferior boilers, low efficiency engines, poor firing, a grade of fuel not up to the standard, lack of proper auxiliary apparatus, are all features that have meant the wasteful expenditure of thousands of dollars during past years such that it is incumbent upon the manager of every industrial institution to produce the power at a minimum cost. The power problem in general is of such importance as to become a leading issue in provincial politics. City and town councils are dealing with it, as best they know how, that manufacturers may be induced to settle within their bound-

adoption in Canada. While it is conceded that electricity is an ideal power, it must be obtainable at a price in keeping with the cost of power from other sources. In the Province of Ontario we have abundant water power for the production of electricity, and in the western peninsula abundance of natural gas, both of which have been and will be to a greater extent adopted for power purposes. With the heating problem run-

seen anywhere have been installed in recent years in this country.

The role steam has played in the industrial development of the world during the past half century, if given its proper credit, would be almost beyond belief, and to attempt to conjecture as to the part this all-important source of power is to play in the world's future would be useless. With all its rivals for the front rank in the power-producing

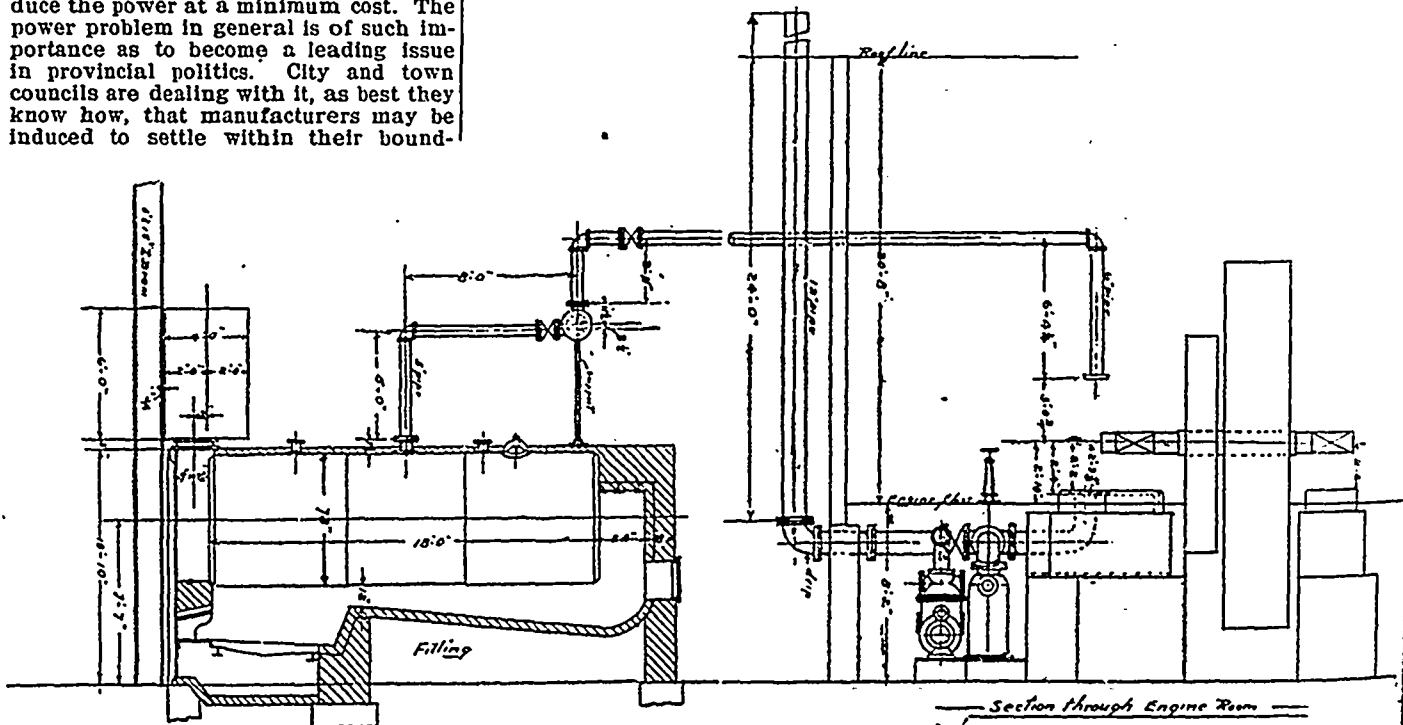


FIG. 2—POWER PLANT MCGREGOR-GOURLAY CO.—SECTION OF BOILER AND ENGINE ROOM.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

field, the modern steam-engine still exerts a powerful influence and must do so for some time to come. Not many years ago, when the question of a power plant was under consideration, where water power was not to be had, the steam engine was the only other available source, and the question to decide was the style, make and power of the unit or units to be put in. To-day there are several, all reaching out with their various claims for supremacy.

When the MacGregor-Gourlay Co., of Galt, Ont., decided to double the capacity of their plant, to modernize it in every detail, to run all the machinery rated at 450 h.p. Another important consideration was that of the boilers, one of their Goldie-Corliss engines,

The general lay-out of the boiler-room and engine house is shown in the full-page diagram, and includes the which were likewise supplied by the Goldie & McCulloch Co., as well as the condenser, pumps, and feed water heater, while the contract for the generator, electrical apparatus, switchboard Goldie-Corliss 450 h.p. engine already mentioned, a battery of three return tubular boilers, 72 in. diameter, 18 ft. long, each carrying a pressure of 125

ing lighting or for running any one department, consisting of a 40 h.p. Leonard-Ball automatic steam engine belted to two 17 k.w. Toronto Electric Motor Co.'s generators.

GENERAL FEATURES.
The relative situation of the boiler

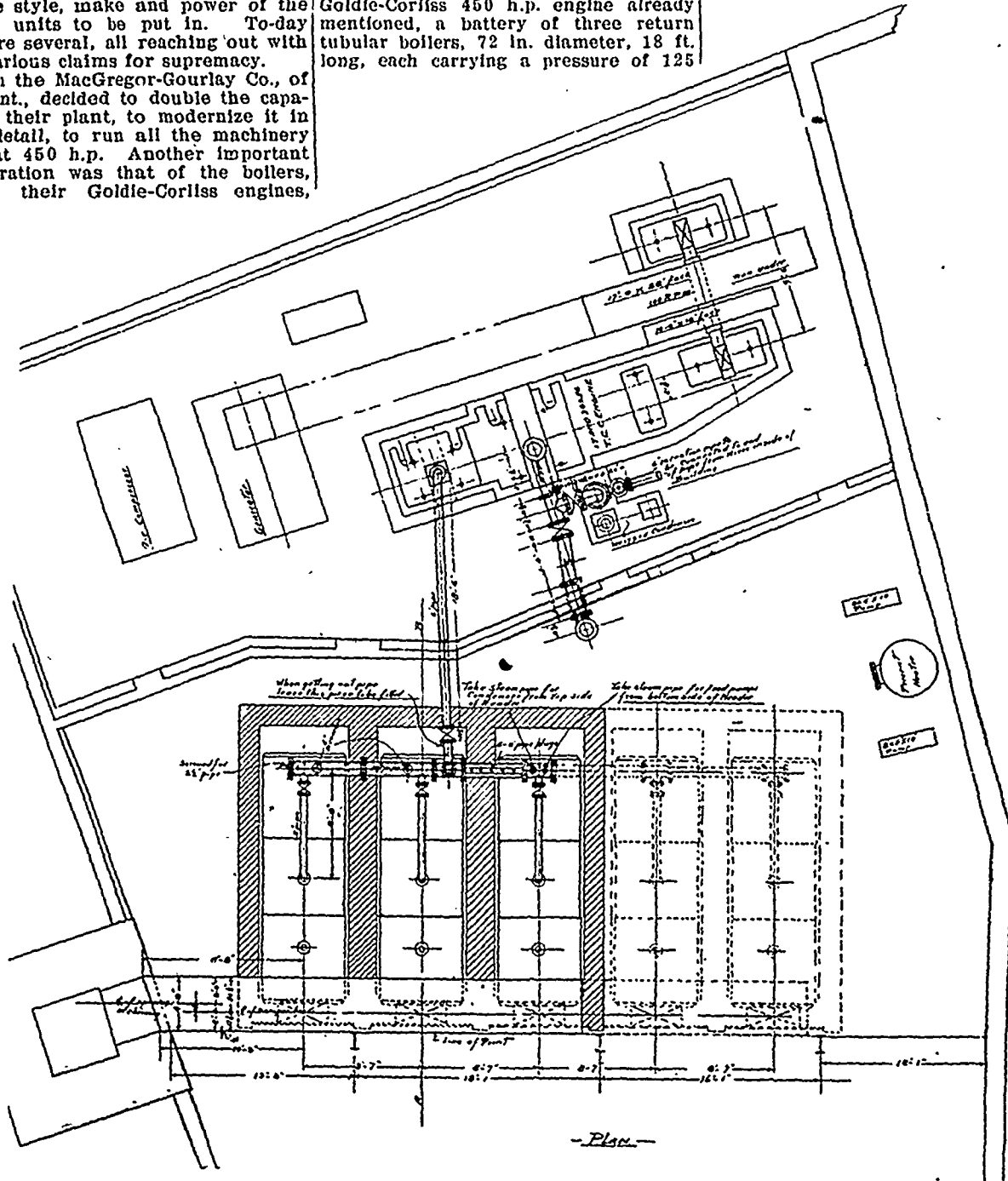


FIG. 3.—POWER PLANT MACGREGOR-GOURLAY CO.—PLAN SHOWING GENERAL LAY-OUT OF PLANT.

by individual or group motor drive, and to put in a complete new and up-to-date power plant, the power question came in for thoughtful consideration and elicited considerable discussion on the part of the managers of the company, in which the steam engine won the day, the contract being given to the Goldie & McCulloch Co., of Galt, for and motors for various departments was given to the Canadian Westinghouse Co.

lbs.; a jet condenser with independent air pump, 10 in. and 17 in. x 15 in.; two boiler feed pumps, 8 in. and 5 in. x 10 in.; a Moffatt No. 7 feed water heater; a 300 k.w. Westinghouse generator belted to the engine; a high-class four panel marble switchboard installed by the Federal Electric Co., of Toronto, with Westinghouse volt meters, ammeters and controlling apparatus; a Rand compound air compressor and an auxiliary plant for morning and even-

house and engine room is at once seen from the diagram. The boiler house floor is 8 ft. 2 in. below that of the engine room floor, the latter being approximately on a level with the G. T. R. tracks which run alongside the power house, a spur line of which runs through the boiler room. Pennsylvania lump and nut soft coal is delivered in hopper bottomed cars, and when dumped fall to the level of the boiler house floor into a coal bin 125 feet long

and 15 feet wide, immediately in front of the boilers, thus eliminating all unnecessary handling of coal. The fact that the boiler room is sufficiently far below the engine room floor to allow the condenser being placed on a level with it, makes the latter easy of access and saves placing it in a pit, as is frequently the case.

with a means for adjusting the amount by which one plate laps the other when hooked in. The valve stem lever is keyed to a spindle and is also split on one side and clamped, thus making it impossible for it to become loose. The lever is placed inside the bonnet, which brings it close to the valve and correspondingly reduces the effect of twist-

superior to the ordinary fly-ball governor, the steadiness is a feature, there being no tendency whatever to "race."

INDEPENDENT AIR PUMP AND JET CONDENSER.

An illustration is given of the independent air pump and jet condenser. The exhaust steam from the engine, pumps, etc., is admitted into the top of the condenser, and on its descent is met by a fine spray of cold water coming in the opposite direction through a spray pipe. By this process a complete mechanical mixture of the steam and injection water is obtained. A vacuum is thus formed by the water depriving the steam of nearly all its latent heat and condensing it. The air pump removes the condensed steam and injection water from the condenser, the action being continuous.

The condenser is provided with an automatic vacuum breaking device, consisting of a float and valve opening to the atmosphere. Where water is available a great saving of fuel or corresponding increase of power can be obtained by the use of these condensers. It is a well-known fact, that the atmospheric resistance, together with the back pressure and exhaust passages and pipes is so much power taken from the steam on the engine piston. When the steam in an ordinary non-condensing or high-pressure engine has performed its work in the cylinder it is ejected into the atmosphere against atmospheric pressure usually reckoned at fifteen pounds to the square inch. The work of the condenser is to remove this back pressure and form a constant vacuum equal to thirteen or fourteen pounds per square inch on the exhaust side of the piston, and the steam can consequently be expanded to nearly the absolute zero of pressure, thereby obtaining its full expansive power. The use of a condenser causes a saving of



FIG. 4—AUXILIARY POWER PLANT.

THE ENGINES AND BOILERS.

The three boilers are arranged side by side, leaving sufficient room for the addition of two more at any time. Manual stoking is adopted. Each of the boilers is supplied with a Diamond flue cleaner, made by the Diamond Flue Cleaner Co., Windsor, Ont. These are steam cleaners by means of which, simply by turning on steam and manipulating a crank, every flue in the boilers may be cleaned. The valves used are manufactured by the Lunkenheimer Co., of Cincinnati, Ohio.

For convenience a tank for the storage of air for the air compressor rests on the boiler foundations and is situated immediately above them.

The tandem compound engine has a high pressure cylinder of 17 in. and a low pressure of 34 in., with a 36 in. stroke, and runs at 100 revolutions per minute. The illustration given shows the valve gear in the engine. The valve gear is operated by two eccentrics, one operating the steam valves and one the exhaust valves. The chief advantage of this arrangement is that the governor maintains control of the cut-off up to three-quarters stroke, instead of losing the control before half-stroke, as is done with a single eccentric engine. An additional advantage is that the exhaust valve can be adjusted to open and close the exhaust at exactly the proper time. The steam valves are driven direct from the eccentric without a wrist plate. The exhaust valves are driven through a combination of short links and cranks which gives the same effect as a wrist plate. As this whole motion is supported on the bonnet itself, there is no toggle strain pending to push the bonnet sideways, as there is with a wrist plate. The wearing surfaces are large and the hardened steel latch plates have eight wearing surfaces and are provided

ing action on the spindle. The device for unhooking the motion from the eccentric rod in order to operate the valve here by hands is very simple. By rotating the small handle half a revolution, the reach rod is permitted to pass freely back and forth through the block. The dash pots are of standard vacuum type.

Another special feature of this en-

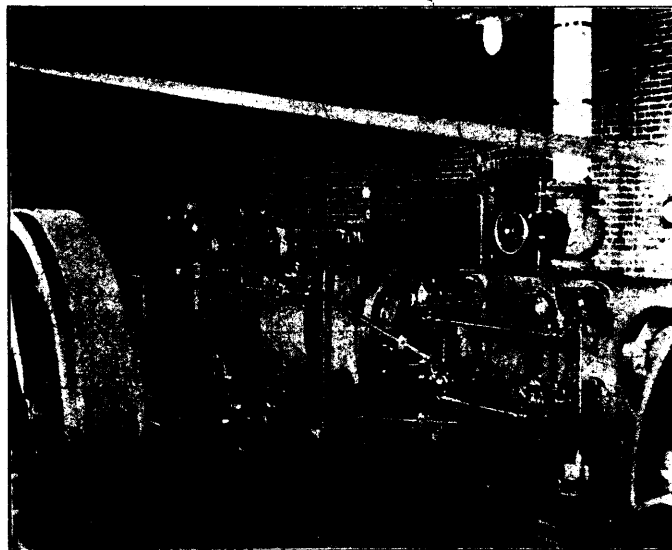


FIG. 5—GOLDIE & McCULLOCH ENGINE IN POWER PLANT.

gine is the Rites governor, of which an illustration is also given. The particular features of this governor are its quickness and sensitiveness, due to the use of inertia, coupled with small amount of friction and steadiness under the strain of tripping the valve gear. While the degree of regulation is much

from 20 to 25 per cent. or increases the power from 20 to 25 per cent.

MOFFATT HEATER.

Heat is supplied to the heater by exhaust steam from the pumps and condenser and enters at bottom of heater at inlet pipe "I" (see cut), passing up

into enclosed drum "14" of Moffatt Patent Oil Extractor. When steam, water of condensation and oil are discharged downwards through cups "T" into upturned cylinders where oil and water are left behind to pass to drain for sewer at pipe "U" or "10." Steam then rises around drum and enters steam pipe "I" at "P," ascending to disc "K," being discharged at opening "4," filling chambers with steam and passing also around under incline head in chamber "3." Steam now works up through filtering matter, and enters steam pipe at "5," breaking out again at "4," filling chamber, and then passes upwards at "5," being discharged at "6," where it comes into contact with cold water under disc or diaphragm, then passing around and out at opening "A" to the heating coils or atmosphere. Cold water is admitted at automatic supply pipe "7," where it is sprayed and broken up into fine particles, then falls downwards into perforated sections, where it is evenly distributed over filtered bed "1." Here it passes through from eighteen inches to five feet of excelsior (according to the size of heater used), and, as it percolates, comes into contact with thousand rough surfaces, to deposit the mineral matter. At the bottom of chamber "1," water meets with burlap cloth, arranging in number from three to seven thicknesses, passing through it again, falls in a fine spray through the steam, when the same as above process is gone through in chamber No. "2." After passing through No. "2," water falls into slanting head of heater and is conveyed to side of machine and falls into scumming chamber, which is a cross section of heater, and water pipe, until within four inches of bottom of water chamber of heater. The hot water then passes under bottom of

into pure water hot well "11." It is in this lower part of the system that the quicksand and clay are precipitated and held back from feed water. Suction

pass into chamber below. A heater requires to be cleaned every week or ten days, or longer, according to the quality of water. All heaters are fitted with

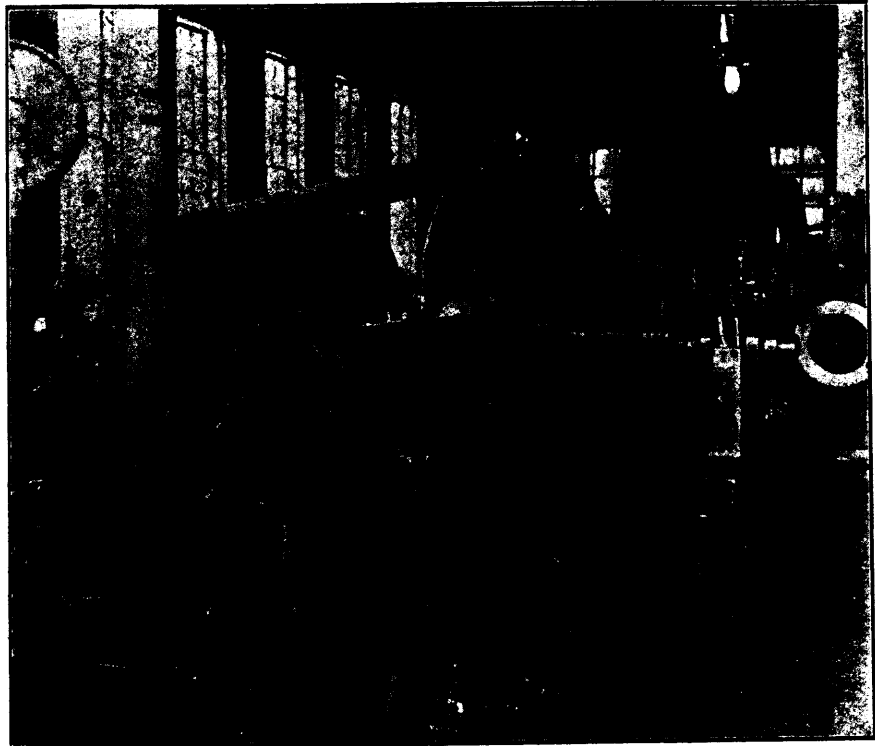


FIG. 6—POWER PLANT—MACGREGOR-GOURLAY Co.—VIEW SHOWING AIR COMPRESSOR AND GENERATOR.

pipe is placed in bottom of hot well "11." "12" is "blow off" to empty water chamber, "13" is scum cock. "14" is "by pass," so if top chamber at any

self-draining floats and automatic regulation for cold water supply. "B" is trap overflow, 2 1/4 feet being allowed on every pound of back pressure required

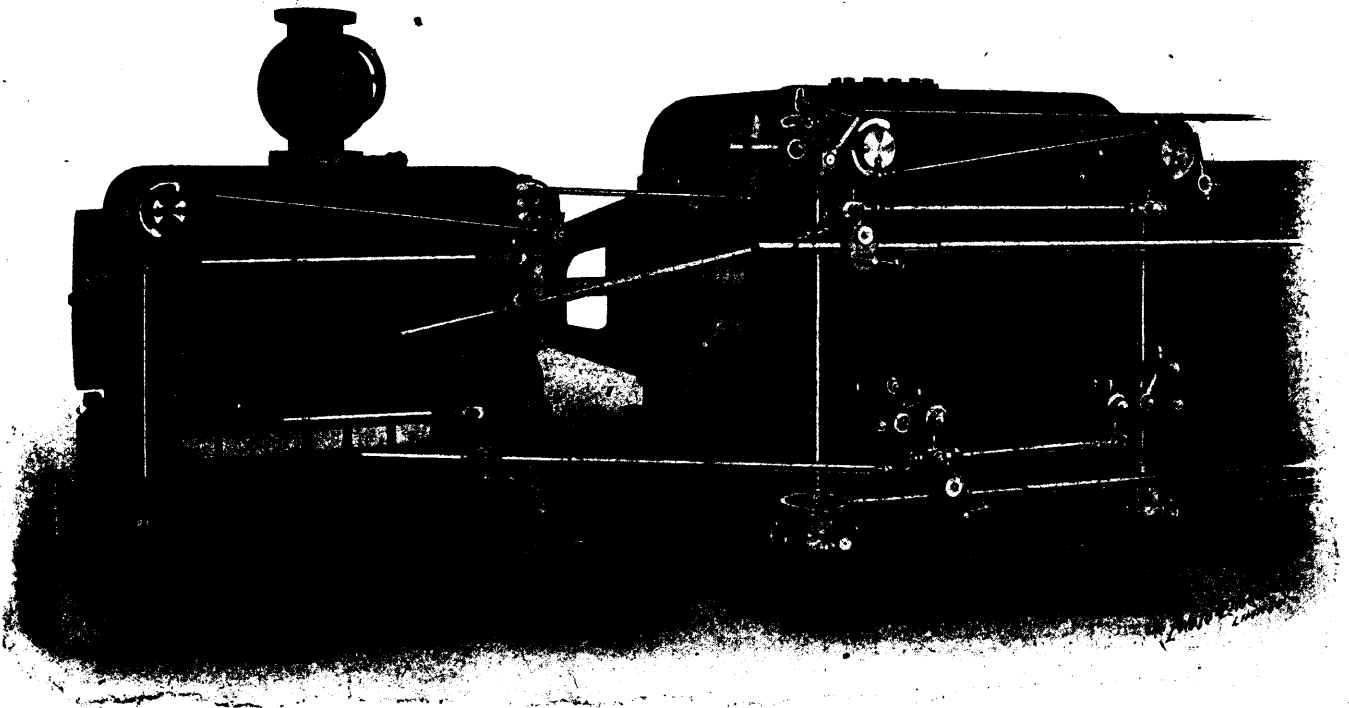


FIG. 7—POWER PLANT—MACGREGOR-GOURLAY Co.—VALVE GEAR OF GOLDIE CORLISS ENGINE.

chamber No. "3," and rises up through burlap cloths covering bottom of grates and takes a side course through coke chamber "3" to perforated side strainer

time should become over charged with mineral matter so water does not come down freely, engineer will open globe valve on by pass and allow water to

to carry for heating purposes. This acts as safety valve of heater, but water cannot come back on your engine, as it would be carried away at oil drip "10,"

if the overflow should by any cause become clogged.

THE GENERATOR.

Of prime importance in a plant of this kind is the generator, which must

cured. The series coils are formed of copper bars forged to shape and carefully insulated, and are connected at the rear of the generator. The shunt coils are machine wound and are taped and impregnated by processes which

though other compounding may be obtained if desired.

Separate pedestals bolted to the bed plate support bearings of the self-oiling type, which consist of cast iron shells lined with babbitt metal and lu-

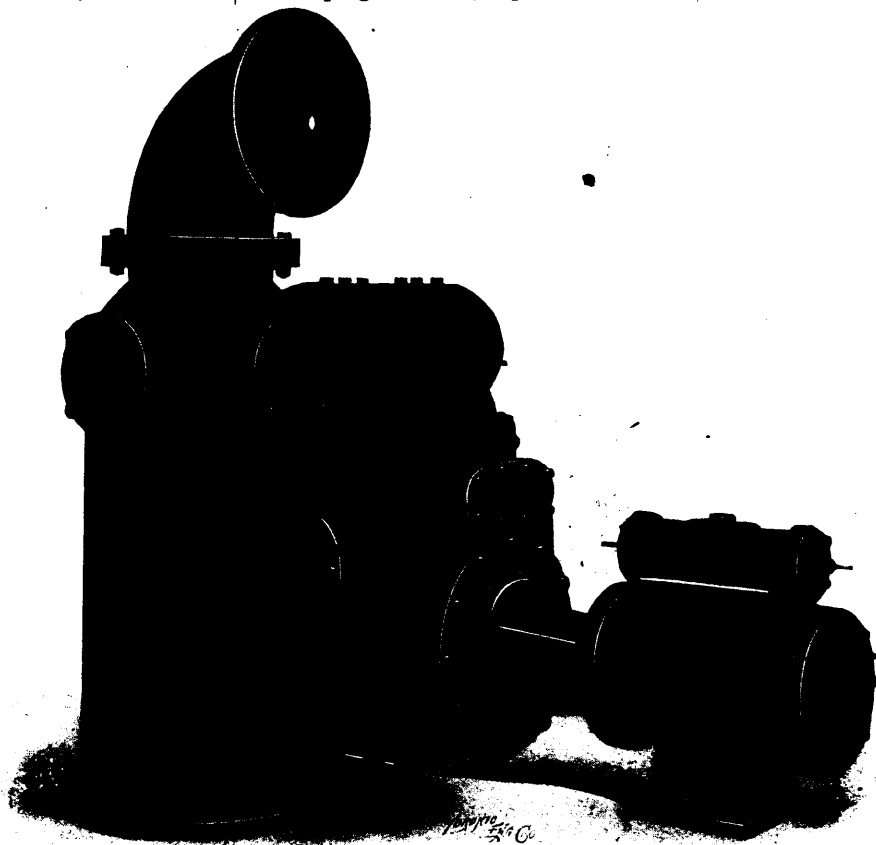


FIG. 8—POWER PLANT MACGREGOR-GOURLAY CO.—INDEPENDENT AIR PUMP AND CONDENSER.

be adapted to continuous service, with the possibility of anything going wrong within the machine itself almost nil. The type chosen was a Westinghouse 300 k.w., 3-wire, direct current generator, 125-250 volt compound wound. It generates current to supply power to the entire establishment. This machine embodies the well-known features of Westinghouse machines, including multiple frame, laminated pole piece, slotted armature core, machine formed armature coil and the balanced magnetic circuit.

The frame of the generator consists essentially of a circular yoke of cast iron divided horizontally into two parts and mounted upon a bed plate of cast iron, to which are bolted the pedestals which carry the armature bearings. The poles are built up of punchings of soft steel riveted together between end plates and firmly bolted to the frame. The pole tips are spread to properly form the magnetic field and to support the field coils. Any pole and its coils may be readily removed. The holding bolts which pass through the yoke are threaded and screwed into the pole pieces. They do not penetrate the pole faces, which are left smooth and unbroken.

The shunt and series field coils are separately wound and are held in place by the spreading tips of the pole pieces. Spaces are provided between the coils, and between the coils and poles in such a way that thorough ventilation is se-

make them entirely moisture-proof. The field windings are regularly proportioned so as to provide an increase of

lubricated by means of rings which ride upon the shaft and dip into large reservoirs filled with oil. The bearing hous-

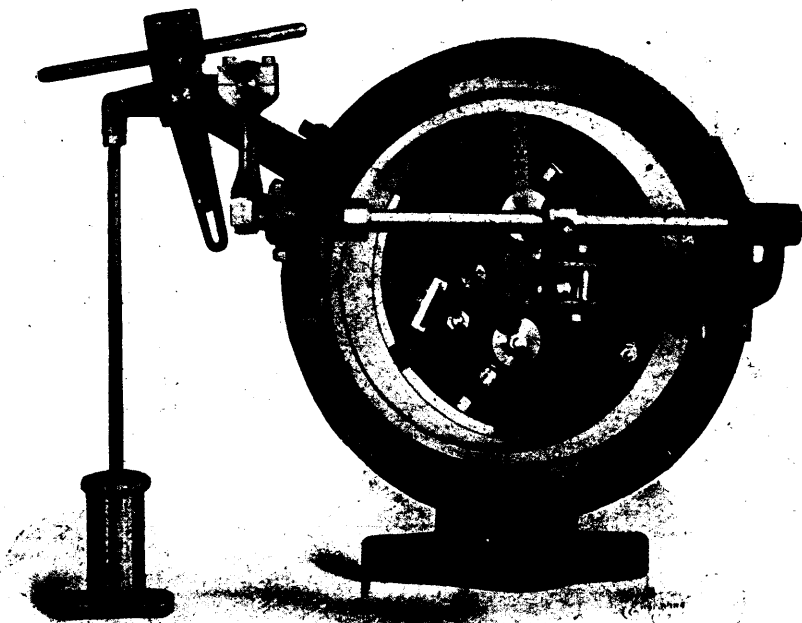


FIG. 9—RITES GOVERNOR USED ON GOLDIE-CORLISS ENGINE.

potential of about 10% at the generator terminals from no load to full load,

ings and bearing shells are divided horizontally into two parts to facilitate

mounting and removal. Bearing caps are bolted to the pedestals and may be easily lifted off whenever it is desirable to remove the armature.

Cores of the slotted drum type are formed of carefully annealed punchings of soft steel and built up on a cast iron

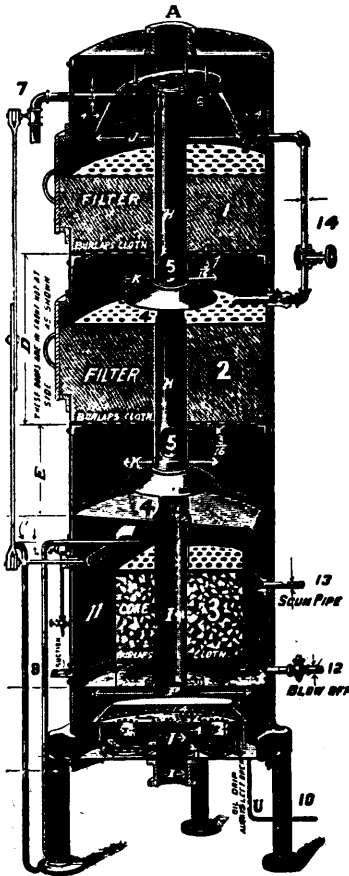


FIG. 10—MOFFAT FEED WATER HEATER.

spider, which is mounted on and keyed to the shaft. Longitudinal openings through the core and ventilating ducts at right angles to the shaft make possible a thorough circulation of air while the machine is in operation, so that all parts are thoroughly ventilated and a low temperature is maintained. The armature coils are formed of copper strap, carefully insulated, and are held securely in their slots by retaining wedges of hard fibre which fit in grooves in the armature teeth. There are no band wires about the core. The commutators are built up of hard drawn copper segments, thoroughly insulated from each other and clamped between V-shaped bushings. They are mounted on extensions of the armature spiders.

The brush holder arms are mounted upon a concentric rocker ring which fits a machined seat in the field frame. The carbon holders are of the sliding type with shunts, and consist of rectangular boxes machined to fit the carbon brushes on all sides.

Tension on the brushes is obtained by long, flat, spiral springs, which give a uniform pressure over a wide range of movement without change in adjustment. These springs are riveted to brass straps, the extensions of which, formed into hooks, provide convenient means for lifting the springs from the brushes. The coiled part of the spring affects the carbon indirectly through the pivoted brass strap, so that the lug

which rests on top of the brush moves definitely through an arc of a circle.

Sparking at the brushes, wasteful heating in the armature winding and abnormal magnetic strain upon the armature—troubles occasioned by inequality in material or by displacement of the armature from the centre of the field—are obviated by balancing the magnetic circuit. A number of points in the armature winding which are normally at equal potential are connected by leads through which balancing currents may pass from one section of the winding to others. These correcting currents are alternating and are leading in some coils and lagging in others and consequently magnetize or demagnetize the field poles in such a way as to automatically produce the necessary magnetic balance. A very small current will effectually balance the circuits. The cross connections are made at the rear end of the armature.

SWITCH BOARD AND CONNECTIONS.

The switch board and all wiring was installed by the Federal Electric Construction Co., of Toronto, who also installed the motors in the different departments of the plant and made all connections to the prime unit besides installing the lighting equipment. The switch board is of the Westinghouse type for direct current light and power service, containing four panels, one generator and three feeders.

This board is made up of separate units, the generator panel being 24 inches wide, and each feeder panel 20 inches wide. Each panel is 90 inches high, 2 inches thick, and made up of three slabs, 20, 45 and 25 inches in

illumined dial, is mounted on a swinging bracket, which can be placed at the most convenient angle for being easily and accurately read from any part of the switchboard. Carbon break circuit breakers are used. Incandescent lamps are placed upon the feeder panels over the instruments.

COMPRESSOR PLANT.

The compressor is of the Rand duplex type, shown in illustration, each side consisting of a steam cylinder connected tandem to an air cylinder, the cranks being at right angles to each other. The distinguishing feature of this type of machine is its automatic self-regulating power, being fitted with a governor which automatically regulates the speed and controls the steam consumption in proportion to the air load, the machine gradually slowing down, remaining at a standstill, or speeding up, as required. As the air is compressed in four impulses per revolution in comparison with two impulses per revolution in straight line compressors, the strains are more equalized with consequent smoothness of action. This type of machine is very popular and a large number have been installed by the Canadian Rand Company, Limited, in all parts of the Dominion.

Compressed air kept in the reservoir at 90 pounds pressure is used in the works for operating pneumatic tools, including air hoists, pneumatic drills, chippers and sand shakers.

The gauge used in connection with the compressor plant is of 200 pound range, manufactured by the Standard Gauge Mfg. Co., Syracuse, N.Y., of the Bourdon spring type shown in illus-

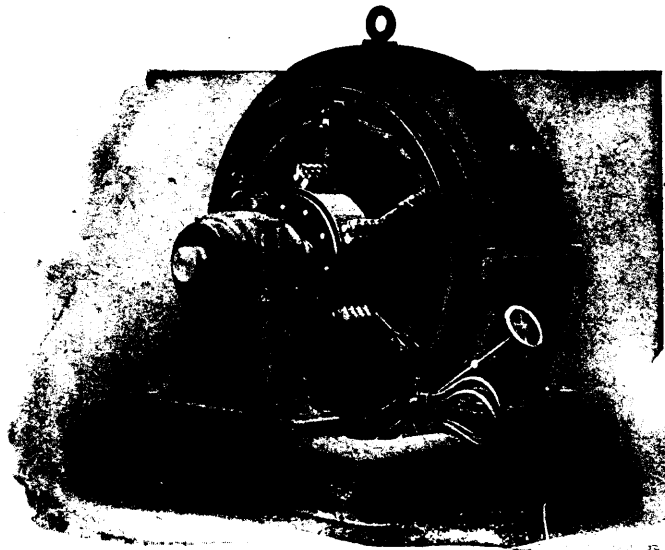


FIG. 11—POWER PLANT MACGREGOR GOURLAY CO.—CANADIAN WESTINGHOUSE GENERATOR INSTALLED.

height respectively. Blue Vermont marble panels are regularly supplied. Each generator and each feeder circuit has its separate panel. The frame is made up of standard channel and angle iron, the board resting on a channel six inches wide and two inches high. The connections are made by copper strap. The main bus-bars are made up of units of 3 x 1/2 copper straps, connections to the instruments being made by similar straps. Every board is set up and connections between all instruments made before shipment. A voltmeter, with

tration, with springs of solid drawn tube, with independent or suspended movement. The construction of this is such that it allows for a free air space and comes in contact with the case at one point only. Movement plates and segments are made from a special composition. Pinions and arbors are made from either German silver or silver metal, both being strictly non-corrosive.

OTHER FEATURES.

Realizing the fact that it is not wise to be entirely dependent upon one

prime mover, the MacGregor-Gourlay Co. have installed in their power plant an auxiliary plant, which takes care of the morning and evening lighting and to run any department of the works at any time. It consists of a Leonard-Ball automatic high-speed engine of 40 h.p., with two flywheels. The engine is belted to two Toronto Electric Co. motors of 17 k.w. capacity each.

The large belt with which the enormous flywheel on the engine is belted to the generator was manufactured by Sadler & Haworth, and is 36 inches wide, of three ply.

Steam gauges, both pressure and vacuum, for the engine and boilers, were manufactured by Crosby Steam Gauge & Valve Co., Boston.

All the boilers are fitted with Diamond flue cleaners, which is a steam

tributed as follows: In the foundry, one each of 15 h.p., besides about 75 h.p. of motors on crane; one of 6 h.p. in pattern storage, operating the elevator. One in the pattern-making department of 30 h.p., for running the machinery there. Seven in the planing department, one 50, two 30 and four 15 h.p., the latter each driving a planer direct. In the machine shop are one 13, three 20, two 30 and one 35 h.p. In the wood shop one 20 h.p. In the blacksmith shop one 15 h.p. In the erecting shop power supplied to three motors operating a Whiting travelling crane.

The lighting system comprises about 500 incandescent and 30 arc lamps of the Westinghouse make.

This installation made in conjunction with the large increase in the capacity of the MacGregor-Gourlay Co.'s works

Smoke Talks.

By R. C. HARRIS.

A steam boiler of insufficient capacity and bad design cannot perform the work required with economy and efficiency. Where is the business man who would not revile the proposition to hitch a single horse to a fully-laden double dray with the expectation of speedy and satisfactory delivery? Yet hundreds greatly overload their boilers, thereby transgressing the elementary principles of economy and good combustion, and heedlessly violate a primary hygienic requisite by contaminating the air which their fellows inhale with harmful solid and gaseous elements.

A furnace which supplies heat to a heavily over-laden boiler will smoke de-

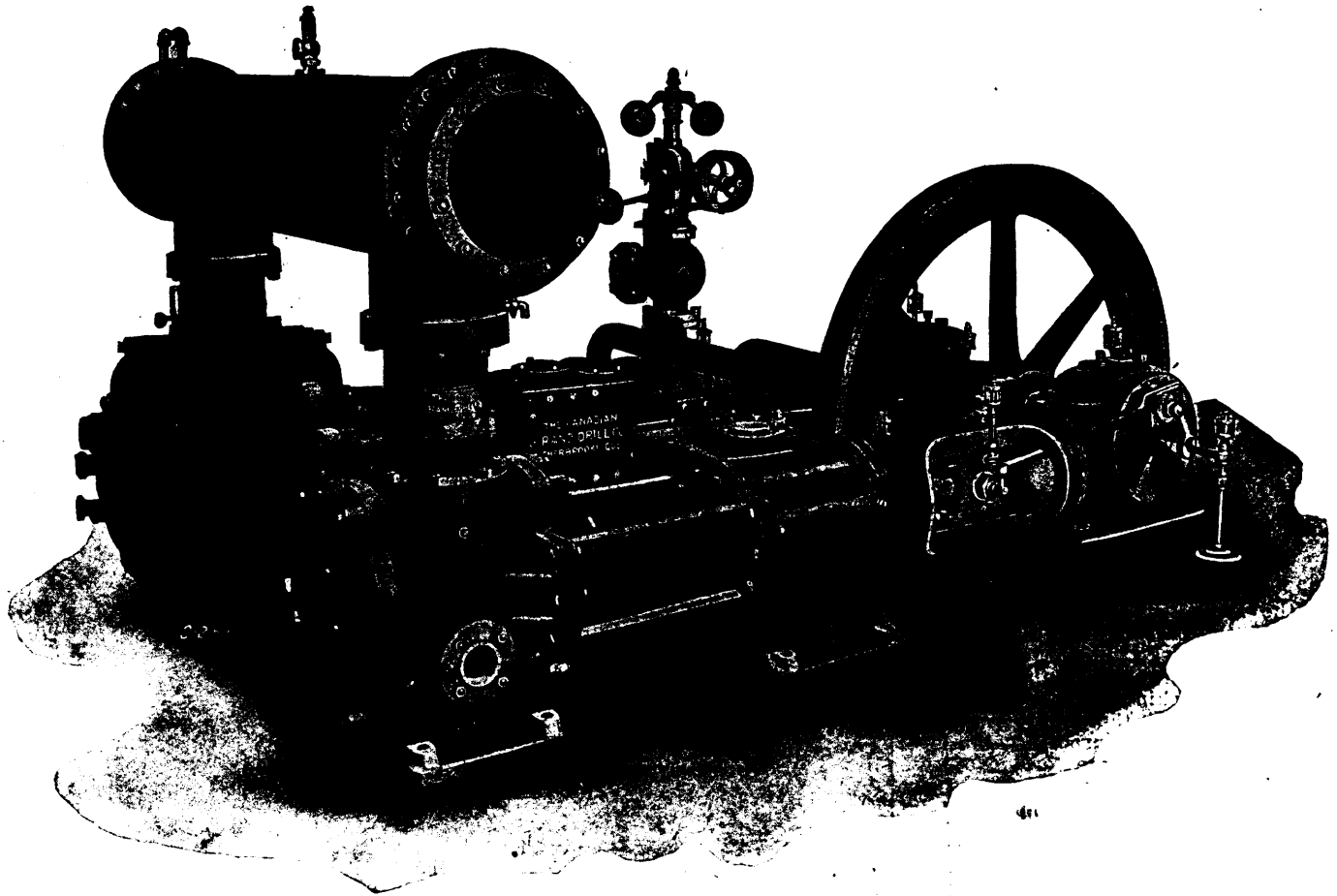


FIG. 12—POWER PLANT MACGREGOR-GOURLAY CO.—RAND AIR COMPRESSOR.

cleaner, by means of which, through the operation of a crank, every tube in the boiler is cleaned. These are manufactured by the Diamond Flue Cleaner Co., of Windsor, Ont.

The valves used in the power plant were manufactured by the Lunkenheimer Co. of Cincinnati.

DISTRIBUTION OF POWER.

The electrical energy generated in the power house is used for running all the machinery in the plant by motor drive, for the entire lighting, both by incandescent and arc lamps, for operating the ventilating fans in connection with the Sheldon system installed, for running the power cranes and for elevator service.

The motors in the plant, which are all of Westinghouse manufacture are dis-

tribute the most careful hand or automatic firing, or the interposition of smoke preventive devices; yet the proprietor is slow to recognize this depletion of profits, which works discomfort and ill to others by reason of smoke emitted.

make the plant one of the most modern in the country. It has already been running some months, long enough to give every test and to satisfy the management of the company that the change has been an eminently satisfactory one.

'Twas Tainted Money.

The big touring car had just whizzed by with a roar like a gigantic rocket, and Pat and Mike turned to watch it disappear in a cloud of dust.

"Thim chug wagons must coast a heap of cash," said Mike. "The rich is fairly burnin' money."

"An' be the smell av it," sniffed Pat, "it must be thot tainted money we do be hearin' so much about."—Success.

D. K. Clark, an eminent and accepted authority, in his standard publication, "The Steam Engine," says:

"Incomplete combustion and its usual concurrent, smoke, occur in different forms. Smoke may be discharged immediately after fresh fuel is charged on the fire, consisting of variously tinted hydro-carbon gases—volatized fuel—from dark brown to light yellow, which have escaped combustion. Smoke of another kind is the result of the precipitation of carbon in an extremely

divided state—condensed carbon vapor precipitated in the course of combustion, and carried away, intermixed with and giving color to the gaseous products of combustion. When the dissociated gases are suddenly cooled, as by contact with the walls or the roof of the furnace, or even by a current of cold air, the carbon vapor is precipitated and forms smoke.

"Combustion is rendered incomplete in another way by the reduction of the carbon dioxide formed by the combustion of incandescent fuel with air through the fire-grate. The carbon dioxide passing upwards through a thick bed of fuel takes up another equivalent of carbon, and becomes carbon monoxide. If an additional supply of air be not forthcoming to restore the carbon dioxide, the heat absorbed in the reactive reduction to the state of oxide is lost as for the purpose of generating steam.

"For ensuring completeness of combustion, the first condition is a sufficient supply of air; the next is that the air and the fuel, solid and gaseous, should be thoroughly mixed; and the third is that the elements—air and combustible gases—should be brought to-

pressed in the quotation from D. K. Clark in this article as is possible in the English language, and may be thus summarized:

Admit sufficient air below and above fire.

Obtain the best possible admixture of air and fuel.

Combine and maintain air and gases at high temperature.

If owners would provide adequate plants and see that firemen strive to observe the principles indicated in the foregoing summary, the market for smoke preventive devices and the necessity for smoke enactments would be inconsiderable.—Industrial World.

STEAM TURBINE EFFICIENCY.

The rapidity with which the steam turbine has come into popular favor is one of the phenomena of modern steam engineering. It is less than a decade ago since the first turbine was sold in the American market, but there are to-day about 700 in use throughout the country, aggregating a total capacity of approximately 1,000,000 k.w., or about 1,500,000 h.p. This wonderful

consumption which has ever been recorded by a stationary steam engine. This steam consumption figures less than 1½ pounds of coal per k.w. hour, and graphically illustrates the great ad-

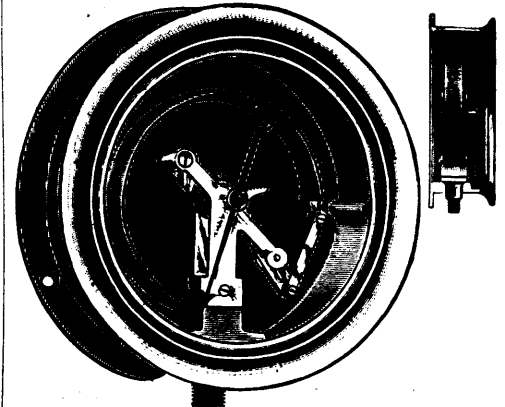


FIG. 14—STANDARD VACUUM GAUGE.

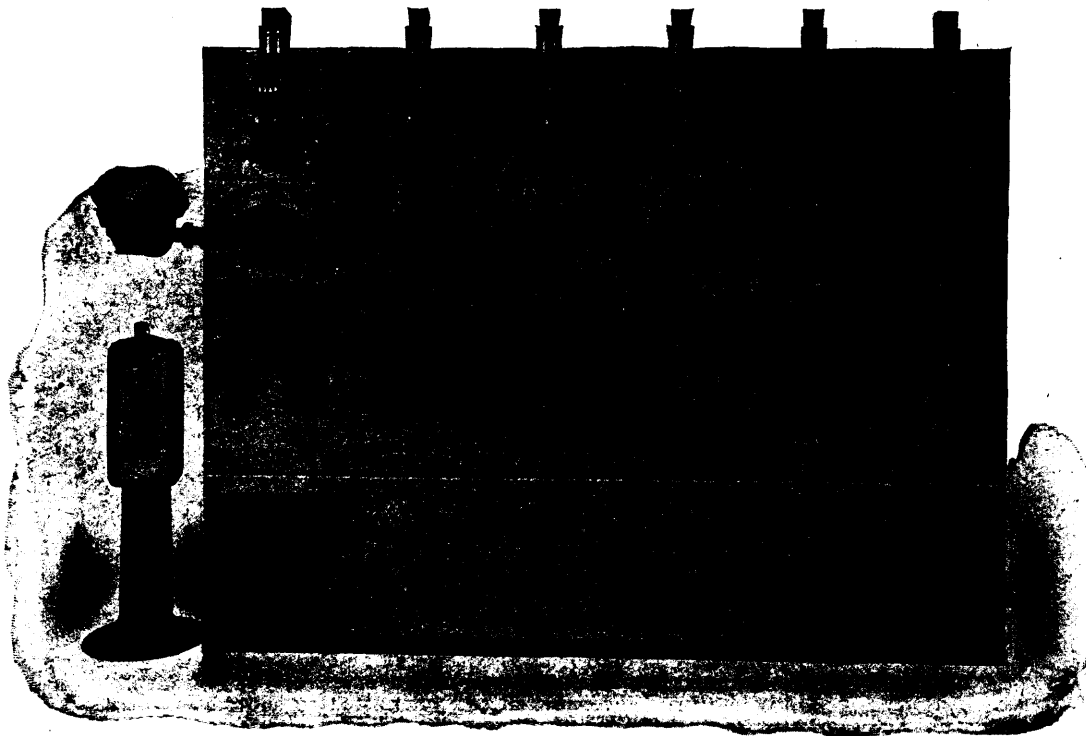


FIG. 13—POWER PLANT MACGREGOR GOURLAY CO. TYPE OF CANADIAN WESTINGHOUSE SWITCHBOARD USED.

gether and maintained at a sufficiently high temperature. The hotter the elements the greater is the facility for good combustion."

The paragraph immediately preceding spells the solution of the question of smoke abatement when applied intelligently to a plant of ample capacity, well designed, with a proper and rational proportion existent between grate area, heating surface and stack area. The average fireman views the air supply simply as a "draft"—a mechanical promoter, rather than a supporter, of combustion, and air admission over the fire is often regarded as heresy.

To my mind the necessity for air admission is as potently and aptly ex-

demand for that novel prime mover is, of course, easily explained by the many advantages the turbine has over the reciprocating steam engine. An interesting test was conducted recently by the engineers of the New York Edison Company, at the Waterside Station, near 30th Street, which developed facts hitherto unattained by any steam prime mover in this country. The unit under test was a Westinghouse turbine of 10,000 h.p. capacity. It had been sold under a steam consumption guarantee of 15.9 pounds of steam per k.w. hour, but the test recorded the phenomenally low steam consumption of a shade less than 14.9 pounds per k.w. hour. Apart from the fact that this result gained a bonus

vance in modern power plant practice attained through the introduction of the steam turbine, the efficiency of which has been demonstrated.

TO VISIT QUEBEC BRIDGE.

The Deputy Minister of Railways and Canals will grant free transportation to members of the Canadian Society of Civil Engineers, who desire to visit the Quebec Bridge, leaving Montreal on Saturday morning, November 9, and returning at such time as may be convenient for them.

Gravenhurst's Municipal Power Plant.

A DESCRIPTION OF PLANT AT SOUTH FALLS, MUSKOKA, WHICH IS BELIEVED TO BE THE CHEAPEST POWER DEVELOPMENT IN CANADA.

South Falls, on the south branch of the Muskoka River, eight miles from Gravenhurst, Ont., might well be cited as an illustration of the advance of civilization and of man's mastery of nature during the last generation.

Thirty years ago the occasional lumberman or hunter, or pioneer settler who chanced to pass by South Falls, found them, as they had probably been for centuries, a delight to eye and ear. As can be seen from the accompanying view, the white foam on the upper fall and the bluish, greenish white on the lower fall, made a delightful picture against the background of rocks and trees.

The lumberman, as the pioneer of industry and civilization, was first to divert a portion of the waters to his service. He found the falls a barrier



FIG. 1—GRAVENHURST'S MUNICIPAL POWER PLANT—VIEW OF SOUTH FALLS.

to the passage of his logs down the river to his mills, so twenty-nine years ago he built a timber slide, more than a thousand feet long, which carried his logs straight and clear from the higher level to the lower.

This week witnesses the completion of the next step in the harnessing of these waters to the service of man. At the same time, as the waters are diverted for the first time into the flume and turbine of the power station recently completed, the municipality of Gravenhurst is provided with what is probably the cheapest power development in Ontario.

South Falls, according to expert opinion, is capable of developing at low water at least 4,000 h.p., under a working head of 106 feet. At present, however, there is not the demand for such

an amount, and Gravenhurst has wisely started modestly. At the power station a total of 750 h.p. is being produced, while the construction work has been done with the idea of doubling this amount at minimum cost. The forebay, excavation for flume, space in power house and discharge are all completed to permit installation of a second unit of 750 h.p. by erection of necessary machinery.

The cost of developing the present unit of 750 h.p. has not exceeded \$45,000, while the second unit can now be installed for an additional \$20,000.

FOREBAY AND FLUME.

To construct the forebay, which is of concrete, 2,500 cubic yards of rock were excavated. No large dam was necessary, however, as there was in place a timber bulk head at head of falls, built substantially some years ago. The forebay provides a splendid flow of water to the present intake, and is of sufficient capacity to give full head of water to the second pipe-line, when it may be set in place.

The flume is of double rivetted steel pipe, and is 1,100 feet in length. There was available a working head of 106 feet, but the plant was laid out to do its work under head of 100 feet. The flume was supplied and installed by the Canada Foundry Co.

The flume delivers its water straight from upper level to the penstock, which is almost altogether inside the power house.

EQUIPMENT OF POWER HOUSE.

The water wheels which drive the generator consist of one pair of specially designed turbines, revolving at a speed of 600 r.p.m., delivering 750 h.p. under working head of 100 feet. The runners are 20 in. in diameter, are constructed of bronze and are enclosed in the penstock, which is of steel.

The turbines driving the exciter wheels are also of bronze enclosed in separate steel case. The water is supplied to this wheel from the large wheel case, the flow being controlled by large gate valves. For regulating the pressure on flume and wheel case a Lombard relief valve has been installed.

The speed of wheels is controlled and regulated by size F horizontal model Woodward governor, direct connected to mechanism controlling gates, which are what is known as cylinder gates, and are also constructed of bronze.

The water-wheels, etc., were specially designed by the Jenckes Machine Company, Sherbrooke, Quebec.

The eminent feature of the electrical equipment at the power house is one 450 k.w. revolving field generator, generating 6,600 volts. This generator is an Allis-Chalmers-Bullock three phase 60 cycle direct connected to the pair of turbines.

The exciter is a 15 k.w., 120 volts d.c. generator, and is also direct connected to a small horizontal turbine.

The switchboard controlling operations at the power house is placed on a gallery seven feet above main floor, and is constructed entirely of steel and concrete. Two panels of blue Vermont marble constitute the switchboard. Upon one of these is mounted three ammeters,

each of which is connected to one phase of system; volt meter and frequency indicator, both of horizontal, edge-wise type, also one automatic circuit breaker.

On the exciter panel are mounted necessary knife switches for controlling exciter, also one voltmeter, one ammeter, two I. T. E. circuit breakers and rheostats for controlling exciter field.

The electrical equipment in power house as well as that at sub-station, was supplied by Allis-Chalmers-Bullock, Montreal.

THE POWER STATION BUILDING.

The building is strongly built, all walls being of brick, 18 in. thick, the roof of reinforced concrete, supported on heavy steel I beams; the floor of concrete. The inside dimensions are 40x27 feet. The foundation under water wheel and generator, as well as under the walls, are entirely of concrete, going down to bedrock. The tail race is 100 feet long. Between its two sides, which are built of solid concrete, is ample space for discharging flow from second unit as well as from the present one.

THE TRANSMISSION LINES.

Power is transmitted eight miles to Gravenhurst, where is situated the transformer house, where voltage is reduced from 6,600 to 2,400 volts. The transmission line is of usual construction, with cedar poles, and three No. 4 hard drawn copper wire, and porcelain insulators, designed to stand working voltage of 10,000 volts. There are three sets of lightning arresters, each of standard G. E. three-phase multiplex 6,600 volt type. Two of these are at either end of the line. For the third set a small brick building has been constructed four miles from power house, this precaution being rendered advisable by the severity of thunderstorms in the locality, where mineralized rock is common. The transmission line, including lightning arresters, was supplied and installed by Garrioch, Goddard & Co., Ottawa.

THE SUB STATION.

The sub station is a small brick building near the centre of the town. There are two transformers in this station, each 250 k.w. capacity. Three-phase current is transmitted from power house to sub station at 6,600 volts, and there transformed to two-phase current at 2,400 volts. From here it is distributed throughout the town.

The switchboard at the sub-station consists of three blue Vermont marble panels. One of these is high tension panel, upon others are low tension panel, upon which is mounted voltmeter and one 6,600 oil break switch. The others are low tension panels upon each of which are mounted two ammeters for showing output of each of the two phases, also two automatic oil break switches.

It will be seen by the description given as well as from the illustrations that natural advantages have been utilized to the full extent, to ensure economical construction and operation. This is greatly to the advantage of Gravenhurst, both in the reduction of municipal lighting charges and in the town's ability to offer power to manufacturers

at from \$10 per annum up, according to amount used. At the same time it is greatly to the credit of Mr. T. T. Simpson, C.E., of Ottawa, who designed and supervised the construction of the plant; also to his assistant, Mr. J. M. Thomas, of Ottawa, resident engineer during construction. This plant makes an aggregate of 100,000 h.p. of hydro-electric energy developed in various parts of Canada under design and supervision of Mr. Simpson, and it is evident that the economy of construction is largely due to his wide experience.

The history of this power development is instructive. When Gravenhurst was but a village, and when transmission of electricity was not so well understood as at present, a company secured a franchise for electric lighting. In 1903 this plant was taken over by the town and although the fuel bill was as high as \$2,800 in one year, the plant has each year shown a profit. By the change from a steam plant to a hydro-electric plant the cost of producing

teen tons daily. On a square mile of the city the soot deposit is 171 tons a month, or 343,728 pounds, an average of several pounds to each inhabitant. In one of the suburbs the soot in the bucket was 464 grammes to the square foot for a period of thirty days. For the same time the deposit at a central point in the city was 22,550 grammes to the square foot.

Other cities that burn soft coal need not flatter themselves that they fare much better. A glance out at the window tells the story. In many parts of a sooty city the trees and flowers are coated with grime, and often refuse to grow. The smoke cloud injures health in several ways, one of which is the shutting out of the sunlight that destroys disease germs. That soot is deposited in human lungs is a fact well known to surgeons. These figures were laid before a smoke abatement league meeting in Cincinnati a few days ago, and it was resolved to ask the next Legislature for more stringent anti-smoke laws. The

draft and feed to meet the demands for steam, keeping the water level constant to avoid priming and burning of plates. Ash pits are to be kept clear to avoid burning the grate bars and to prevent loss of draft and efficiency. Never attempt to stop a leak or to tighten a joint when the boiler is under high pressure. Never cut in a boiler with a battery until its pressure is equal to that of the battery. Before banking the fires run the water to its proper level, which note, and see that the steam pipe drains are open and in working order. Keep the boiler clean internally and externally and thoroughly examine plates and seams at frequent intervals, especially those in contact with setting or exposed to direct action of the fire. Always raise steam slowly and never light the fire until water shows in the gauge glass. Keep furnace walls in good condition and well pointed up. Allow boiler and brick work to cool before emptying the boiler. Prevent oil and greasy matter from entering boiler, as same

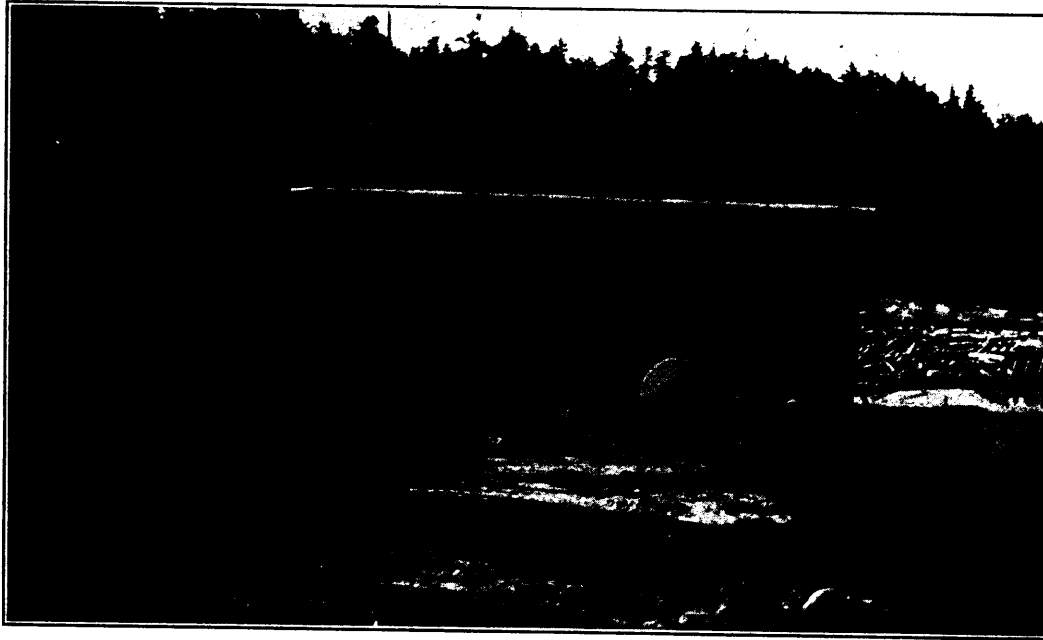


FIG. 2—GRAVENHURST'S MUNICIPAL POWER PLANT—VIEW OF POWER HOUSE AND INTAKE.

electricity is much reduced, thus increasing the profit on current now supplied, and providing a supply for industries which, it is hoped, will be attracted to the town.

The plant will be operated under a power commission, consisting of Mayor F. Slater and Messrs. J. S. Gibson and John McKenzie.

Soot in the Atmosphere.

A scientific investigator in Cincinnati has been trying to arrive at a definite idea of the amount of soot deposited in that city in the course of a year. One of his tests was to place two buckets, three-fourths filled with water, on eleven roofs in different parts of the city. At the end of three months a careful analysis of the contents of the buckets to ascertain the amount of carbonaceous matter was made. The result is that in the downtown area the falling soot amounts to 541 tons a month, or eigh-

teen tons daily. present methods of smoke abatement are visibly unsatisfactory, and the opinion is widely held that relief must come through some means not yet attained.

Steam Boiler Operation.

See that the water level has not fallen and examine joints and seams to detect leakage, and furnaces for evidence of bulging. Blow through water gauges, open the blow-off cock to remove sediment, try safety valve to insure free action, raise dampers to clear flues of explosive gases, and stir up the fire, heating boiler and setting slowly. These are the preliminary precautions to be observed. See that proper water level is maintained. Keep water gauge glasses clean and passages clear by trying gauges frequently. Lack of proper attention to water gauges leads to more accidents than any other cause. Maintain a fire of even thickness, free from holes and clear of ashes and clinkers. The proper thickness of fire increases with the hardness and size of coal and with the strength of draft. Regulate fire and

lead to serious inefficiency and to dangerous heating of plates. In case of low water or evidence of distress, draw the fire at once, unless very heavy, or unless the tubes or plate appear to be red hot, in which case smother the fire with dirt or wet ashes, leaving the fire doors open and ash pit closed. Warn every person away from the boiler. If the engine or feed pump or injector are operating, do not stop them, but if not running do not start them. Do not attempt to blow off steam until the fire is out and the plates are cool, and never blow off rapidly or under high pressure. —By J. H. Boughton, in Engineer.

NOT ALWAYS.

"But you are always bothered with poor light, are you?" inquired the complaint clerk at the gas office.

"Oh, no, not always," replied the quiet citizen.

"Ah! I thought so; it's only at certain times that you notice it, eh?"

"Yes; only after dark."

Mammoth Car Shops at Winnipeg.

A POSSIBILITY FOR THE NEAR FUTURE.

In reading the annual report of the Canadian Pacific Railway and noting the increased expenditures by that corporation upon rolling stock, it would appear that in order for all of our trans-continental lines to keep pace with the thousands of miles of new mileage and to take care of the expansion of trade the country offers, there should be increased facilities opened whereby the railways can secure promptly the rolling stock necessary. . In this connection, why not build mammoth car shops at Winnipeg ?

It would appear that the various railway companies of Canada have been go-

other spike on a new extension for the next three years.

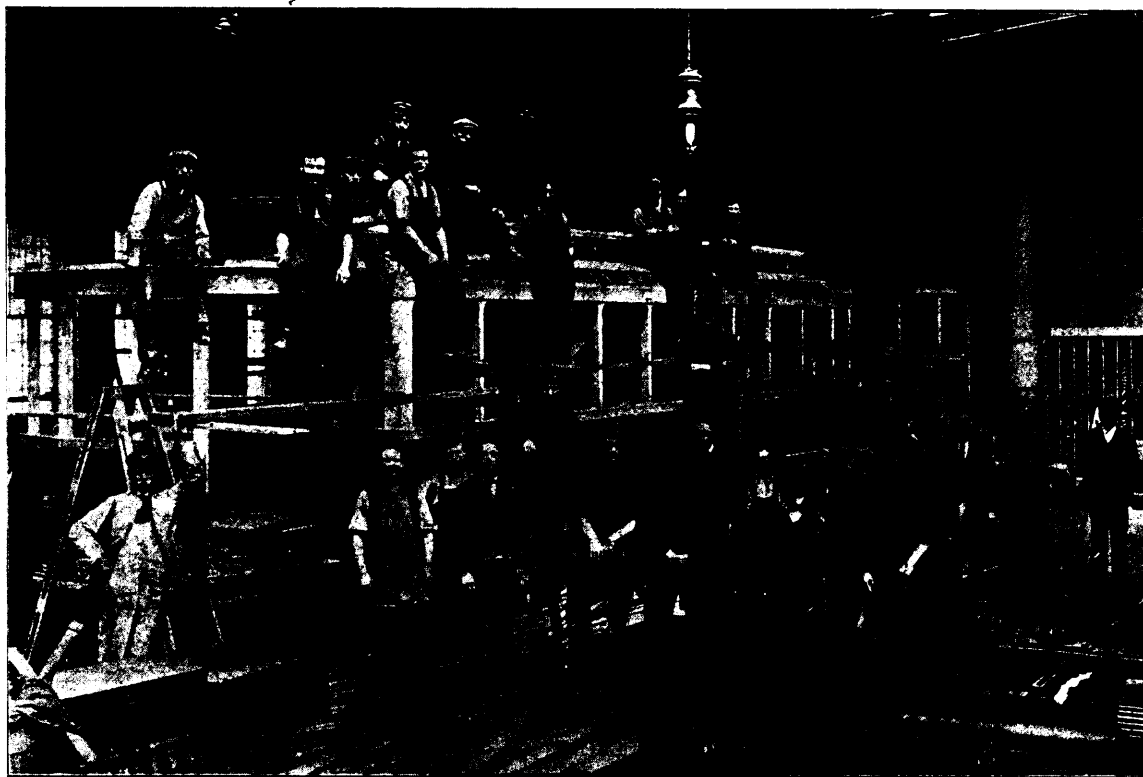
BUILDING CARS.

The building of railway cars is not a new thing to Winnipeg. The Canadian Northern Railway have built at their shops some 80 or 90 box cars, cabooses and coaches complete. The Canadian Pacific Railway are employing in Winnipeg over 1,800 men in their shops, mostly in repair and assembly work. This department has grown to such proportion in the last few years that this great corporation has more than doubled the capacity of their shops. The Winnipeg Electric Railway Company are building new cars in Winnipeg and are turning out as excellent a car

on the islands of this great lake be developed and the iron itself manufactured and the truck parts founded at Winnipeg? There are iron deposits being worked to-day that are of less consequence than Lake Winnipeg offers.

ORE DEPOSITS.

It is not necessary to dwell upon ore deposits, as with the completion of the Atikokan iron smelters at Port Arthur on the south, the question of a car works at Winnipeg is one of importance. With the Grand Trunk Pacific now at work within our limits it will soon open another important avenue to Winnipeg's increasing trade, and before this road is ready for business it will mean orders for rolling stock that will amount to over \$5,000,000. This will be merely a start in the amount that will be required before the road can even commence to handle the traffic in sight along their great system. Canada has now an operating mileage of 21,500



CAR MANUFACTURING IN WINNIPEG.

ing ahead laying their steel and extending their lines regardless of how they were going to equip them, until now matters have reached such a stage that in the public interest and shipping interests in general, such an industry would be heralded as a most welcome one in Western Canada. The shipper who has already had cause for complaint, naturally blames the railway, but the companies say that they cannot be held responsible, for they would only be too glad to buy cars enough to handle the traffic if they could find factories that would sell and deliver the cars to them. As matters now stand, there is little prospect of the railways being able to properly equip their lines for years to come, even if they should not drive an-

as Ottawa or Philadelphia shops can deliver. There has been under consideration for two years or more the construction of car shops at the Pacific coast. While British Columbia has the timber she has not the iron. If the car truck parts had to be taken to the coast from Montreal or Nova Scotia, and there assembled, it would mean all rail freight haul across the continent. Winnipeg, situated as it is, and the pivot of all the three great Canadian railway systems, is just half-way between these two producing points of raw material that are used in car construction. Winnipeg could, without question, offer to the railway companies the best delivery point on the continent. With the St. Andrew's locks completed, and Winnipeg an open lake port, Lake Winnipeg's thickly-wooded shores could supply timber in unlimited quantities for car building, and why should not the iron deposits

miles of railway. To handle the traffic on these roads there are about 88,000 cars in all, an average of about four cars per mile of railway.

While development of our railroads has been remarkable, the expanding trade of Canada is more so, and if cars could be had the average per mile would be eight cars in place of four cars as at present. This would show an immediate market for 80,000 cars. This is not a high estimate by any means, for we might refer to some of the older American roads—the Pennsylvania Railway has in operation 35 cars to the mile, the Philadelphia and Reading roads 41 cars to the mile—from these facts it must be apparent that there is an unlimited market for railway cars in Canada. A conservative estimate on the railway cars which will be required in western Canada in the five years to come could be placed as follows:

	Cars.
Immediate necessity	40,000
5,000 miles under construction (4 cars to mile)	20,000
25 per cent. increase in traffic..	20,000
5,000 new mileage in next five years	20,000
	100,000

100,000 freight cars at an average cost of \$850 each would mean orders aggregating \$85,000,000. This is not counting on new equipment to replace old cars going out of commission, and most any railroad man will tell you that the life of a freight car is 10 years. The present supply of made in Canada cars come from practically four shops (not including the great Angus shops of the C. P. R. at Montreal). The Crossen Car Mfg. Co., Cobourg; Rhodes Curry & Co., Amherst; The Rathbun Co., Deseronto, and the Canada Car Co., of Montreal. The two former companies have in the past few years been making a specialty of building electric railway cars, and as the demand is increasing for this class of cars to a considerable extent in eastern Canada, they are not anxious to handle car orders of heavy construction. According to Government statistics the output of all eastern car factories (not counting the Angus shops of the C. P. R.) has never reached 5,000 cars annually; the capacity of these shops is said to be more than double this amount, but as stated above, these manufacturers are not confining themselves to the heavier class of construction in car building. Freight cars are exactly what Western Canada wants, and a works of this class would find at Winnipeg an exclusive field for operation. The manufacturing of railway cars on an extensive scale at Winnipeg would mean the employment of several thousand men, and in this connection the question of labor supply would be a most vital one, Winnipeg's position in this respect being the best that Western Canada can offer the manufacturer. Western Canada is now receiving a greater influx of workmen than any point in Canada. In the past three years, each year has seen an improvement in the supply of labor at Winnipeg, and this season has brought many skilled workmen in from the great industrial cities of Europe; many now are working on the various railway extensions throughout Western Canada; others are trying their hand at harvesting this year's crop, but this particular class will eventually find their way back to Winnipeg, and there is no question that if a car works were established there the operators would soon have sufficient artisans at no higher cost than other eastern Canada manufacturers are paying, this to some extent made it possible for Winnipeg to attain the position of the fourth manufacturing city in Canada.

Winnipeg is now operating rolling mills, turning out bar iron profitably, heavy brass castings in large quantities are supplied to our great railroads now at Winnipeg that have always been heretofore imported. Winnipeg's five iron works and foundries are turning out mammoth castings that would be a credit to the show rooms of any of the machinery halls of Canada. With such evidence of manufacturing enterprise in the iron trade of Winnipeg, it would appear that the question of a car works at Winnipeg is one that should appeal to outside capital.

A Growing Canadian Industry.

In a recent review of electrical progress in Canada The Electrical Review of New York made the following reference to Allis-Chambers-Bullock, Limited, of Montreal:—

Although only a few years in business, the company has made surprising progress in many lines. For instance, it has had in successful operation for over a year in the power-house of the Northern Aluminum Company at Shawinigan Falls, Quebec, six 940-kilowatt, direct-current, interpolar generators, the largest machines of the kind ever built, and the only ones so far in operation in Canada. Their original rating was 2,570 amperes at 365 volts, but they have operated perfectly under 2,570 amperes at 425 volts. The plant of the Laprairie Brick Company, across the river from Montreal, is operated entirely by this company's induction motors, which include one of 500 horse-power, one of 300 horse-power, and other smaller ones, the aggregate being over 1,000 horse-power. The mines of the Asbestos & Asbestos Company at Danville, Quebec, use one 900-horse-power, two 300-horse-power, one 50-horse-power and several smaller induction motors. For over a year there has been in satisfactory operation at the high-service pumping station of the Montreal waterworks a 400-horse-power induction motor, driving at constant speed a fourteen-inch, three-stage centrifugal pump of a capacity of 5,000,000 Imperial gallons in twenty-four hours against 250 feet head. The official test conducted by Professor Herdt of McGill University, on behalf of the city, showed an overall efficiency of 66 per cent. on the whole unit. The waterworks plant of the city of Three Rivers includes a two-speed induction motor, capable of 100 horse-power at 900 revolutions per minute, and 150 horse-power at 1,200 revolutions per minute, 2,200 volts, sixty-cycle, three-phase, driving a two-stage centrifugal pump, which delivers 1,500,000 Imperial gallons at the slower, and 2,000,000 Imperial gallons at the higher speed. The domestic pressure is 90 pounds per square inch, and the fire pressure 150 pounds per square inch.

The new Canadian Pacific Railway Hotel at Winnipeg is lighted by four of the company's 75-kilowatt direct-current generators, and the new Canadian Pacific Railway Hotel at Victoria, British Columbia, by three similar generators. There was recently put into operation a lighting plant for the town of Kenora, including three 625-kilowatt, water-wheel-type alternators, exciters, switchboards and other auxiliary apparatus, all built by the company. At the Canadian Copper Company's works, Copper Cliff, there have been in operation during the past year induction motors built by Allis-Chambers-Bullock, Limited, aggregating over 3,000 horse-power and including three of 600 horse-power, each three-speed, driving blowing engines; one of 500 horse-power, constant-speed, driving a blowing engine; one of 300 horse-power, driving an air-compressor, and one of 150 horse-power, driving a six-inch, four-stage centrifugal pump.

The company is now paying particular attention to hydro-electric work, being the only one in Canada which designs and builds both water-wheels and electric apparatus. Among the contracts of this sort recently completed was a

plant for the Quebec Railway, Light & Power Company, including a twin horizontal, enclosed turbine, 2,200 horse-power, 222 revolutions per minute, with 40-inch runners, to operate under 60 feet head, direct-connected to a 1,500-kilowatt, 11,000, to 5,500-volt, 60 2-3 cycles, two-phase alternator. At the time of writing there were ready for shipment three horizontal turbines, each of 5,350 horse-power, under 50 feet head, provided with oil regulating governors, for the plant of the Montreal Light, Heat & Power Company on the Soulanges Canal, about forty miles from the city. A novel feature of this development is the use of concrete draught tubes designed by Allis-Chambers-Bullock, Limited, and used there for the first time in this country. The company is also the only one in Canada which builds complete electric hoisting engines, and among those under construction was a reversible double-friction drum hoist to be driven by a 150 horse-power induction motor for the Mond Nickel Company.

ENGINEERING MEETING.

The Fifty-fourth Annual Meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies' building at 29 West 39th Street, New York, December 3-6, 1907.

Symposiums on foundry practice, giving the experiences of prominent men in that work, have been arranged. The specific heat of superheated steam will be taken up, a very important and exhaustive work by a Professor of Engineering at Cornell will be presented. The utilization of low-grade fuels in gas producers, combustion control in gas engines, tests of producer gas engines, etc., will be given a session. Other live topics, such as industrial education, power transmission by friction driving, cylinder port velocities, etc., will be discussed.

All of these subjects have been treated by prominent engineers of Europe and America, professors of our universities, and men eminent in the particular work of which they write.

The committee have on hand an interesting excursion for Wednesday afternoon, and an address in the evening, which will be especially enjoyable.

A Record in Welding

A record weld was recently made in Montreal, when the rudder stock and shoe of the steamship "Corunna," of the Canadian Transportation Line, were successfully repaired by the Thermit process.

While passing through the St. Paul locks, Montreal, the rudder stock of the Corunna, four inches in diameter, and the shoe, measuring 7x6½ inches, were broken. The fitting of new parts would have involved considerable delay and heavy expense. The owners, however, communicated at once with the Goldschmidt Thermit Co., of New York, who sent an expert down, and he, in company with Mr. Wm. Abbott, the Montreal representative of the company, completed the repairs in four days. The special appliances necessary for this job have been left with Mr. Abbott, which will mean a considerable saving of expense in future repairs of this nature.

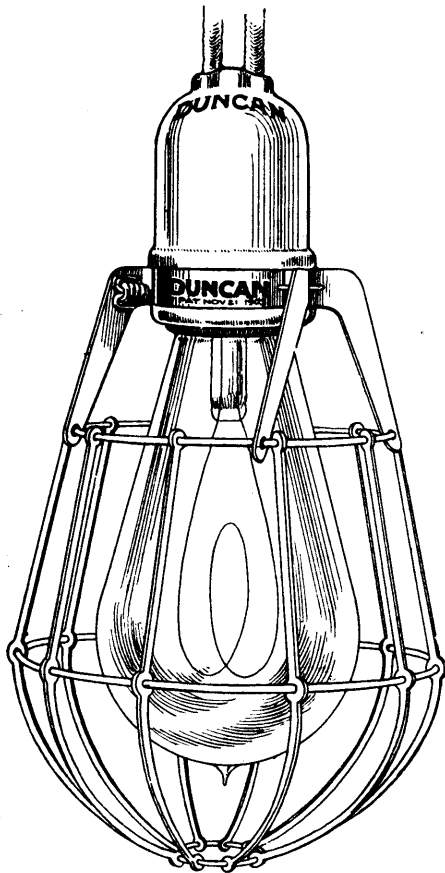
Duncan Lamp Guard.

The latest recruit in the incandescent lamp guard field, is what is known as the "Duncan" guard, recently brought out by the Duncan Electrical Co., Limited, of Montreal.

This product is manufactured by them to meet the demands of all kinds of socket users, whether that be in brass, porcelain or hard rubber, and are styled type A, B and C, respectively.

The principle feature of these guards, and the one that appeals to users most favorably, is that the guard fastens in all cases to the socket, thus preventing any fear of short circuit from any current that may escape from the screw shell of the lamp.

Another feature of this product is their construction, the ribs and the hinges being stamped from sheet steel and strung on spring steel wire rings,



thereby insuring the maximum of strength with the minimum of obstruction to light.

The steel latch, which securely attaches this guard to the socket, is positive in action, while the whole is compact, self-contained and inseparable.

The appearance of this guard when in position is very neat, while its durability is all that could be desired, and by its continued use lamp bills will be positively cut in half.

Another strong recommendation in favor of this guard is that it can be made to fasten with a seal, thus preventing the tampering with the lamps, which must appeal very strongly to all concerns who have a large number of lights.

The cut shown represents type B guard, attached to a No. 2 porcelain weather-proof socket.

Munderloh Specialties

Bulletins and catalogues have been received from Munderloh & Co., Montreal, describing some of the special electrical apparatus manufactured and put on the market by them.

The Munder socket is described and illustrated in natural colors. In this socket for incandescent lamps no screws are used to hold the working parts, which are securely clamped in position between two solid blocks of porcelain. The advantage of this is obvious, as where many screens are used and all subject to considerable strain they are bound to become loose in time through repeated turning on and off of the light, especially in places where sockets are subjected to vibration. With the exception of the binding screws the two screws which hold the porcelain blocks together are the only screws in the socket. There is no strain upon them and they will not become loose. The cam which makes and breaks the circuit works between two flexible spring contacts and subjects the screw shell to no strain whatever. The centre contact is made of spring brass and holds the lamp well under tension. A notable feature of this socket is that the shell is securely locked to cap and cannot become loose, but can be easily removed and as easily replaced without the use of a screw driver or other tool. The method of construction overcomes the trouble of the shell becoming loose and dropping down on the lamp. Its simplicity of operation is another notable feature.

Helios-Munder high economy arc lamps are also described. These are direct current enclosed arc lamps for constant potential 110 volt circuits. By combining a reactance coil with the regulating coil of the lamp in a peculiar way it is possible to operate a lamp on a 110 volt circuit satisfactorily as 97 volts at the arc thereby causing more of the energy consumed in the lamp to be consumed in the arc. This means increasing the length of the arc and allowing a lesser amount of light to be obscured by the carbons and an increase in the watt efficiency of the arc itself. Some of the features of this lamp are the ornamental appearance, easy accessibility of mechanism, supported at the bottom and can be removed when the lamp is burning, easily trimmed and steady burning. With one trim of carbons this lamp will burn 125 hours.

Condulets, described as the modern line of conduit outlet boxes and fittings and the only line of conduit fittings made for each and every size of conduit, are completely dealt with in bulletin No. 10. Every type of conduit required in electric wiring is illustrated or specified, making a very complete book of reference.

The Beck Flaming Arc.

A member of the Montreal Light, Heat & Power Co. asked recently for the names of well-lighted factories in Montreal, replied, after some deliberation, that there were none. THE CANADIAN MANUFACTURER, however, was able to find one well lighted flat, in the factory of the R. E. T. Pringle Co., Limited. This flat is now lighted with three Beck flaming arc lamps, which are giving efficient service where six arc lamps failed before. These lamps are rated at 3,000 candle power. One

gives a golden yellow light, and the other two a brilliant white light. The color depends on the carbons used. Newspaper print is easily read at a distance of 40 feet from the light.

The flaming arc lamp is an economical and desirable form of artificial illumination for large areas. The Beck lamp, manufactured in Canada by R. E. T. Pringle Co., Limited, Montreal, combines simplicity with the other virtues of flaming arcs, by a simple device that dispenses with the usual complicated regulating mechanism. In the Beck, the feeding and regulating is accomplished by means of a rib on the carbons, which rests on supports; the burning away of the carbons automatically regulates as well as feeds the lamp.

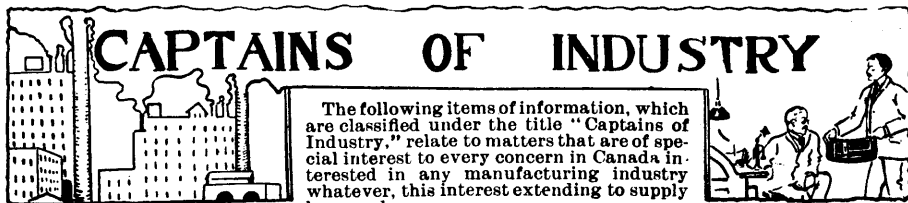
A good feature of the Beck lamp is that the current is conveyed to the carbons at the arc, thereby avoiding any voltage drop due to the resistance of the carbons. In other flaming arcs, when a new pair of carbons is put in, the voltage at the beginning of the rim is higher, due to carbon resistance, than at the end of the rim. As the carbons burn away, the voltage drops, and, consequently, the current rises, which burns the carbons faster and increases current consumption. In this lamp the resistance does not vary.

Beck flaming arcs are made for direct or alternating current. The direct current lamps run two in series on 100 to 120 volts, using 10 amperes for the series. The alternating current lamp runs two in series on 100 to 120 volts, on any frequency from 25 to 133 cycles. It is a practical lamp on 25 cycle circuits. Either direct or alternating lamp can be burned in multiple on 100 to 120 volts. In the direct current lamp a resistance, which is self-sustained, is used. In the alternating current lamp a small auto-coil reduces the line voltage with small transforming loss. No objectionable fumes are given off.

A number of features in this lamp are worthy of note. It has a new designed carbon holder, in which carbons can be inserted in an instant. It cannot be trimmed wrong. A perfect economizer prevents any fumes or gases from reaching the mechanism. It has no chains to become kinked. All parts are self-contained, no external resistance, no coils to burn out. Globe holders are readily taken off and put on. Globes are held to lamps by phosphor bronze springs, and can be easily removed even while lamp is burning. Lamp is 32 inches over all, weighs 20 pounds.

MAN'S MEASURE.

☞ A man, like a battleship, is supported by his own displacement; and, if he is to hold his own in the battle of life, with freeboard enough for winter weather, he must have a high box coefficient. His only foundation on the seat of life is his power of displacement. A man, when launched into the world finds no empty place made ready to receive him. No one scoops out a hole in the water to receive the ship; when launched she must displace her weight of the element into which she plunges. So a man displaces his weight of whatever element is opposed to him.—Extract from paper, "The Man and the Ship," read by Mr. George W. Dickie before Technical Society of the Pacific Coast, March 3, 1905.



The McClary Mfg. Co., London, Ont., have installed a gas producing plant and a 200 h.p. gas engine.

P. J. Powers & Co., Ottawa, have just about completed six large locomotive boilers for the Canadian Northern Railway Co.

The Ontario Hide, Wool & Fur Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture hides, skins, wool, etc. The provisional directors include A. R. Bickerstaff, F. H. Potts, Toronto.

The Fesserton Timber Co., Fesserton, Ont., have been incorporated with a capital of \$40,000, to manufacture lumber, timber, etc. The provisional directors include R. Robertson, Trenton, Ont., and W. J. Myers, Toronto.

The Domestic Specialty Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture blackings, leather dressings, cement, etc. The provisional directors include J. D. Trenaman, H. C. Trenaman and C. Wideman, Hamilton.

The Treasure Island Gold Mining Co., Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include J. G. Chester, J. Baird, and W. H. Hodges, Toronto.

The Kimmel Felt Co., Berlin, Ont., have been incorporated with a capital of \$200,000, to manufacture felt and leather goods, footwear, etc. The provisional directors include T. H. Rieder, A. J. Kimmel and A. H. Kimmel, Berlin, Ont.

The Page-Hersey Co., Guelph, Ont., are erecting a factory at Welland, Ont., for the manufacture of pipe from four to eight inches in diameter. The building for the lap weld furnaces will be 200 feet long, with wings at each end 380 feet long and 50 feet wide. The wings will contain the storehouse, thread testing plant and overhead clear runway. Between the two wings will be a separate building for machine shop 60x33 feet, and socket shop 180x33 feet. Additional to this will be the gas producer house 66x35 feet. The site selected adjoins the works of the Ontario Iron & Steel Co.

The premises of Messrs. Fraser & Co., Sault Ste. Marie, Ont., were damaged by fire, October 18. Loss about \$6,000.

The Tate Accumulator Co., of Canada, Toronto, have been incorporated with a capital of \$500,000, to manufacture electrical accumulators, storage batteries, machines, etc. The provisional directors include A. O. Tate, J. C. Stewart and W. W. Sloan, Toronto.

The Larder Gold Reefs, Limited, Ottawa, have been incorporated with a capital of \$40,000, to carry on a mining, milling and reduction business. The provisional directors include W. A. Allan, A. W. Ault and H. W. Chamberlain, Ottawa.

The Grand Trunk Railway freight sheds at Toronto Junction, Ont., were destroyed by fire, October 19. Loss about \$4,000.

The evaporator of J. A. Holgate, Foxboro, Ont., was destroyed by fire recently. Loss about \$2,000.

The Provincial Construction Co., Toronto, have been awarded the contract for the construction of the new building for the Canadian Automatic Machine Telephone Co., in Brantford, Ont. The cost will be about \$15,000.

The Independence Larder Lake Gold Mines, Toronto, have been incorporated with a capital of \$4,000,000, to carry on a mining, milling and reduction business. The provisional directors include F. Law, J. H. Tighe, and W. L. Russell, Toronto.

The government has accepted the tender of Louis Fisher & Co., of Dryden, Ont., for the right to cut timber on eight berths in the Rainy River district, northeast of Dryden station and along the route of the Transcontinental railway. The area of the berths aggregates about 143 square miles, and the right to cut extends for five years.

The premises of the Toronto Feather & Down Co., Toronto, were damaged by fire, recently. Loss about \$15,000.

The Kaufman Rubber Co., Berlin, Ont., have been incorporated with a capital of \$500,000, to manufacture rubber boots and shoes, etc. The provisional directors include J. Kaufman, A. R. Kaufman and A. A. Voelker, Berlin, Ont.

Messrs. H. A. Clemens & Co., Guelph, Ont., have been awarded the contract for the erection of the new coal house for the Ontario Agricultural College, Guelph. The building will be 100x70 feet and will cost about \$10,000.

The dry kiln of the Chatham Fruit Growers' Association, Chatham, Ont., was destroyed by fire October 18. Loss about \$600.

The Toronto Viavi Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture drugs, chemicals, medicines, etc. The provisional directors include S. A. McGaw and A. M. Sugden, Toronto.

The sawmill of John Stormont, situated a mile east of West Lorne, Ont., was destroyed by fire October 17. The firm had a contract with Henry Wise & Co., of St. Catharines, Ont., for cutting oak timber. A large amount of lumber belonging to this firm was also consumed. The loss is about \$3,000.

The Scantlebury building, and several other buildings, Belleville, Ont., were damaged by fire October 18. Loss about \$40,000.

It is stated that Mackenzie & Mann purpose doubling the capacity of their blast furnaces at Port Arthur, Ont., and that larger iron docks will be constructed.

The town council, Carleton Place, Ont., are considering the presenting of a by-law to borrow \$25,000, for the establishment of a waterworks system.

The Department of Public Works, Ottawa, invite tenders up to November 5 for additions to the post office, Toronto.

The town council, Sarnia, Ont., have passed a by-law intrusting the Sarnia Street Railway Co. to construct about a mile and a half of railway.

The city of Windsor, Ont., have under consideration the building of a number of new sewers, concrete curbs and asphalt block pavements.

The ratepayers of Markham, Ont., voted favorably on three by-laws for municipal works: granolithic sidewalks, \$3,000; extension of the electric light plant, \$3,000; completion of new bridge over the Rouge River, \$3,000.

The Ideal Clothing Co., Port Hope, Ont., have been incorporated with a capital of \$40,000, to manufacture cloths, clothing, etc. The provisional directors include W. McLean, W. D. Stephens and R. Gillies, Port Hope, Ont.

The work contemplated on the construction of a new western entrance to Toronto harbor will involve an expenditure of about \$400,000. The new entrance is to be dredged out through the sand strip, south of the present channel, which will be 400 feet wide.

Messrs. Pratt & McDougall, Midland, Ont., have been awarded the contract for the construction of the new dock at the gas plant for the Department of Marine and Fisheries, at Parry Sound, Ont.

Messrs. Mackenzie & Mann have placed a contract for 350,000 ties with Captain Shear, Port Arthur, Ont.

The city of Hamilton, Ont., are considering the question of supplying the residents of Barton township with water.

The new plant of the Chatham Gas Co., Chatham, Ont., has been completed.

The Georgian Bay Power Co. are developing power at Eugenia Falls, near Flesherton, Ont.

The Ontario Power Co. have purchased a 60 foot right of way from Niagara Falls to Welland, Ont.

The Ontario Novelty Co., Toronto, have secured a site on which they will erect an addition to their present factory.

Messrs. Boyer & Swartz, of Indiana, will establish a factory in Stratford, Ont., for the manufacture of garden swings, step ladders, etc.

The Hanover Portland Cement Co., Hanover, Ont., are enlarging their plant and the following contracts have been placed: Canada Foundry Co., for two 250 h.p. boilers, condensers and pumps; Kilmer & Pullen, Toronto, one 400 k.w. generator; the Robb Engineering Co., Amherst, N.S., one 500 h.p. engine.

The ratepayers of Chatham, Ont., will vote on a by-law to loan \$25,000, to the Canadian Pin Co., who will agree to establish a factory in Chatham. Besides the town loan, they ask for exemption from school and frontage taxes for ten years, and 7-cent water.

A new armoury will be erected at Strathroy, Ont.

The Toronto Rowing Club, Toronto, will erect a club house at a cost of about \$7,000.

The offices of the Traders Bank at Guelph, Ont., will be enlarged at a cost of about \$15,000.

Messrs. Langford & Sheehy have been awarded the contract for the erection of the

new Roman Catholic church in Peterboro, Ont., for \$44,311.

Mimico, Ont., will borrow \$7,000, for school purposes.

The town of Welland, Ont., will erect a new hospital.

Messrs. Edge & Gutteridge have been awarded the contract for the station of the Canadian Pacific Railway Co., at Walkerton, Ont.

The Waterloo Knitting Co., Carleton Place, Ont., have been incorporated with a capital of \$250,000, to manufacture woolen, cotton, silk, flax, jute, etc. The provisional directors include A. F. Savaria, B. A. Charlebois, and T. Meunier, Waterloo, Ont.

The Yukon District Gold Mining Co., Toronto, have been incorporated with a capital of \$5,000,000, to carry on a mining, milling and reduction business. The provisional directors include W. Bain, R. Gowans and J. S. Bisgrove, Toronto.

The Buffalo Mines are erecting a large mill at Cobalt, Ont.

A bridge is being erected across the Don River, Toronto, to carry the gas pipe mains of the Toronto Gas Co.

The Orpen Contracting Co. have been awarded the contract by the Board of Control of Toronto, for the construction of a sewer on Greenwood Avenue, Toronto, for \$22,950.

It is probable that new tenders will be called for shortly for the erection of the addition to Rideau Hall, Ottawa.

The city of Ottawa are considering the construction of a system of relief sewers in the Upper Town, at a cost of about \$28,000.

A new concrete dam will be built at Bobcaygeon, Ont. It will be 1,700 feet in length, 1,200 feet of which will be clay embankment, and the 500 feet of dam proper will be of concrete.

The Raven Lake Portland Cement Co., Raven Lake, Ont., are to be re-organized. It is proposed to secure permission from the Ontario Government to write off 20 per cent. of the stock, and reissue the amount among the bond and shareholders.

The new chapel of Assumption College, Sandwich, Ont., has just been completed by the Blonde Lumber & Mfg. Co., of Chatham. The architectural sheet metal work on the exterior and interior of the building was done by the Metal Shingle & Siding Co., of Preston, Montreal and Toronto.

The premises of the James Morrison Brass Mfg. Co., Adelaide Street West, Toronto, were damaged by fire, October 21, to the extent of about \$2,300.

The sawmill of Rider & Kitchener, Lindsay, Ont., was destroyed by fire October 19. Loss about \$5,000.

The Deseronto Iron Co., Deseronto, Ont., whose furnaces have been idle since last year owing to the difficulty of securing charcoal for fuel, began in October making coke pig iron of both foundry and malleable, Bessemer qualities. A. C. Leslie & Co., Limited, Montreal, are Canadian sales agents.

The Metal Shingle & Siding Co., Preston, Montreal and Toronto, are now engaged in placing 6,000 square feet of skylights on the new Intercolonial Railway shops at Moncton, N.B. They have also just completed instal-

ling 6,000 square feet of copper skylight on the extension to the Canadian Pacific Railway Angus shops at Montreal.

The large crockery establishment of F. T. Thomas & Co., Quebec, Que., was destroyed by fire October 26. Loss about \$25,000.

The ratepayers of Lachine, Que., voted favorably on a by-law, October 21, to grant a bonus and other concessions to the Imperial Locomotive Co., of London, England, who will establish works there. Under the agreement the company are to invest not less than \$2,225,000. They are to get water at five cents per thousand gallons and exemption from taxation for twenty years.

The flour mill of the G. A. Taylor Co., Ogdensburg, Que., was destroyed by fire October 21. Loss about \$25,000.

C. E. Castle, Ogdensburg, Que., has been awarded the contract for the erection of a large addition to the mill of the Racquette River Paper Co., at Potsdam. It will take about 300,000 bricks to erect the building, a portion of which is 70 feet in height.

The premises of the Roman Catholic church, Cote St. Paul, Montreal, were destroyed by fire October 12. Loss about \$90,000.

The Royal Victoria Hospital, Montreal, will be extended at a cost of about \$35,000.

A bridge will be erected across the Restigouche River from Campbellton, N.B., to the Quebec side in Bonaventure county. The bridge will be 3,330 feet long, with 16 piers besides the approaches, and the cost will be about \$600,000. In addition to a steam railway track accommodation will be provided for a highway and an electric car line. The bridge will connect the Atlantic, Quebec and Western Railway and the Intercolonial Railway now under construction.

Messrs. Madden & Son, Notre Dame de Quebec, Quebec, have been awarded the contract for the installation of a waterworks system there.

J. A. Belanger, Delormier, Que., has been awarded the contract for the construction of sewers for Boulevard St. Paul, the contract price being \$89,140.

The new plant of the Wabesso Cotton Co., Three Rivers, Que., is nearing completion.

The Salaberry Catholic School building, being erected in Montreal, will cost \$130,000 when completed.

The Boston Asbestos Co., Parish of Sacre-coeur ae Jesus, Beauce county, Que., have been incorporated with a capital of \$300,000, to manufacture asbestos, minerals, etc. The provisional directors include A. A. Normandin, Boston, Mass., J. H. Lorranger, Montreal, and P. Boldue, St. Victor de Tring, Que.

O. V. Lafleur, Ottawa, has been awarded the contract for the construction of the new public building at Lachute, Que., for \$15,000.

John Millen & Son, Limited, Montreal, have organized a separate department for Shelby Steel Tubing, in charge of Mr. F. D. Lyman. They are now stocking tubes up to 5 inches o.d. both in Montreal and Toronto.

H. A. Drury & Co., 317 Craig Street, Montreal, have remodelled their storage and warehouse departments, enabling them to carry a full stock of all sizes and grades of tool steel. The second floor has been handsomely fitted up for office purposes.

The power plant of the Maine & New

Brunswick Electrical Power Co., Aroostook Falls, N.B., has commenced operations.

The Bank of Montreal will erect a branch building at Moncton, N.B.

The Warren Bituminous Paving Co., Toronto, have been awarded the contract for the laying of 5,000 square yards of pavement in Amherst, N.S.

Messrs. Rhodes, Curry & Co., Amherst, N.S., have been awarded the contract for the construction of the power house for the Sydney & Glace Bay Railway Co.

The branch of the Bank of Nova Scotia being erected at Truro, N.S., is almost completed.

Mr. Harvey Graham, assistant manager of the Nova Scotia Steel Co., died at New Glasgow, N.S., on Thanksgiving Day.

The elevator of the Imperial Elevator Co., La Salle, Man., was destroyed by fire October 17.

The ratepayers of Winnipeg, Man., will be asked to vote on a by-law to raise \$100,000 for public baths.

The grain elevator of G. B. Murphy, Carberry, Man., was destroyed by fire October 21.

The premises of the Winnipeg Paint & Glass Co., Winnipeg, Man., were destroyed by fire recently. Loss about \$275,000.

E. L. Drewry, Winnipeg, Man., will erect a bottling plant in connection with his brewery. It will cost about \$30,000, exclusive of machinery.

The Canadian Pacific Railway Co. depot at Brandon, Man., will be enlarged.

An independent telephone system may be installed in Trehern, Man.

It is stated that within a short time the city of Winnipeg, Man., will call for tenders for an incinerator plant.

Work has commenced on the Union Terminal station at Winnipeg, Man.

The Department of Public Works, Winnipeg, Man., invite tenders for the construction of a 90 foot span Pratt truss steel bridge with concrete abutments across the Boyne River at Carman, Man.

Messrs. Buchanan & Co., Winnipeg, Man., have been awarded the contract for the construction of a wooden Howe truss bridge across the Winnipeg River, in connection with the power development, the price being \$44,127.

The Brandon Electric Light Co., Brandon, Man., have made application for permission to increase their capital from \$125,000 to \$400,000.

A reformatory will be erected at Brandon, Man., at a cost of about \$150,000.

The Grand Trunk Pacific Railway Co. have 140 miles of track ready for government inspection west of Portage la Prairie, Man.

The Western Iron Works, Limited, Winnipeg, Man., will increase their capital from \$100,000 to \$300,000.

The municipality of Shell River, Man., are calling for tenders for the construction of a bridge across the Shell River, near Roblin, Man.

Messrs. Dobson & Jackson, Winnipeg, Man., have been awarded the contract for the construction of sewers on Jarvis Avenue, Winnipeg, at a cost of about \$1,558.

Brantford Roofing Co., Limited, Brantford, Can.

Manufacturers of High-Grade Ready Roofing

Viz. "Brantford Asphalt"

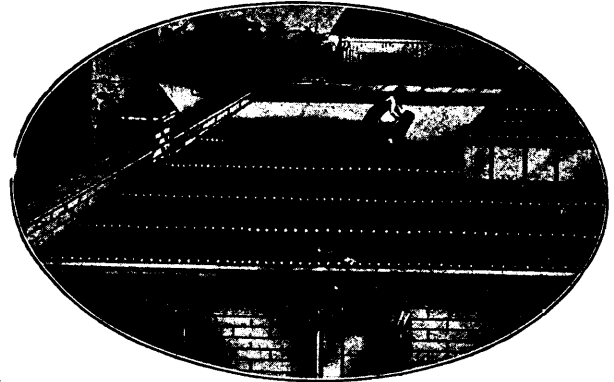
"Brantford Rubber"

Under this Trade Mark



Specially Adapted for the Roofing of
Factories, Warehouses, Rinks, and Large
Buildings of every Description.

Get a "Brantford Specification" for an A-1 Job.
Write us for Tenders—on Materials Only, or Laid Complete.



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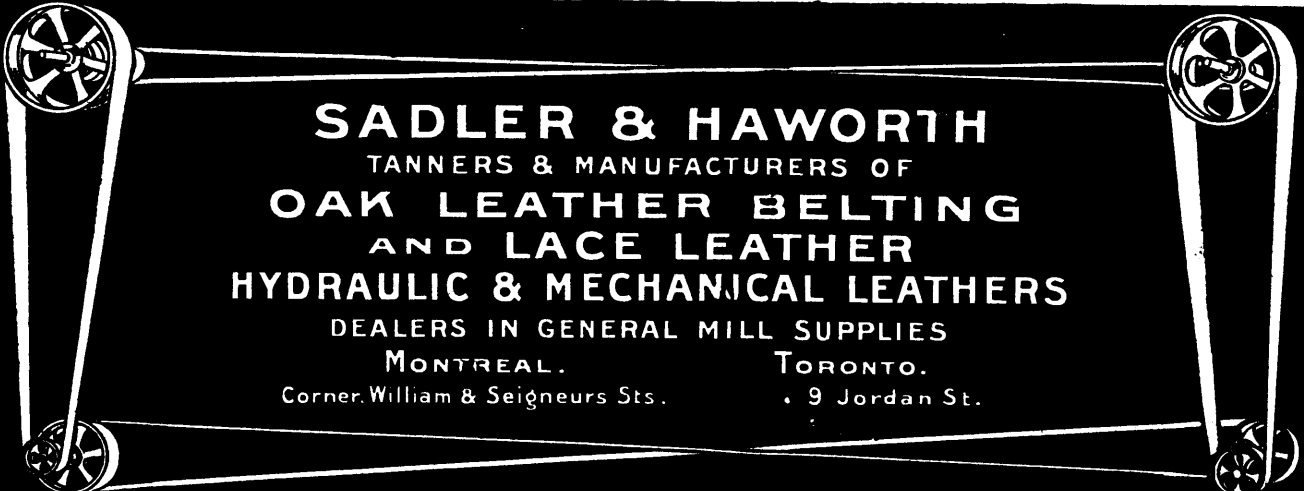
MANUFACTURERS OF THE WELL-KNOWN

"Hammer Brand" **Calcined Plaster**

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HYDRAULIC & MECHANICAL LEATHERS
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GENERAL OFFICES AND
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CANADA

TORONTO BRANCH,
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Bare and Insulated Electric Wire

Electric Light Line Wire, Incandescent and Flexible Cords.

Railway Feeder and Trolley Wire

Americanite, Magnet, Office and Annunciator Wires, Cables for Aerial and
Underground Uses.

The edifice being erected at Sturgeon Creek, Man., for the Church of England, is almost completed.

The congregation of the Baptist church, St. James, Man., are erecting a new edifice.

The Ontario, Manitoba & Northwestern Land Co. are erecting an eight story building 88x44 feet, in Winnipeg, Man.

The new school being erected at Norwood, Man., is almost completed.

A provincial sanitorium will be established at Ninette, Man., at a cost of about \$50,000.

A new school will be erected at Pierson, Man.

The congregation of the Presbyterian church, Treherne, Man., are erecting a new edifice.

The Dominion Bank purpose erecting a large new building in Selkirk, Man.

The Ideal Fence Co., Winnipeg, Man., have made application for permission to increase their capital from \$100,000 to \$200,000.

Messrs. McLaughlin & Ellis, Winnipeg, Man., have been incorporated with a capital of \$100,000, to construct elevators, wharves, docks, etc. The provisional directors include A. B. Ellis, H. Phillips, Winnipeg, Man., and H. R. McLaughlin, Wolseley, Sask.

The warehouses of the Singer Sewing Machine, and the Pioneer Fruit Co., of Brandon, Man., were damaged by fire October 19. Loss about \$10,000.

The ratepayers of Rosthern, Sask., will vote on a by-law to raise \$10,000, to complete and furnish the new town hall now in course of erection.

The post office block, Edmonton, Alta., was destroyed by fire October 17.

A large new drill hall will be erected in Calgary, Alta., at a cost of about \$40,000.

The Government are considering the erection of an armoury at High River, Alta., at a cost of about \$10,000.

The International Heating & Lighting Co., of which Mr. C. S. Eaton is Western manager, are endeavoring to secure a gas franchise at Wetaskiwin, Alta.

Natural gas has been struck near Grenfell, Sask. Steps will be taken to develop it as it is believed to exist in paying quantities.

The Northwestern Telephone Co., have taken over the telephone system at Phoenix, Sask., and will erect a large addition to the building.

Messrs. Newman & Co., Regina, Sask., have been awarded the contract for the erection of the sub-structure of the Government bridge across the Saskatchewan River, at South Battleford, Sask. The cost will be about \$100,000.

A temporary septic tank will be constructed at Edmonton, Alta.

A Presbyterian church will be erected at Settler, Alta., at a cost of about \$2,400.

The cement brick and block industry at Carlyle, Sask., will be enlarged and work resumed again by K. Morrison.

Work has been commenced on the concrete footings for the city hall at Calgary, Alta.

The town of Arcola, Sask., has secured a loan of \$50,000 from the F. H. Cook Mortgage Co., for the completion of the water-works system and other purposes.

W. C. Thorburn, Broadview, Sask., is

erecting a new elevator on the site of his old one. He is also erecting an elevator at Oakshella, Sask.

The Western Canada Flour Mills Co. are erecting a 50,000 bushel elevator at Yorkton, Sask.

The Canadian Pacific Railway Co. tank, being erected at Maple Creek, Sask., will have a capacity of 40,000 gallons.

The Edwards Planing Mill Co. have commenced operations at High River, Alta.

The new premises of the Imperial Bank at Red Deer, Alta., have been opened.

The Bank of Hamilton have opened branches at St. Albert, Alta., and Tuxford, Sask.

R. J. Lund, of Wapella, Sask., will erect an elevator at Asquith, Sask.

The new edifice for the Church of England being erected in Asquith, Sask., is nearing completion.

Canora, Sask., is asking for tenders for \$1,500 school debentures.

The Government have purchased a site in Arcola, Sask., for a new court house.

The International Lumber & Implement Co. have been granted a permit to erect a factory at Swift Current, Sask.

The Grand Trunk Pacific Railway Co. are considering the construction of 200 miles of main line west of Edmonton, Alta.

The sum of \$175,000 was spent in Macleod, Alta., this year in the erection of new buildings. The most important of these were the Hudson Bay store, \$50,000; the Empire hotel, \$25,000; and Canadian Pacific Railway improvements, \$12,000.

Messrs. Rakow & Pouplier will erect a new brewery in Calgary, Alta., to be known as the Golden West Brewery. The building will be three stories, 61x60 feet.

Senator G. A. Cox, president of the Canada Life Assurance Co., has purchased the Leland hotel site on Hastings Street, Vancouver, B.C., from Edward Lewis, at a price of about \$85,000, and it is expected a new building will be erected for the company.

A rich strike of gold and copper was made at Thunder Mountain, near Collinson Bay, Moresby Island, B.C. Rough assays of this ore made on the spot showed it to carry values as high as \$100 to the ton, a large quantity of gold and high percentage of copper.

Messrs. Leeming & Co., Victoria, B.C., will build a steam freighter larger than the steamer Trader, to carry on the general freighting business done by this firm.

The Canadian Pacific Railway Co. have decided to make Grand Forks, B.C., a divisional point, and will erect new roundhouses and repairs at a cost of about \$100,000.

The British Columbia Power & Electric Co., New Westminster, B.C., have received a grant of water rights on the Cheakamus River. The proposed plant will generate 20,000 h.p., and will supply power to any point within a radius of 75 miles of the plant.

The Canadian General Electric Co. have been awarded the contract for the additional machinery for the Revelstoke power plant. The plant will consist of a generator of 60 cycle, 150 k.w. type, 6 r.p.m., weighing with exciter, 10,300 pounds.

The Nelson Cement Co., Nelson, B.C., a newly organized company, will commence

operations as soon as machinery can be purchased.

A new dry dock will be erected at Victoria, B.C.

A large cold storage plant will be erected at New Westminster, B.C.

The North Pacific Lumber Co., Barnet, B.C., will erect a large sawmill on the shore of Burrard Inlet, at Vancouver, a short distance east of the large mill, which the company already have in operation.

The Schelt Brick & Tile Co. is the name of a new company recently organized by the Canadian Financiers, Limited, Vancouver, B.C., to operate at Schelt, B.C. The company have secured 131 acres of crown granted land at that place, and it is expected that by March next they will be in position to turn out brick at the rate of a million a month. The manager of the company will be F. M. Humber, for many years engaged in the brick making business at Victoria, B.C., and lately manager of the Harper Brick Co., Harper, Wash.

It has been decided to have new plans prepared for the Victoria, B.C., West school, as the appropriation amounts to \$30,000 and the lowest tender of those submitted was \$8,000 in excess of this sum.

The Y.M.C.A., Victoria, B.C., are considering the erection of a building there at a cost of about \$1,000,000.

The Eastern Townships Bank have opened a branch in Keremeos, B.C.

Messrs. Campbell & Gray have been awarded the contract for the erection of the new Methodist church at Cold Creek, B.C.

An addition will be erected to the Clarence Hotel, Vancouver, B.C., at a cost of about \$11,000.

The city council, Vernon, B.C., have installed an additional pumping plant, including a Fairbanks-Morse duplex double booster pump driven by a 20 h.p. Fairbanks-Morse gasoline engine.

The congregation of the Presbyterian church, Moyie, B.C., are erecting a new edifice.

PUBLICATIONS.

COTTON YARN DYEINGS—Cassella Color Co., of New York, have issued a handsome color card containing eleven sheets of samples illustrating dyeings on cotton yarn fast to cross-dyeing. For the production of dyeings fast to cross-dyeing such as are principally used for warps and thread effects in union fabrics, which are subsequently to be wool dyed in an acid bath, a number of diamine immedial and basic colors are found very suitable. The formula for developing the various colors are given together with the beautiful card samples showing the various shades.

MUNICIPAL FILTRATION—The Pittsburg Filter Mfg. Co., Pittsburg, Pa., engineers and contractors for filtration, water softening and sewage disposal plants and manufacturers of pressure and gravity filters and water softening plants for public institutions, railroad and general industrial purposes are sending out an instructive 109 page catalogue dealing with municipal filtration plants. It is pointed out that water may be as clear as crystal and still rank with contamination and

Amatite

ROOFING

THE MINERAL SURFACED ROOFING

Ordinary ready roofing is made with a smooth surface, prepared to receive a coat of paint. Sometimes the paint is applied at the factory and when the roof is laid no coating is required, but after a year or two the paint, under the hard conditions of roof service, wears out and it is necessary to coat the roofing again. Every year or two after that the same thing is necessary, and the expense of these annual paintings will in the end be more than the original cost of the roofing.

Amatite, however, is a different kind of roofing. In place of the smooth surface it has, on the weather side, a firmly embedded layer of crushed mineral matter. This mineral matter will wear longer than a dozen coats of paint. It needs no coating, and when your Amatite roof is once laid the work is all done and the expense is ended.

The durability of Amatite is assured by its thickness and weight. It contains more material per square foot than other roofings costing several times as much.

Booklet and sample will be gladly sent to you without charge, if you will forward your request to the nearest office.

The Paterson Manufacturing Company, Limited

CANADIAN AGENTS

Toronto

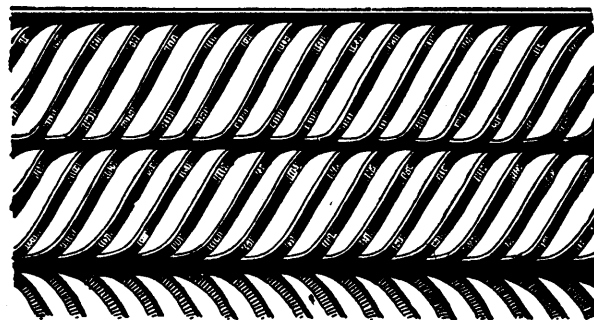
Montreal

Winnipeg

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Halifax, N.S.

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germs of disease, that to-day filtration means the elimination from waters not only all suspended matter visible to the eye, but in addition thereto from 97 to 99 per cent. of the bacteria to meet standards of accepted authorities. The conduit kind of a filter may give clear water; only a scientifically designed and carefully constructed filter will produce pure water. A scientific explanation of filtration is given together with descriptions of apparatus manufactured by the company. Some filtration plants designed and installed by the Pittsburg Filter Mfg. Co., are described and well illustrated. Results of tests made and copies of testimonial letters, with names of users complete this interesting publication.

PAROID ROOFING—Circulars issued by F. W. Bird & Son, manufacturers of paroid roofing, Hamilton, Ont., give facts and particulars to the man about to buy roofing regarding the ready roofing manufactured by them. Reasons why this roofing should be considered when roofing is required are given in intelligent form.

CARBORUNDUM—A 43 page catalogue from the office of the Carborundum Co., Niagara Falls, is devoted to carborundum products as sent out by this firm in commercial form including wheels of all sizes and edge shapes, carborundum cloth, razor hones, slip stones, oil stones, pocket stones, knife sharpeners, etc. Prices are given in each case, making the catalogue one of handy reference.

METAL SAWING MACHINE—It has been demonstrated that the cold cutting saw is the most satisfactory solution of the problem of stock cutting. After several years of study and experimenting the Cochrane-Bly Co., of Rochester, N.Y., have placed on the market a new style metal sawing machine, as described in their catalogue. They are made in 6 and 8 inch capacities. A full description of these machines is given covering the various points of advantage.

QUALITY IN LEATHER BELTING—The good points of Sadler & Haworth belting are brought out in a booklet with the above title issued by Sadler & Haworth, Montreal, in which the various classes of belting are described.

ELECTRICAL GOODS—The Galt Electrical Mfg. Co. successors to the Maple Leaf Automobile & Electrical Mfg. Co., of Galt, Ont., are making a specialty of small generating units as described in this catalogue. This company's lines include motors and generators, switch boards and special lighting plants.

"IDEAL" ENGINES—Catalogue number six from the advertising department of the Goldie & McCulloch Co., of Galt, Ont., deals with their ideal high speed centre crank and side crank steam engines. It contains 55 pages, is beautifully illustrated and handsomely gotten up. The various features of the engines are illustrated and described. Tables are included giving powers and dimensions, floor space, shipping weight, speed, etc., of their single cylinder, tandem compound non-condensing and tandem compound condensing Ideal engines.

TINNED AND ENAMELLED WARE—A handsome catalogue of 185 pages printed in four languages, English, French, German and Spanish is being sent out by the Welsh

Tinplate & Metal Stamping Co., Cambrian Works, Llanelly, South Wales. It illustrates a wide variety of goods, the illustrations being produced from actual photographs, every article shown in the catalogue being made throughout on the company's premises. The catalogue which includes a price list of pressed, stamped and machine made hollow ware and introduced by a suitable index, is divided into two parts, part one devoted to tinned, galvanized and japanned ware and part two to enamelled ware. It is designed for the wholesale trade both local and export.

CAREY'S ROOFING—A nicely illustrated catalogue of 25 pages is devoted to the growth and output of the Philip Carey Mfg. Co., of Cincinnati, whose Canadian offices are at 8-10 Place d'Youville, Montreal, and 112 Bay St., Toronto, being two of forty branches of this firm. Materials entering into the composition of Carey's roofing are described and the various claims made for the roofing enumerated.

SYSTEM OF REINFORCING—The American system of reinforcing for concrete construction for which Parmelee & Nicholson, 1314 Traders Bank Bldg., Toronto, are selling agents, is described in a 47 page catalogue, recently issued. The catalogue is designed to interest the concrete engineer, architect and constructor. The advantages of this system are dwelt upon at some length and numerous illustrations given showing work constructed after this system. Any one interested may secure a copy of this interesting catalogue from the above address.

FASHIONABLE SHADES—Cassella Color Co., of New York, are sending out a handsome shade card containing fashionable shades for 1907-8, produced with easily levelling dye-stuffs. The method of dyeing is given for the production of these handsome shades.

KAHN SYSTEM STANDARDS—A hand book of practical calculation and application of reinforced concrete compiled and published by the Engineering department of Trussed Concrete Steel Co., London, Detroit, Toronto. Pages, 106, price, \$1.50. The rapid growth of reinforced concrete construction has led to the publication of this hand book on designs similar to those in use for the ordinary classes of building material. The information given herein deals particularly with reinforcing as affected by the Kahn system. Much valuable information including tables of safe loads, spacing for various loads, footings, bridge arches, etc., concluding with brief specifications of materials for reinforced concrete work.

PRESSES—The Canadian Boomer & Boschert Press Co., of Montreal, have issued their 50 page catalogue of presses of all kinds. These presses are made at the company's plant at 1040 St. Catherine Street East, Montreal, which include knuckle joint presses, power screw presses, hydraulic and special presses. Illustrated and described in this catalogue are their oleo and wax press, lard and tallow press, fertilizer press, leather press, leather belting press, veneer press, steam plate press, baling, power box, yarn baling, knit goods, book binders, paper and binders board press. Their line includes hydraulic pumps and accumulators. A copy of this interesting catalogue may be had or further information secured by communicating with the above address.

PROMINENT MANUFACTURER DEAD.

Mr. Franklin Bates Polson, president and general manager of the Polson Iron Works, Limited, Toronto, died very suddenly at his home, 6 Beaumont Road, Toronto, on the afternoon of Monday, October 21, at the age of 50. On the Saturday previous Mr. Polson had complained of feeling unwell, but was apparently well again, when death came almost without any warning, due to acute indigestion. The Polson Iron Works established by him and his father in 1883 has grown to be one of the largest shipbuilding concerns in Canada, as president of which he occupied a prominent position in Canadian manufacturing circles. The first steel steamship ever built in Canada, the Manitoba, for the Canadian Pacific Railway was constructed



MR. FRANKLIN B. POLSON.

by this firm, which in addition has filled from time to time large and important contracts for the Dominion Government. Mr. Polson was a member of the Canadian Society of Civil Engineers, was deeply interested in technical education and acted as chairman of the Arbitration Board of the Employers' Association. He was also a member of the Engineers Club of New York, the Rideau Club, Ottawa, the National Club, Toronto, the Lampton Golf and Country Club, the Royal Canadian Yacht Club, and the Toronto Hunt Club. He was known as a man of keen business capability and sound judgment and highly esteemed by those with whom he came in contact. Extreme regret at his sudden demise is expressed in manufacturing circles where his influence was prominently felt.

The men whose visions are high and wide are laughed at, derided at first—followed later. They tell the good news that the world will not believe. But in their lifetimes or later, the truth and their services are known.

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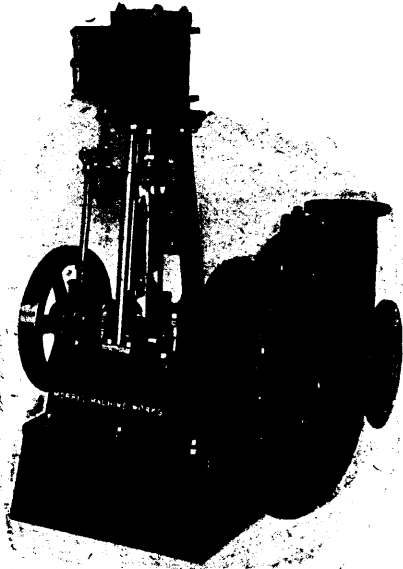
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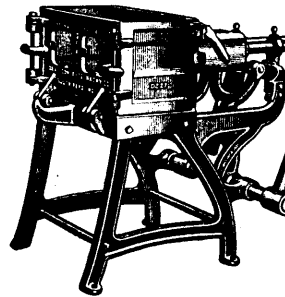
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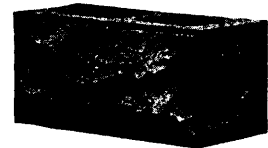
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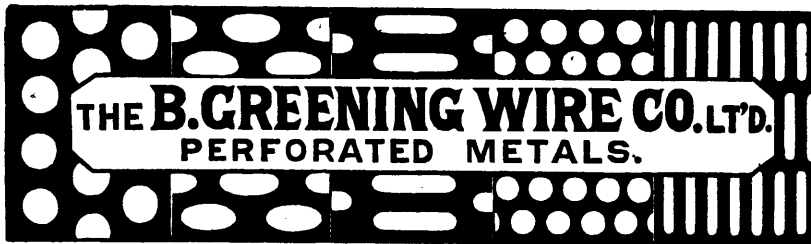
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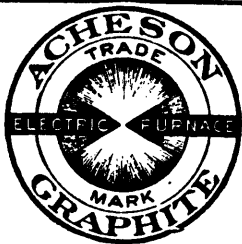
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CANADIAN PATENTS.

Below will be found the weekly list of patents recently granted to Canadian inventors in Canada and United States, which is furnished by Fetherstonhaugh & Co., Head Office Bank of Commerce Bldg., Toronto, from whom all information may be readily obtained: P. Lord, Montreal, nut locks; J. Jamieson, Hamilton, Ont., trays or grates for stoves; M. C. Hauffman, Vancouver, B.C., fire boxes for hot air furnaces; H. A. Nesbitt, Finch, Ont., stove pipes; A. Brake, Toronto, hot air register; C. Demers, St. Flavians, Que., nut locks; W. C. Perry, Toronto, clothes washers; A. J. T. Gauvreau, Montreal, catamenial sacks; S. Goddard, Toronto, match scratchers; C. L. Higgins, Montreal, methods for forming rubber articles; B. S. Silla, Belleville Ont., trusses; A. M. Mossley, Guelph, Ont., pencil sharpeners; F. W. Slater, Montreal, spring beds; N. W. Holland, Hullett, Ont., incubators; J. J. McGuigan, Toronto, automatic feeding device; C. P. Cathrea, Vancouver, B.C., display frames; E. W. Klotz, display stands; T. M. Putman, Lyons, Ont., H. H. Scott, London, Ont., sleighs.

CANADIAN COMPANY NOT AFFECTED.

The recent application of the Westinghouse Machine Co., of East Pittsburg, for a receivership in no way affects the Canadian Westinghouse Co. The latter, while an affiliated institution is on an entirely separate financial footing and will not feel the shock that has overtaken the parent company. The receivers of the Westinghouse Machine Co. announce that the company is suffering from nothing more serious than a rapidly growing and profitable business. There has not been even a momentary pause in the operations of the company and the personnel remains the same as before.

ECONOMY LIGHT.

A leaflet issued by the Citizens Gas Control Co., 317 St. James St., Montreal, describes the "Tubus" gas light, being a incandescent gas light with the mantle in a horizontal position. It is claimed for this light that it has twice the efficiency of ordinary incandescent gas lights and three times that of the inverted light. It has a guaranteed actual candle power of 165 and uses only $3\frac{1}{4}$ cubic feet of gas per hour.

PERSONAL.

Mr. K. L. Aitken, C.E., of Toronto, has been retained for some special electrical work by the Standard Oil Co., of New York.

At a meeting of the Toronto branch of the American Institute of Electrical Engineers, held at the Engineers Club, Toronto, on Friday, October 11th, the following were elected: Chairman, K. L. Aitken; vice-chairman, W. A. Bucke; secretary, L. W. Pratt; executive committee, H. W. Price, Edw. Richards and W. G. Chace.

CHEAP POWER—KAMINISTIQUIA.

In the article under the above heading appearing in CANADIAN MANUFACTURER issue of Sept. 20, the paragraph dealing with the officers of it was incomplete. It was omitted to mention that W. A. Black, Western manager of the Ogilvie Milling Co., of Winnipeg, is managing director of the Kaministiquia

Power Co., of Fort William, P. R. Farrow is chief operator and assistant to the superintendent at Kakabeka Falls and C. E. Smith is superintendent of substation and lines at Fort William. T. Byrne not R. Kyle as mentioned, is resident engineer on the construction of the reinforced concrete aqueduct.

THE EARTH'S HEAT.

The temperature of the earth is estimated to be at least 5,000 degrees Fahr. at a depth of 50 miles, and in many places comparatively high temperatures are found very near the surface. The utilization of this heat is one of the great problems now in the minds of engineers. With the direct and economical conversion of heat into electricity on a large scale, which is looked for in the near future, the earth's hot spots should become important manufacturing centres.

"LIFTING THE LIGHT."

The almost universal adoption of arc lamps for street lighting, has given rise to some important problems of an incidental nature, chief of which is that of manipulation. In other words, suspension of "lifting the light" with a maximum of efficiency and a minimum of expense, is a desideratum. The demonstrated success of the Oneida galvanized chain for arc lamp suspension, justifies its adoption by every municipality. Its merits were widely recognized as soon as it was introduced. Two hundred cities quickly adopted this suspension among which are Milwaukee, Wis., Springfield, O., Charleston, S.C., Lansing, Mich.; etc. In most cases where introduced, it is used exclusively. Reports from 1,500 other central stations making tests of the chain, confirm the experience of those cities which have already adopted it. Communications expressive of interest from 2,000 central stations indicate the favor with which this suspension is generally regarded. The demand is steadily increasing. It is obvious that this success can only be explained by the superior merits of the chain for the purpose as actually demonstrated in practical use. The chain is heavily galvanized and rust-proof. (Ice or sleet does not interfere with its ease of operation). This was very strikingly demonstrated at Niagara Falls, where a certain light was close to the cataract, and the chain subjected not only to all conditions of weather; but to a continuous deposit of mist arising from the Falls. The Buffalo and Niagara Falls Electric Co. reported that the chains on this system worked perfectly throughout the entire winter in spite of the severe conditions. With the Oneida Galvanized Chain are supplied special attachments for fastening it to the lamp and to the pole. Care is taken to have the attachment as strong as the chain. The methods of attaching either rope, cord, cable or chain to the lamps vary so that no standard attachment can be offered. The No. 1 S. Hook is made at the request of central stations who have found their present method of attachment unsatisfactory. This S. Hook is strong, and in fact is stronger than the chain itself, can be readily fitted into the chain, and hooked into the lamp and insulator and then closed up. The Superintendent of the numerous central stations which have used the Oneida Galvanized Chain and attachments have not hesitated to write very strong

endorsements of the same. This chain is manufactured by the Oneida Community, Niagara Falls, Ont.

NEW SALES OFFICE.

Canadian Rand Co., of Montreal, have opened up a show room at 11 St. Nicholas St., where they display a complete line of air compressors, rock drills and Imperial pneumatic tools. A small stock of repair parts will also be carried for the convenience of local customers. This will be found a great convenience as buyers in Montreal will have an opportunity of examining the various lines carried by the Canadian Rand Co.

PRODUCTIVE PUBLICITY.

The publicity engineer is an evolution of modern business methods relating particularly to salesmanship, being an engineer who has devoted himself to publicity as distinguished from an advertising writer who has acquired some knowledge of engineering. In an attractive booklet Walter B. Snow, 170 Summer St., Boston, Mass., outlines the field for productive publicity in engineering products, and announces the fact that he has entered the field as a publicity engineer prepared to take entire charge of the advertising of firms manufacturing engineering or mechanical apparatus. During his 20 years connection with the B. F. Sturtevant Co., where he prepared the technical advertising and catalogues with special treatises delivered lectures at technical schools, contributed special articles to the technical press and had charge of the photographic and printing departments, Mr. Snow became one of the best known technical publicity men in America. He has membership in the American Society of Mechanical Engineers, the Societies for the Promotion of Engineering and Industrial Education and the American Society for Testing Materials. Many a manufacturing firm will welcome the announcement that Mr. Snow is prepared to take up this work. He announces that more than one client will not be accepted in a given competitive line and the total number will be limited to the ability to give personal attention to each. With the reputation behind his work in the past, Mr. Snow should have little difficulty in securing all the business he can handle.

INDUSTRY FIRST.

I do not despise genius—indeed I wish I had a basketful of it instead of a brain, but yet, after a great deal of experience and observation I have become convinced that industry is a better horse to ride than genius. It may never carry any one man as far as genius has carried individuals but industry, patient, steady, intelligent industry, will carry thousands into comfort and even into celebrity, and this it does with absolute certainty, whereas, genius often refuses to be tamed and managed, often goes with wretched morals.

If you are to wish for either, wish for industry."—Julian Rolph.

The Canadian Polished Stone, Brick & Tile Co., Limited, are booking orders for next year's delivery. Machinery is being built for their plant for the manufacture of polished stone building blocks and enamel face bricks.

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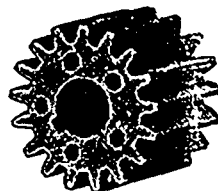
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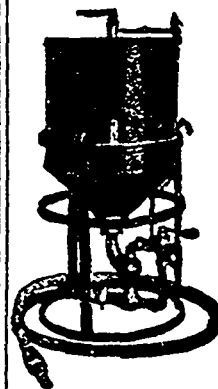
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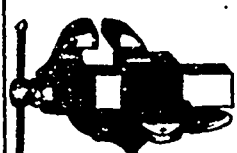
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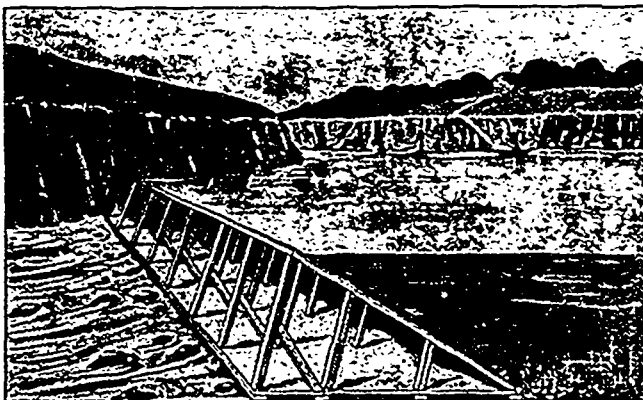
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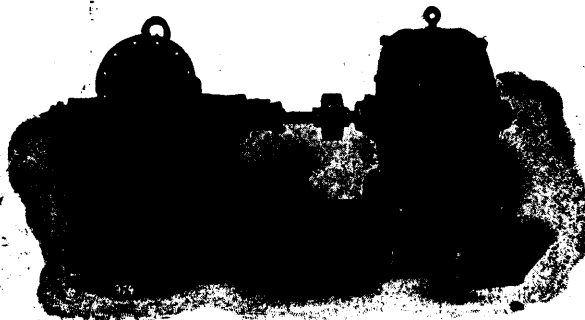
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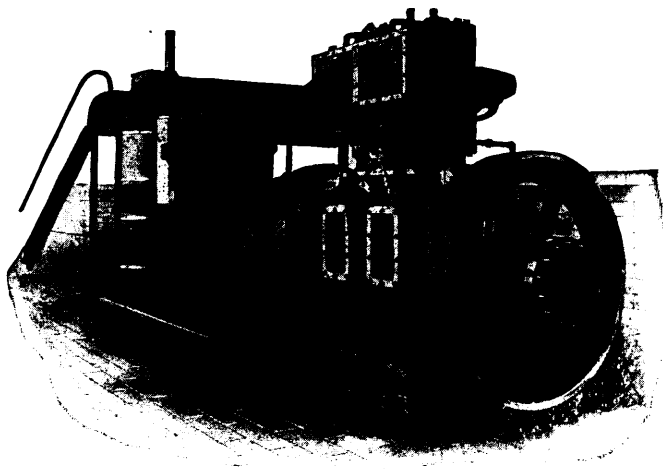
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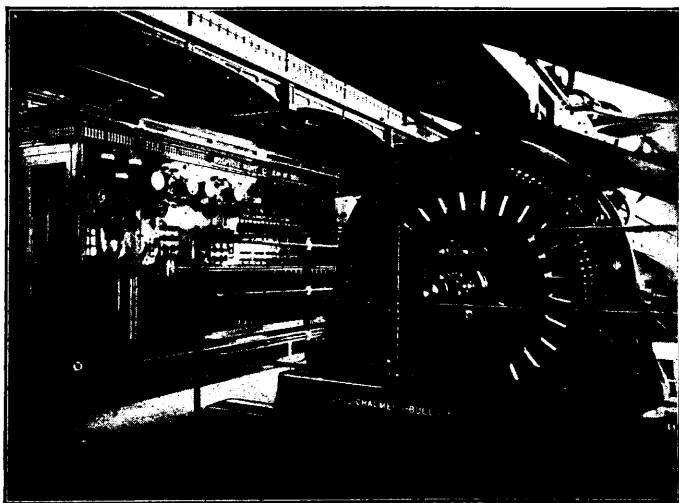
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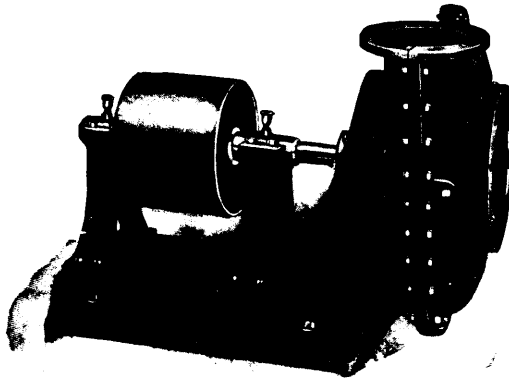
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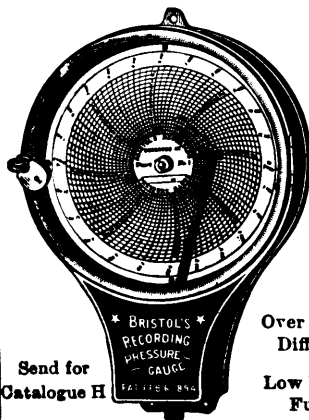
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