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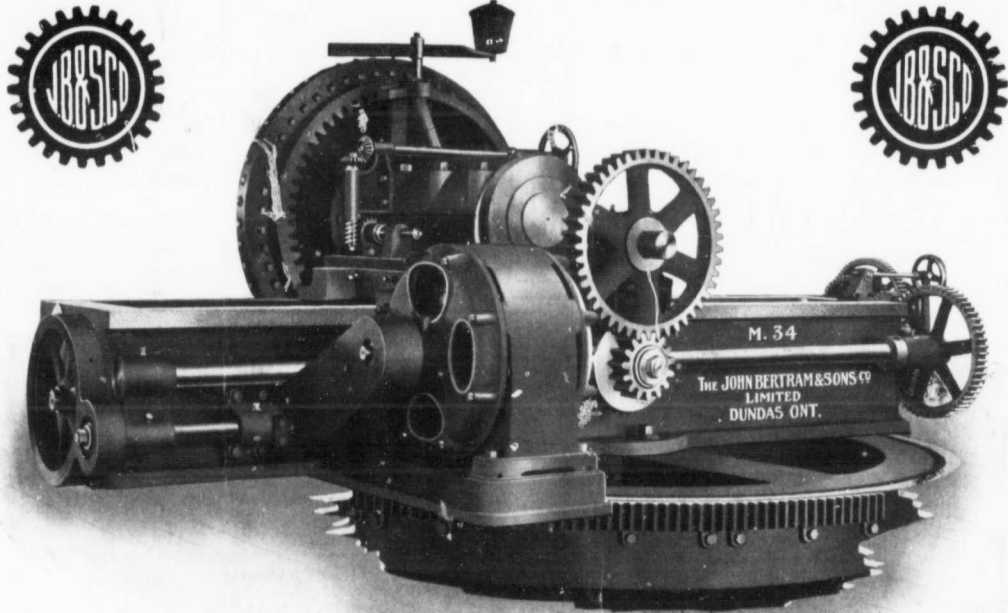
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Vol. 57. No. 7.

TORONTO, SEPTEMBER 18, 1908.

New Series—Vol. 1. No. 3.

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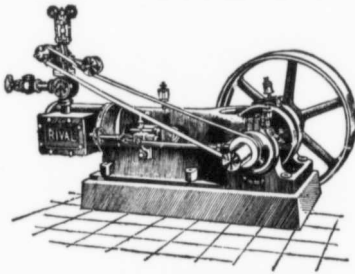
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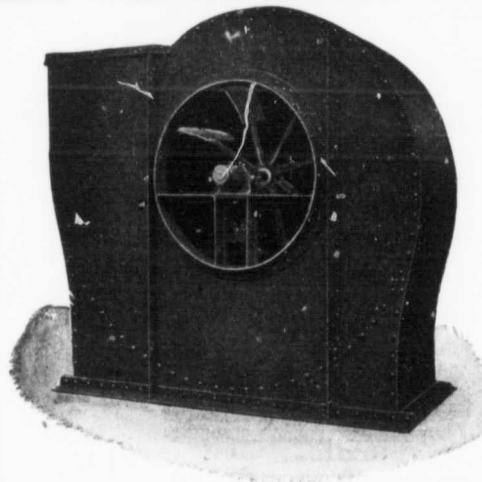
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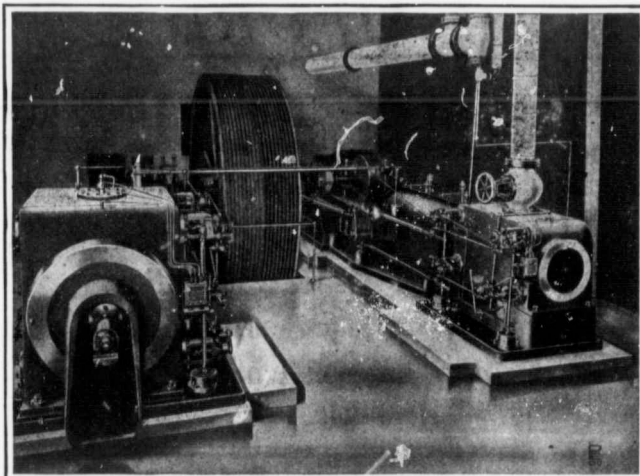
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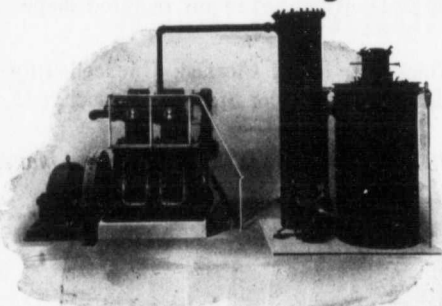


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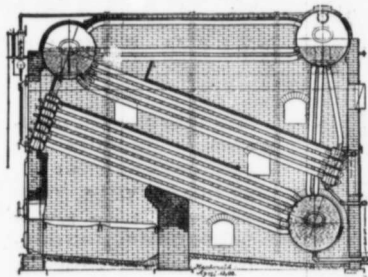
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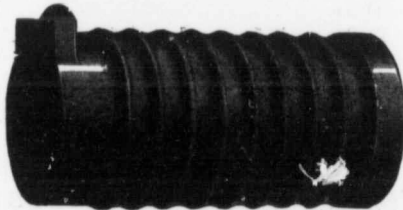
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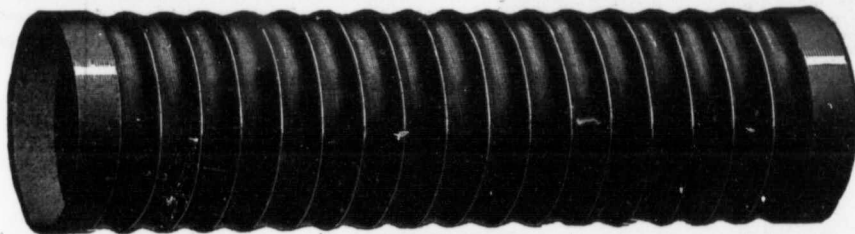


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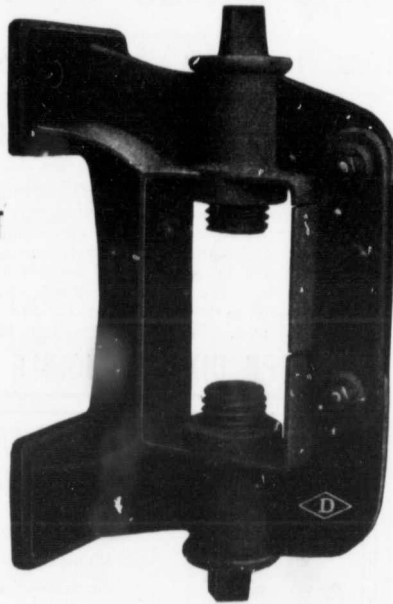
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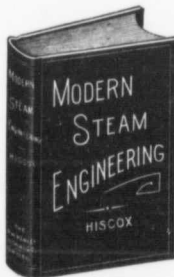
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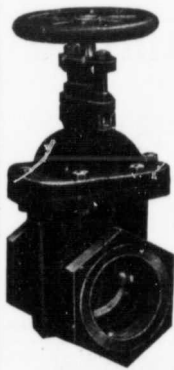
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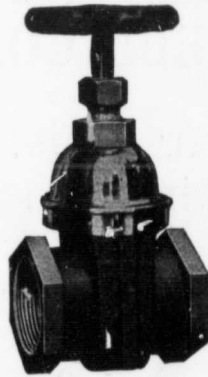
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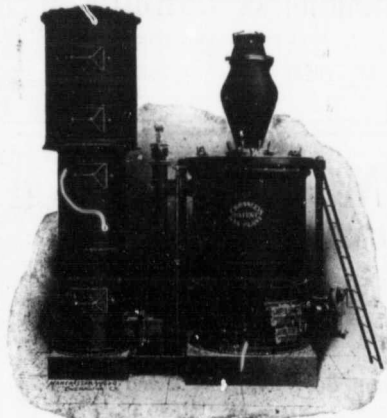
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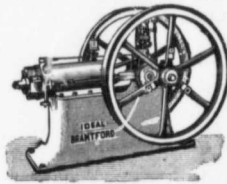
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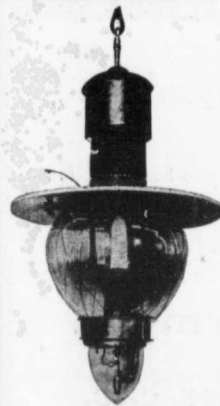
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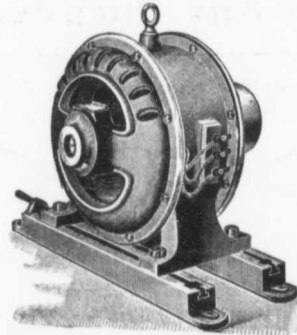
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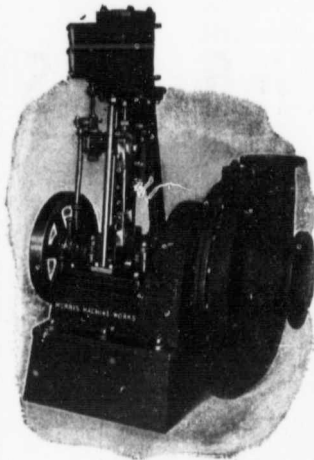
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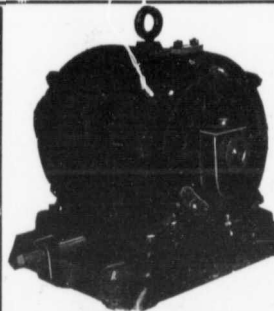
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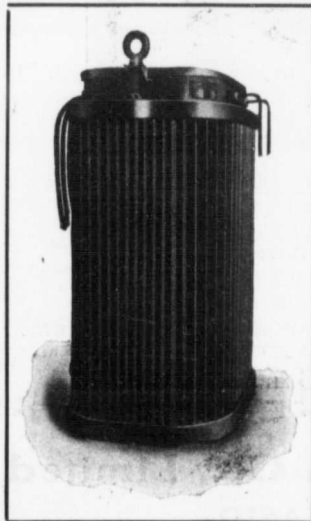
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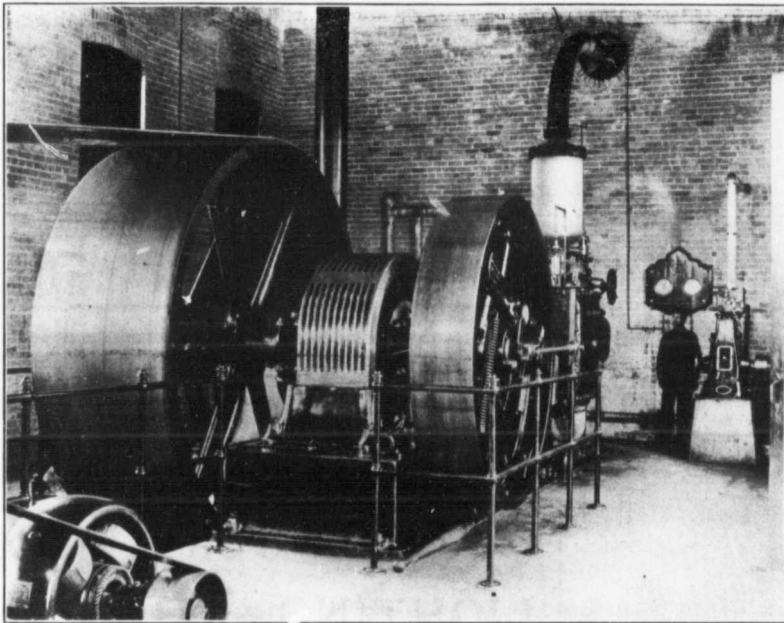


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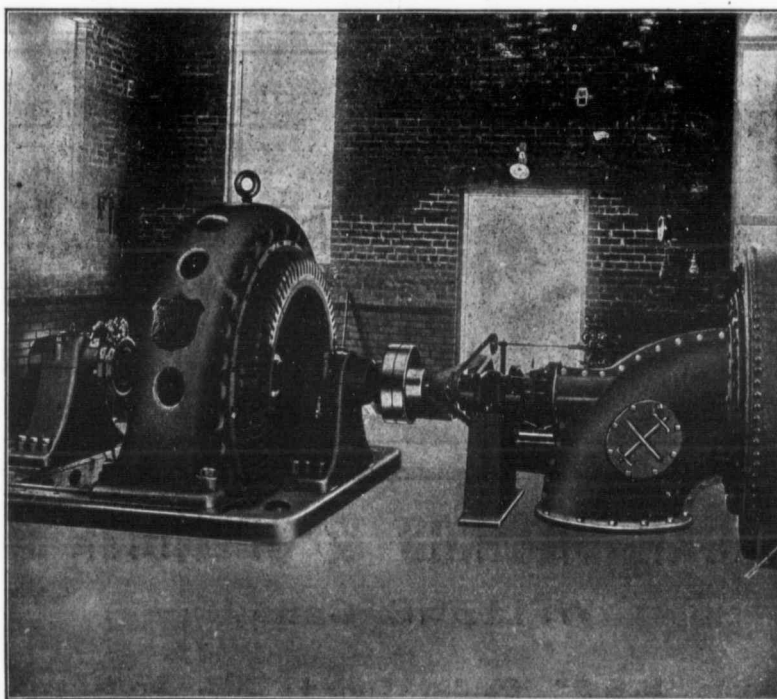
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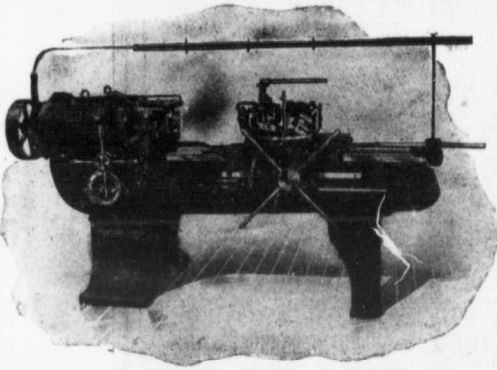
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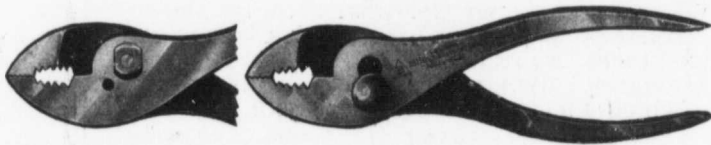
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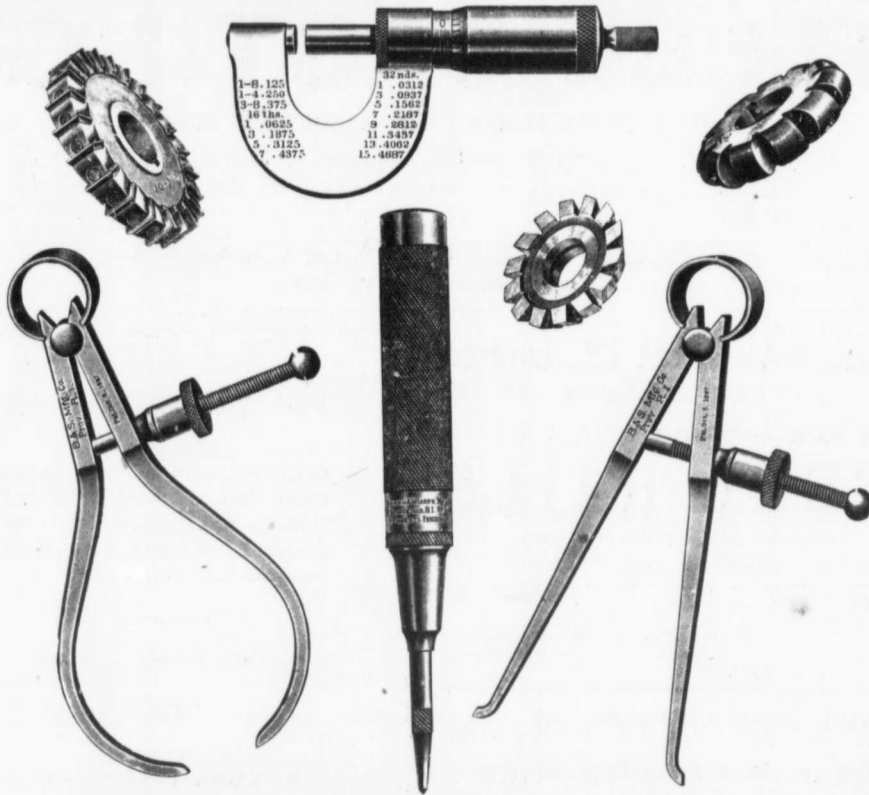
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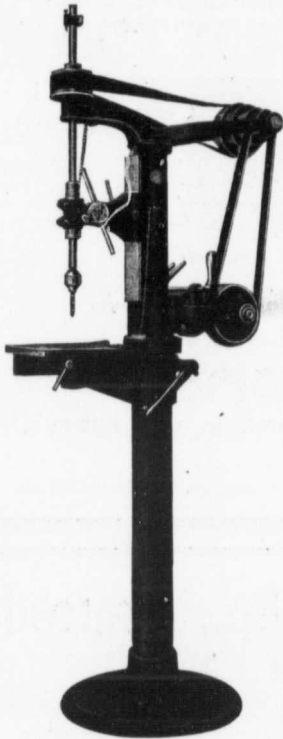
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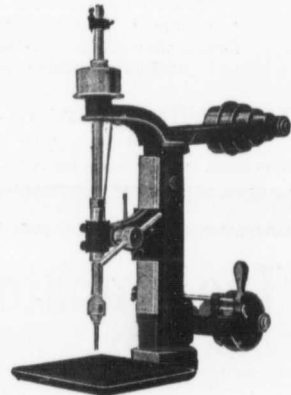


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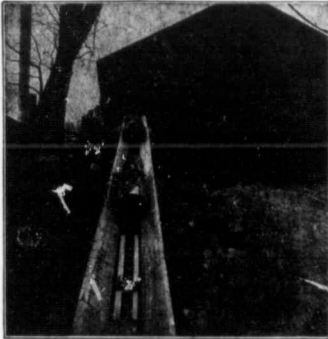


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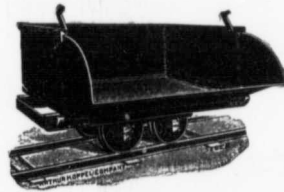
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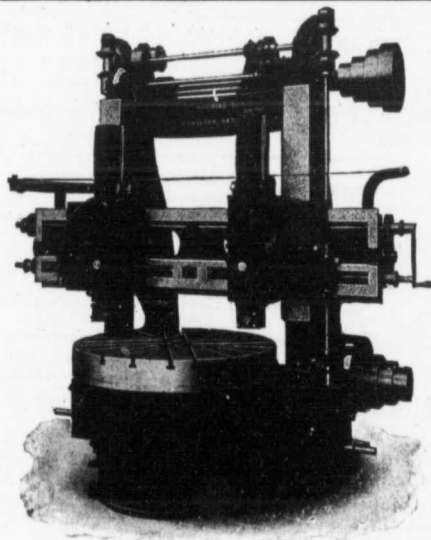
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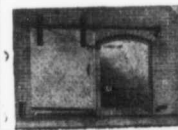
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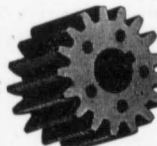
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THE EVER RELIABLE

PIPE WRENCH

ALL UP-TO-DATE DEALERS
CARRY THEM

OUR PAST RECORD
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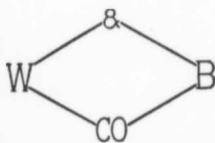
Our new Factory, located at St. Catharines, Ont., will be ready for operation on October 10th, and will be the most up-to-date plant of its class in America.

Our largely increased facilities will enable us to serve the trade more promptly than ever before.

The Whitman & Barnes Mfg. Co.,

Canadian Factory and Sales Office:

St. Catharines, Ont.



Annual Address of the President of Canadian Manufacturers Association

PRESIDENT HON. J. D. ROLLAND DELIVERS AN ABLE ADDRESS.

The chief feature of the first day's meeting of the Canadian Manufacturers Association, at Montreal, on Tuesday, the 15th inst., was the annual presidential address given by the retiring president, Hon. J. D. Rolland, Montreal.

In opening his speech President Rolland referred to the trade depression throughout the world, noting that Canada had been no exception to the rule, for all classes and all trades had suffered. Possibly its effects had not been felt quite so keenly here as in other countries, for the rapid settlement of the northwestern Provinces and the construction of thousands of miles of railway had relieved the situation. Upon the farmer the burden seemed to have rested with comparative lightness. On the manufacturer the heavy part of the burden had been laid. Appearances would seem to indicate, however, that the turning point had now been reached. Assurances of an abundant harvest had already established confidence to a marked degree. Buyers were beginning to contract for materials twelve to eighteen months in advance. The lessons taught by the present depression had been many. Among them the manufacturer had been impressed as never before with the fact that his very existence depended upon a thorough organization of all departments. Competition had proved a splendid specific for many of the complaints which business is heir to.

THE WOOLEN INDUSTRY.

The condition of the woolen industry was still in a serious condition, owing to the competition of foreign materials, a result of the lack of protection. Unless a helping hand were stretched forth, that industry must suffer; it is, in fact, doomed. Greater protection for this, as for several other leading Canadian industries, was absolutely necessary.

THE LABOR SITUATION.

One of the most conspicuous and at the same time one of the most regrettable features of Canadian industrial life was the present labor situation. A year ago manufacturers in all lines were complaining of the scarcity of skilled help, but with the cancellation of orders and the curtailment of production this had all changed. It was inevitable under these circumstances, that the workmen should suffer.

TRANSPORTATION.

The transportation interests constituted one of the most important elements in the industrial life of Canada. The fact that Canadian railways had received in lands or cash the sum of \$233,000,000 for subsidies, or almost one-fifth of the combined share capital and funded debt of all the railways in Canada put together. "With such an investment," said the president, "it is no wonder that we as Canadians take the deepest interest in the progress of our railways. But what is the situation confronting us? Our north-

western provinces are rapidly being covered with railways leading to the border. We must turn the trade east and west, and keep our products within our own borders, and handled by our own transportation companies," was his conclusion.

President Rolland next referred to the preservation of the forests. He made a

pulpwood exported, with freight charges included to the boundary, netted Canada from \$6.70 to \$8.50. If manufactured into news print paper the same cord would net the country \$37.40. At the lowest calculation, therefore, the country was losing \$28.90 on every cord exported. Every stick of pulpwood allowed to leave the country be-



HON. J. D. ROLLAND, RETIRING PRESIDENT OF THE CANADIAN MANUFACTURERS ASSOCIATION.

strong appeal for the reservation of the incalculable millions Canada has in her forests to-day. Referring to the pulpwood situation, he placed himself on record as an advocate of prohibiting absolutely and totally the exportation of pulpwood. Nothing, he said, could ever compensate Canada for allowing this material to leave the country in an unmanufactured state. A cord of

comes a weapon in the hands of Canada's keenest commercial rival.

TECHNICAL EDUCATION.

Referring to technical education, he said that it was the association's firm conclusion that no more helpful service to the industrial and social future of Canada could be performed by the Federal Government than the

undertaking of an inquiry into the needs of technical education. He was of opinion that there was not another topic of more importance before the Canadian people to-day. It was the duty of the Federal Government to find ways and means for protecting and developing native talent. Such an enquiry would redound to the credit of the association, would stimulate Canadian industry, and be a fitting testimonial as to the true attitude of employers and employees, and an enduring evidence of the close relation of the manufacturer to the broad interests of the country.

O. H. L. Wernicke on Publicity

EXTRACTS FROM THE ADDRESS OF O. H. L. WERNICKE, PRESIDENT OF THE MACEY COMPANY, DELIVERED AT THE CONVENTION OF THE ASSOCIATED ADVERTISING CLUBS OF AMERICA AT KANSAS CITY.

Advertising and business are inseparable terms. The effect of intercourse is publicity; it may be good, bad or indifferent, according to circumstances, but knowledge can neither be acquired or imparted without some degree of publicity resulting therefrom.

Advertising is a complex art of such infinite variety, and so rich in possibilities, that its study has become a subject of universal interest in every department of human activity.

For the purpose of this paper, however, I will endeavor to confine my remarks on the subject of publicity to its normal relations with merchandise, the production and sale of which involves a degree of skill and ingenuity requiring aptitude and special training.

I shall also avoid the subject in its fraudulent forms, and relations to any business that depends on deception, trick or other questionable practices for its success.

WHAT IS PUBLICITY?

Publicity may take the form of favorable location, inciting displays, attractive values, square dealing, prompt service, courtesy, skill, energy, as well as paid space. All of these are important factors in business and deserve careful consideration. The science of business and the art of advertising find their best expression in the skillful employment of every favorable factor, while steering clear from pitfalls and errors.

Paid space is only one form of publicity, but it is the customary form with which advertising is generally associated. Under this head we find the newspapers, magazines, bill boards, signs, booklets, and many other channels of publicity which are for sale, and may be purchased in very much the same way as other merchandise.

Space is the stock in trade of the publisher, upon the sale of which he is dependent for a livelihood, hence the buyer should exercise the same care and intelligence that he would use in making any other purchase or expenditure of equal importance. Space which may be warranted not to fade and possessing good, honest value to one customer may be quite worthless to another.

Every person who contemplates the purchase of paid space publicity should be qualified by experience to select that which will be most suitable for his purpose.

TOBACCO INDUSTRY.

Referring to Canadian tobacco, President Rolland said that the Government had aided the industry, with the result of increasing the use of the domestic leaf in the manufacture of tobacco and cigars, but the demand is limited to home consumption, while the production exceeds the supply. In order to secure maximum results we must look to exportation to foreign countries. It is conceded that the profit of tobacco-growing gives a better return to the grower than any other farm produce, netting an average of \$100 an acre, while the market is practically unlimited if an export trade be developed.

Those who have publicity for sale, as well as those who accept compensation for their services from either side in that connection, must also observe the same rules and practice the same principles which govern in other lines of business.

Generally speaking, where you find a successful enterprise, you may look for competent management, and vice versa. Competent management seeks to win success along the lines of least resistance, and will employ every available form of publicity which can be made to produce profitable results, whether it be of the paid space variety alone, or a combination of things.

Paid space advertising is a weapon which, when skillfully used, can be made wonderfully effective. It is also equally dangerous in the hands of the ignorant and unskilled.

Before entering upon a campaign of paid space publicity, the advertiser should be certain that the stage setting is complete in all other respects, and that the merit of the advertised proposition will not fail to command and retain the interest of the audience after the curtain goes up and as the play proceeds.

Having thus outlined some of my views on advertising in a general way, I desire now to deal with the subject in more concrete form, and have chosen for this purpose the dormant possibilities in furniture publicity.

CLASSIFICATION OF SPECIALTIES.

There are certain specialties classed as furniture, such as sectional book cases, certain kinds of office furniture, kitchen cabinets, carpet sweepers, stoves, etc., which owe their prominence in a large degree to paid advertising. Such goods, however, are produced and sold on the strength of their practical usefulness. Questions of art and sentiment are but minor considerations, and, therefore, the methods and forms of publicity successfully employed in their exploitation may not, and probably would not, prove to be equally effective in exploiting furniture wherein the utilitarian features are matters of secondary importance.

The character of furniture which I shall discuss here is the kind that borders on luxury and expresses art in its design, or in its relations to the decorative scheme of the home, or is reminiscent of some period or epoch in history. Let us call it

Furniture of Character, or Good Furniture, to distinguish it from the other.

Here we have a virgin field in which the art of publicity is almost unknown. It is an ideal situation where the lavish hand of opportunity remains unstretched, laden with treasure, to be had for the taking.

I may not be able to convince any one why such a condition exists in the furniture trade, but some of the reasons appear to me to be very plain indeed. Chiefly, they are restricted publicity and absence of the personal element or evidence of personal responsibility.

Here, as in other lines, permanent success depends on a high degree of efficiency, but whether it consists of publicity, economy, activity, skill, or a combination of them all, publicity is the most important factor and should receive the greatest consideration.

THE TRADE MARK.

The trade-mark can be made one of the most valuable forms of publicity in connection with furniture of character, and it is almost inconceivable why it is neglected. The makers of our day have failed to grasp the full significance of this fact, and do not seem to realize the value and importance to themselves of the trade mark idea.

Every person and every concern that produces something good takes pride in it, and should take pains to proclaim its origin. It is a mistake and an unwarranted sacrifice to omit a proper brand of trade-mark.

When the Good-Will of any business rests upon a well-known trade mark, it has a value that can be converted into money, and, like a cumulative interest bond, it works while you sleep.

Every producer of something good and useful should tell his story about it in a truthful manner, and also in such a way that it will be as interesting and convincing as possible. The consumer is always interested in what the maker of any article may have to say about it.

Every satisfied user of an article becomes a living advertisement for it. It is human nature to mention that which affords us pleasure and satisfaction, and the more we know about any particular thing, the more we are apt to talk about it.

The up-to-date merchant renders a valuable service to the manufacturer and to the community, for which he is entitled to a liberal reward. No sensible person denies this, but the manufacturer has the right to be faithfully represented and to share in the benefits of good will and publicity which his own efforts and his particular products deserve.

To illustrate some of the benefits which a merchant derives from well-known trade marks, I need only mention Studebaker vehicles, McCormick reapers, John Deer plows, Elgin watches, Steinway pianos, Stetson hats, Rogers silverware, Royal baking powder, Singer sewing machines, Garland stoves, Globe files, Macey bookcases—but there are hundreds of others, and the agencies for such goods are always earnestly sought after and reluctantly surrendered. There is no difference in principle between such articles, as I have mentioned, and Good Furniture, whether it be viewed from the standpoint of the maker, the merchant or the user.

CONSTRUCTION AND EQUIPMENT EDITION

OF THE

CANADIAN MANUFACTURER

Established in 1880.

Published on Fridays.

The Canadian Manufacturer Publishing Co., Limited

Office of Publication: 408 McKinnon Building, Toronto

D. O. MCKINNON—Managing Director

J. C. ARMER—Editor

Montreal Office—204 St. James Street,

ARTHUR B. FARMER—Representative

London, Eng., Office: 16 Devonshire Square, E.C.

WM. TUCKER & CO., Representatives

SUBSCRIPTIONS:

Canada \$1.00. United States \$1.50 per year. All other Countries in Postal Union six shillings sterling, including postage.

ADVERTISING RATES:

Made known on application to 408 McKinnon Bldg., Toronto

APPRECIATION.

We desire to express our appreciation of the many kind messages of approval and commendation of "The Office Edition" and "The Power Edition" of THE CANADIAN MANUFACTURER, which have come to us from all directions.

To publish four issues in the month instead of two and to give to three of them the highly specialized editorial direction which was given the issues mentioned and which will be given "The Machinery Edition" has incurred much additional expense and a great amount of extra labor, necessitating the enlargement of the paper's staff in every direction. It is, therefore, pleasing and encouraging to know that our readers, especially manufacturers of all classes throughout Canada, have realized and appreciated the enlarged scope of the paper and its increased value to them.

We have received so many expressions of commendation that we are constrained to believe that we have not only enhanced the paper's value to its readers, but have made it of service to a much wider field of advertisers. To those who have in one way or another shown their approval of our efforts to make the paper of more value to them we must express our appreciation and our desire to make it of still greater service to them, as to all its readers.

WHAT DOES YOUR POWER COST?

One of the conditions disclosed by the activities of the Ontario Hydro-Electric Commission was that a large proportion of the manufacturers and other large power users in Ontario did not know what their power was costing them.

In some cases, when enquiry was made, the answer given was, "We don't know exactly but we paid the engineer and fireman \$— and for fuel we paid \$— last

year." But when asked how much of this fuel could properly be charged against power and how much against heating they were at a loss; they had no records of exact costs.

In our last issue, THE POWER EDITION, we published an article by J. G. Ould, a practical engineering expert, describing in detail "How to Keep tab on the cost of Power." We would recommend a study of this article not only by engineers but by accountants, superintendents and others anxious to keep accurate record of costs.

Other articles along the same line will be published in later issues of this edition of THE CANADIAN MANUFACTURER.

THE TARIFF AT THE C. M. A. CONVENTION.

The chief subject of discussion at the annual meeting of the Canadian Manufacturers' Association at Montreal this week was, as predicted by this paper, the tariff.

Despite the efforts at former conventions of a few prominent members, who are ambitious for political honors, to give the impression that the tariff is no longer an issue, it continues to be the most earnestly discussed question on the list.

The President, Hon. J. D. Rolland, in the annual address, referred at some length to the serious condition in the woollen industry and expressing regret that the Canadian Government had not seen fit to grant the request of the Executive Committee, at the July meeting, that relief be given the industry.

The Tariff Committee, in reporting on the telegram to the Premier, Sir Wilfrid Laurier, commented as follows:

"Your committee did not consider it necessary to state in the telegram that if the protection asked for was granted it would not have meant an increased price to the consumer, but, owing to the larger output of the factories, thereby reducing the fixed expenses, a reduction in the price would probably have taken place. This fact appears to have been overlooked by the Premier, notwithstanding that evidence proving same had been supplied by the deputation that waited on him.

"Since the answer was received a number of mills have closed their doors. It is for this meeting to state what further action should be taken."

An able address on the subject was delivered by Mr. Louis Simpson, of the Montreal Cotton Co., Valleyfield, Que., who insisted that unless conditions changed it would to-morrow be in the cotton trade as to-day it is in the woollen trade. Mr. Simpson said that the measure of protection afforded the textile industry is insufficient. He criticized the action of the Government, and suggested that the facts could only be obtained by the appointment of a commission of experts, not party heelers or out-of-place politicians, or even Ministers, who hold preconceived ideas on the subject, and who, if they reported fairly, would have to admit that they have been wrong. "I would suggest a party of experts to go to Germany and Great Britain and study the conditions there." He warned the politicians of both parties that they should learn the truth and secure an appreciation of the real case of the manufacturer and the farmer. Mr. Goldwin Smith had stated that every cent of duty comes out of the pocket

of the farmer. This he denied. If there were no manufacturers of textile goods in Canada the merchant and consumer would be compelled to pay more. Now they were getting well made goods at a fair price. They wanted to get down to the farmer; they wanted the farmer to learn the truth. The interests of the farmer and of the manufacturer were identical.

He then turned to the growing power of the West, and said the East had made the West. The money of the East had developed the West, and the credit of the East had obtained money abroad for Canada, yet politicians told them that the tariff cannot be changed because the West won't have it. Were they to understand that after they had made the West the West was going to cut their throats? He contended that this policy was making business unprofitable for manufacturers.

Mr. James Kendry, of Peterboro, Ont., was indignant that the Government had not seen fit to safeguard the woollen industry. Sir Wilfrid Laurier, in his reply to the telegram sent him by the Executive Committee had stated that "the Government have on more than one occasion given evidence of their appreciation of the importance of the woollen interests, and their desire to give reason, able encouragement to it." This Mr. Kendry denied. Through their lack of support the industry, he maintained is dying in this country, and all the best labor was going to the United States. "We expect," he said, "that this association shall be given fair treatment in this matter, as well as in other manufactures of the country." He made a motion for the appointment of a committee to urge upon the Government further aid. He found a seconder in the person of Mr. J. Hewton, of Kingston."

The final proof of the strong feeling of members of the C.M.A. on this question was finally given by the adoption of the following resolution when the subject of the tariff was discussed:

"Whereas before the introduction of the preferential tariff the manufacture of woollen goods was a prosperous Canadian industry, whereas the industrial census of 1905 abundantly proves the gradual extinction of this important industry, whereas the woollen section have repeatedly given to the Government every possible information and were assured that such information was sufficient, whereas the woollen section suggested to the Government a tariff that would restore this industry and which would reduce rather than increase the cost to the consumer, whereas the slight alterations made in the tariff in 1906 have not relieved the situation; resolved, that the association in annual convention assembled views with alarm the attitude of the Government toward an industry established in so many parts of the Dominion, and which gives employment to so many Canadian people, and protests against the Government discriminating in favor of the outside manufacturer as against the Canadian."

TECHNICAL EDUCATION IS NEEDED.

It is well for any country that it be amply provided with educational institutions where the youth of the land may broaden and deepen their mental grasp, where their sympathies may be deepened and where they may be

brought into intimate knowledge of the great forces and principles underlying human activities and of the minds and personalities who have influenced the world in former generations; where, in short, the culture of the mind and heart may take pre-eminence over the mere desire for efficiency in the sciences or arts.

Yet if Canada is to be what Nature seems to have destined her to be, one of the great industrial nations of the world, many of her young men must prepare themselves for gigantic tasks and must devote several years to technical training of the most specialized nature. To fit these men for the work at hand the technical school, as well as the practical science departments in the universities should be a contributing factor of no mean degree.

We have the men with the courage and imagination necessary to conceive great transportation or industrial enterprises, we have the technical experts to design and superintend the erection of railways, bridges, office buildings, factories, mills, etc., made necessary by the industrial expansion of the country. We must have throughout our factories and mills the most intelligent type of workmen, particularly the foremen and others who have some measure of authority. It has been the experience of Germany, of Great Britain and of some sections of the United States that the technical school is one of the greatest influences in raising the standard and improving the quality of work done in the mills and factories.

Canada needs technical schools, where the elemental facts of chemistry, mechanics, etc., can be obtained by those who have not been able to secure the benefits of technical training in one of our large industries. The manufacturers of Canada, who have learned to appreciate the value of the technical expert want technical schools, in order to bring their businesses to a higher average of efficiency and to see their employees developing their powers so as to, by increasing production or improving quality of product enable the manufacturer to pay them higher wages.

OFFICERS OF THE CANADIAN MANUFACTURERS' ASSOCIATION.

In the election of officers for the Canadian Manufacturers' Association at the annual meeting in Montreal an exceptionally strong executive was chosen.

The new president, R. Hobson, Esq., of the Hamilton Steel & Iron Co., Hamilton, is not only one of the foremost steel experts in Canada, but is an exceptionally well informed and broad gauge manufacturer in the Dominion and withal a most popular member of the Association.

The officers are as follows:

President—R. Hobson, Hamilton Steel & Iron Co., Hamilton.

1st Vice-President—John Hendry, B. C. Mills Timber & Trading Co., Vancouver.

Ontario Vice-President—Col. W. M. Gartshore, McClary Mfg. Co., London, Ont.

Quebec Vice-president—W. H. Rowley, E. B. Eddy Co., Hull, Que.

Nova Scotia Vice-president—William Lewis, The Robert Taylor Co., Limited, Halifax, N.S.

New Brunswick Vice-president—Chas. McDonald, St. John Iron Works, Limited, St. John, N.B.

Alberta and Sask., Vice-president—P. Burns, P. Burns & Co., Calgary, Alta.

Prince Edward Island, Vice-president—Hon. F. L. Haszard, Charlottetown Condensed Milk Co., Charlottetown, P.E.I.

Treasurer—George Booth, Booth Copper Co., Toronto. Secretary—G. M. Murray, Toronto.

Sir Wilfred Laurier on the Woollen Goods Tariff Problem

In his speech at the annual banquet of the Canadian Manufacturers' Association, the Premier, Sir Wilfred Laurier, made the following explanation of the Government's attitude regarding the duty on woollen goods:

"I am sorry that my time is so short. I had been anticipating having a heart-to-heart talk with my friends, the manufacturers of Canada, upon topics as to which perhaps we do not see eye to eye. This is a free country, thank the Lord, and every opinion is welcomed. I welcome the opinion of those who do not agree with me, and I claim as a free British subject that I should have the privilege of speaking my mind also. I have read with the greatest possible interest the splendid address with which the convention was opened by your former Chairman, Mr. Rolland. I cannot agree with every syllable of it, though on the whole I have very little exception to take to it. Upon the tariff, however, I am not sure that I agree with what has been said in that platform. The tariff is a question upon which men will always, I suppose, have differences of opinion, but reading the address of Mr. Rolland and comments which have been made upon it, I do not know that, after all, the tariff cannot be looked at as being reasonably satisfactory. Completely satisfactory perhaps would be too much to expect, but reasonably satisfactory I believe it to be.

THE WOOLLEN INDUSTRY.

"There is one point, however, upon which you have taken exception to the tariff, and that has been the woollen duties. (Applause.) This is the very subject, gentlemen, upon which I had intended to speak at some length, and, although the time is short, I intend to give you my views. I would like to have upon this subject a heart-to-heart talk with you. What is the use of not talking to one another freely on this matter? It is my lot at the present time to be Prime Minister of Canada. I do not know how long I shall so remain. (Laughter.) My friend Mr. Monk tells me my time is short. I don't agree with him upon this question as upon many others. (Renewed laughter.) I intend to discuss this question with you as if my time were to be long.

"I need not repeat to you the facts regarding the request made by the association during the last session of Parliament for an increase in the woollen duties. These facts have been fully placed before you. When the Tariff Commission brought in their report and embodied it in the form of the Act of 1907, I think it was pretty generally accepted at that time that they had reached about a happy medium, and taken all in all the tariff was fairly satisfactory. But it so happened that in the course of a few months the woollen industry, which it must be admitted had not been flourishing very much during the last year, became embarrassed and in

very serious difficulties. Then we were approached to increase the duties.

REPRESENTS THE CONSUMER ALSO.

"Now, gentlemen, you represent the manufacturer. In the position which I occupy I have to represent not only the manufacturer, but the consumer, and it is my duty, and you fully admit in the papers you have read and in the very able speech the Chairman has given us, that all classes have to be considered and every part of the community is entitled to consideration. When we were approached to give an increase of duties last session I was asked to receive, and I received, with my colleague, the Minister of Finance and Customs, a delegation which came before us. I listened very attentively and very carefully to all representations made to us, to all the arguments which were advanced why we should agree to this increase of duty, and I am sorry to say, and I say it in all frankness, that it seemed to me that in the case which was presented to us there was something lacking which was never sufficiently explained, at all events, to my satisfaction. I do not pretend to be a business man. Still less do I pretend to be an expert in such matters, but I do claim that I have a fair average amount of common sense, and I think I can appreciate an argument when a true argument is presented to me. The Canadian manufacturers' complaint, I want to put it fairly, is this, that under the preferential tariff which we gave to Great Britain, Canadian manufacturers cannot compete with British woollen goods. Their argument is that if the quality of British goods were equal to the quality of Canadian goods they could compete. But they say that under the tariff the British manufacturer is able to send to Canada a certain quality of article which is inferior, though by its shining appearance more seductive to the consumer, yet worthless for the money he pays for it. In other words, that the goods which are sent over from Great Britain to Canada are shoddy goods, made up of a little wool, a good deal of waste, cobwebs and refuse and other things—(laughter)—and that the good Canadian housewife going to the shop to buy a suit for her husband, instead of taking the good, substantial but not shining Canadian wear is seduced to buy that miserable article. She is led by the good looks of it to invest her money in it to her sorrow afterwards, for at the first washing it goes to pieces. (Laughter.) Is not that the argument, which has been represented to us, and which is presented to the Canadian public?

A FAIR PRESENTATION.

"I think I have put the case fairly. Well, then, this is where my difficulty arises. First of all I say this to the Canadian manufacturers: If the housewife, the consumer, goes into a shop and is presented with one of

those shining pieces of goods—shining, but unreal and unsubstantial—and on the other side of the counter there is a good piece of Canadian cloth, having substance, but not much appearance—if, after all, the man or woman, deluded or not deluded, chooses to buy the cheap, shining goods, why, in the name of everything that is profitable, do you not give him or her the cheap, shining goods? (Laughter and "Hear, hear.") Why is it you cannot produce what is produced by the British manufacturer? Well, sir, if it be that the conscience of the Canadian manufacturer is so strict—(laughter)—that he will give only pure wool, and nothing else, I say that is not business. I told you I am not a business man, but I think the first rule of the business man is to give to his customer what he wants to buy—(applause)—and, if that be true, why is it that you do not give him that cloth which he wants?

"This is the answer, and it seems a very strong argument, which was given to me after the very anxious inquiry which I made. The British manufacturer can produce a cheaper article of cloth from West India wools, very cheap waste, which he can have at a price that the Canadian manufacturer cannot have. Well, sir, that is a satisfactory answer, so far as I am concerned. If it be true that the Canadian consumer wants that cloth, if it be true that the British manufacturer can have the raw material of that cloth cheaper than the Canadian manufacturer can have it in Canada, that is a condition of things which in itself wants to be considered, and which cannot be overlooked. How are we to proceed with this?

SEND A COMMISSION TO THE OLD LANDS.

"I read to-day very carefully the discussion which has taken place in your convention during the last two days, and I notice that a friend of mine stated that there was a remedy at hand, and that remedy was to send to England and to Germany a commission not of politicians, a commission not of party heeled, but a commission of good substantial business men. Why, sir, I subscribe to that with both hands. I agree that there is a case made for investigation, but I have to say to my friend who has made the suggestion that this very idea the Canadian Government has already adopted.

"The last time that we received a deputation at Ottawa,

some time in the month of July, in a conversation which I had with my friend, the Minister of Customs, I told him we must do something and look into this case to see whether or not something should be done. He suggested himself that he should send at once a commissioner to England, a business man, an expert, and I have reason to believe, though I have not spoken to Mr. Paterson about it since, that this expert has already been sent by him to England, and that he is now doing the work. (Applause).

"I have furthermore, to say that when this commissioner has come back and when he has made his report I shall be only too glad to communicate it to the Canadian Manufacturers' Association, to have their review upon it, and if it be their will or wish to have another commission in which they should be represented, the Canadian Government will be prepared also to do this. (Applause). I am not here to say that your demand is just or not just, fair or unfair, whether it is right or not right, but I am here to say that your complaints are such that they are entitled to the fullest consideration on the part of the Canadian Government. We have not been willing at the present time to disturb the tariff. The tariff is only 24 months old, hardly that, and if, therefore, we are to have a principle of stability in the tariff we should proceed in a very leisurely way upon all such inquiries. But, at all events, there is a grave condition of things. We are prepared to meet it, and in the manner I have just suggested, and I hope this will prove satisfactory in the eyes of every reasonable man.

A PERMANENT TARIFF COMMISSION.

"There is just another matter on which I have a word of expression. You have stated, Mr. Chairman, in your address that you desire to have a permanent tariff commission. I do not exactly realize yet what is meant by a permanent tariff commission, but have simply this to say, that if by it is meant that we are to have a permanent commission such as they have in the United States, to follow the working of the tariff every day, to follow its incidence and its effect upon the producer and the consumer—I do not see any reason why such a commission should not be appointed. (Loud applause). —The Globe.

Montreal Builders Visit Boston

On Saturday, Sept. 5, more than 130 members and friends of the Montreal Builders' Association left Montreal for Boston, this being the third annual excursion of the Association.

The Boston Master Builders' Association owes much of its high position to the initiative and energy of W. H. Sayward, who has been connected with Builders' Exchange work for some forty years, and by his devotion to the cause of a high code of practice among builders, has brought the Boston Association up to its present high state of efficiency.

The Boston Association has not as yet followed the example of many other exchanges, of having attached to it a permanent exhibition of building materials. The reason is that Boston has so many excellent permanent exhibitions of a technical nature that a Builders' Exhibition would be almost superfluous. In the schools of technology for example, all branches of mechanical work are treated, and also in the Mechanics Institute.

As for the Montrealers, the trip proved very

successful and enjoyable. Monday was spent in automobile sight seeing trips, and trips to Revere and Nantasket Beaches, which are the north and south seaside resorts, respectively of Boston. Being Labor Day, the traffic was extremely heavy.

Tuesday, at noon, an official reception of the Master Builders' Association was held at the Exchange premises, which, by the way, are owned by the Association, and yield a handsome revenue. The visitors were welcomed by the president of the Boston Association, Mr. Hicks, and Mr. Thos. Ford, and Mr. Jas. Simpson, by happy coincidence, the president and the first president of the Montreal Association, spoke in reply. Afterwards the party embarked for Nantasket Beach, where they found the famous Boston Fish Dinner served in splendid style at the Atlantic House. Song and speech were interspersed between the varied courses of an excellent menu, enlivened also by the strains of an excellent orchestra. Speeches by members of both associations followed, after which all adjourned to the beach, and returned to the city in the evening.

It is felt by the Associations that such occasions make for a greater feeling of fraternity and a better understanding among

the members by promoting acquaintance and good fellowship. Next year the Montreal builders hope to visit New York.

The following were among those present: Thos. Ford, president, Messrs. Castle, Charpentier, Brenner, Simoneau, and J. A. Gordon, directors; Mr. Jas. Simpson, ex-president, A. Chausse, city building inspector, and party; Jos. Veigne, architect; J. O. Eratton, Messrs. Byers & Anglin, Mr. and Mrs. E. T. Houghton, Mrs. Gordon and party, Mrs. Charpentier, Mrs. Brenner and party; Wm. and Mrs. Hughes; Mr. and Mrs. J. E. Walsh and party; Mr. Hess, Mr. and Mrs. Meadowcroft (The Garth Co.), Mrs. Chas. Henderson, Mr. and Mrs. Thos. Sutton (The Auer Light Co.), Mr. and Mrs. Bishop (The Rexford Bishop Co.), Mr. and Mrs. Hussey (Hussey Construction Co.), Mr. and Mrs. R. D. Clark and party, D. O. Chagnon, Mr. and Mrs. Beaudoin and party, L. A. Roberg, F. X. Charbonneau, Mr. C. H. G. Chamberland and party, Mr. D. McQuaid (Century Electric Co.), H. R. Hutchison, A. Palmer (Canadian Pneumatic Tool Co.) J. J. and E. M. Roberts (Geo. Roberts, contractor), Misses Crawford, Rev. W. W. McCuaig, A. B. Farmer, J. H. and Mrs. Lauer.

The Canada Metal Co., Exhibit.

To the right of the southern entrance to Machinery Hall the Canada Metal Co., Toronto, had an exhibit which attracted the attention of every visitor. As will be seen from the accompanying photograph this display was entirely of metal. It included practically all lines of commercial ingot and pig metals except iron and steel. Among the lines especially prominent in the display were babbit metals, solder, lead pipe of various

TO SPEND A MILLION IN MACHINERY AND PLANT.

The Mount Royal Spinning Co., Limited, Cote St. Paul, Montreal, are erecting large new buildings at a cost of \$300,000.

The best modern machinery for spinning wool is to be installed, including the most perfect looms that can be purchased. This mechanical equipment will cost close to \$750,000, making the actual investment of

of the factory operations, and his extensive experience in cotton mills of the South assures efficiency and the best results in this department.

WM. HAMILTON CO. MAY RESUME.

J. C. Smith, of Peterboro, Ont., has written to the council of that city to the effect that G. W. Green, N. McFarlane, W. H. Collier



Display of Metals by the Canada Metal Co., Limited, Toronto.

sizes and many purposes, lead traps, block tin pipe, fuse wire, battery zinc, ingot tin, pig lead, linotype metals, aluminum, etc. The arrangement of the display with ornamental light shades strung from all corners to the centre, with a bold sign, "The Canada Metal Co. Everything in Metals" and a hanger showing the well known features of Mr. W. G. Harris, president of the company, made it one of the most effective exhibits in the building.

the company amount to nearly \$1,050,000. The factory will be ready to spin wool about Oct. 1 next.

Mr. W. T. Whitehead will be general manager in charge of the business. He is a gentleman who has enjoyed a long, varied and successful experience in the woolen industry, and under his direction a prosperous administration may confidently be predicted.

Mr. James Dolthin will be superintendent

and himself intend to organize a company with a paid-up capital of \$10,000 to erect new buildings, instal new machinery, etc., and carry on a business similar to that conducted by the Wm. Hamilton Mfg. Co. Limited, which will likely employ about 200 men. They ask for a loan of \$50,000 with interest at the rate of three per cent. per annum. No definite action was taken on the matter.

J. F. B. Vandeleur, Toronto.

While the accompanying photograph shows what an effective and attractive display was shown by J. F. B. Vandeleur, Dineen Bldg., Toronto, it hardly does justice to the exhibit. To the left of the section shown an attractive waterfall was kept in continuous operation

of green boughs through which the water splashed downward.

The feature of the exhibit which attracted to it many electrical experts was the display of Evershed & Vignoles, bridge meggers and resistance boxes, and meggers for locating defective wiring, and inkless recording am-

booth was lighted by Gilbert flame arc lamp and several small arc lamps for shop lighting.

At the extreme right of the view shown a "Reavell" portable air compressor for cleaning operations of many kinds is seen. Some distance away, though not shown in the view was a "Reavell" high speed, motor driven



Display of Electric Equipment by J. F. B. Vandeleur Toronto.

by an "Excelsior" high-speed electrically driven pump, made by T. H. & J. Danials, Stroud, England. This pump has, by the way, several features which will be referred to in greater detail later. The waterfall was made doubly attractive by an arrangement

of meters, and voltmeters; of Morganite and Battersea carbon brushes for dynamos and motors, self lubricating bearings, and other specialties of the Morgan Crucible Co., London, England. The waterfall was illuminated by a 30J hour arc lamp, while the

air compressor of the type described in THE POWER EDITION, published last week. The exhibit had, in fact, so many specialties not heretofore shown in Canada that Mr. Vandeleur and his staff were kept busy answering technical questions and distributing literature to interested visitors.

The Canadian H. W. Johns-Manville Co., Exhibit.

It would be hard to conceive of a much more elaborate and comprehensive display than that made by the Canadian H. W. Johns-Manville Co., Toronto, New York, and Danville, Que.

This company have just opened a ware-

high standard of quality running through all their products.

During the fortnight of the Exhibition several representatives of the company were kept busy giving information to visitors. It was a surprise to many of these visitors,

by the company for about fifty years, during which time they have, by experiment, chemical analysis and practical experience developed the commercial value of asbestos and magnesia product to a remarkable extent.

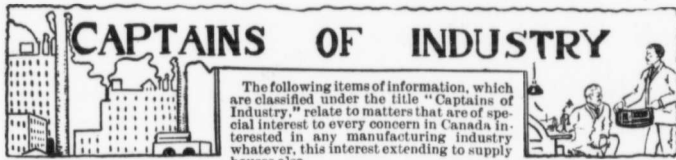


Exhibit of Asbestos and Magnesia Products by the Canadian H. W. Johns-Manville Co., Toronto.

house in Toronto and took advantage of the Exhibition by installing the display shown herewith, to impress on Canadian buyers of asbestos and magnesia products the extensiveness of the line made by them and the

including some who have been buyers of Johns-Manville products, to learn that the mines from which this company's chief raw material, asbestos, comes is in Canada, at Danville, Que. This mine has been operated

The influence of this exhibit in advertising the products of the company and in emphasizing the fact that it is an essentially Canadian concern, must have been very great indeed.



The Niagara, St. Catharines and Toronto Railway Co. will erect a bridge over the Welland River for entrance for the line into Welland, Ont.

The hotel "Sanita," Chatham, Ont., will be enlarged shortly.

E. H. Cuthbertson, Fort William, Ont., will erect a new office building. Cost \$100,000.

The Fairview Hotel, Dorset, Ont., has been destroyed by fire.

Dr. Cuthbertson, Toronto, will erect a four story brick store and offices, Yonge St., Toronto.

The Empire Theatre, St. Thomas, Ont., will be extensively remodelled.

A new building is to be erected at the Exhibition Grounds, Toronto, for the York Pioneers.

A part of the business section of Brantford, Ont., has been destroyed by fire.

The congregation of Raleigh Township Church, Chatham, Ont., intend erecting a new edifice.

The Canadian Packing Co., whose premises at London, Ont., were recently destroyed by fire, are considering a location at Chatham, Ont.

The Woods Product Co., of Canada, Limited, are establishing a plant at Haliburton, Ont., for the manufacture of corona spirits, acetate of lime, charcoal, etc.

The congregation of Hespeler Presbyterian Church, Hespeler, Ont., will erect a new edifice.

Pratt & Lambert, varnish makers, Buffalo, N.Y., will erect a plant at Fort Erie, Ont.

A Carnegie library will be erected at Ingersoll, Ont.

The C. R. Wilmott Co., Limited, will erect a building and install machinery for manufacturing agricultural implements, at Milton, Ont.

The waterworks system of Ottawa, Ont., will be improved.

The Grand Trunk will erect a new station at Omemece, Ont.

The Bank of Nova Scotia are considering the location of a branch office at Port Arthur, Ont.

An engine house will be erected in Wingfleet Township, Ont., by the United Gas Companies, Limited, St. Catharines, Ont.

A new school building will be erected at Hintonburg, Ont.

A new rubber footwear factory is being erected at Berlin, Ont., by the Kaufman Rubber Co.

A new dome is to be erected on the City Hall, Kingston, Ont.

The World Publishing Co., Toronto, will build a newspaper and office building on Richmond St., Toronto.

The tannery of the H. B. Johnston Co., Toronto, was destroyed by fire last week. The damage is estimated at \$150,000 to \$200,000. The building was worth in the neighborhood of \$100,000 and was heavily stocked. The insurance on stock and building amounts to \$150,000.

The Lake Erie Grain, Milling & Elevator Co., recently incorporated in the United States, propose to erect a large mill and elevator at Port Colborne, Ont. Power will be obtained from Niagara Falls. Samuel T. McColl and A. C. Mitchell, of Port Colborne are included among the directors of the concern.

A woodenware factory will be built at Lindsay, Ont., by the Kennedy & Davis Milling Co. of that town.

The congregation of the St. James' Methodist Church, Peterboro, Ont., will erect a new edifice.

Dominion Contract Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture building materials, etc. The provisional directors include C. A. Hull, G. A. Marchant and V. D. Stead, Toronto.

Pratt, Limited, Sault Ste. Marie, Ont., have been incorporated with a capital of \$40,000, to carry on a business of a general store. The provisional directors include R. G. Pratt, J. H. Bryan, Sault Ste. Marie, and N. B. Gould, Port Hope, Ont.

The Universal Pure Water Co., of Canada, Toronto, will be incorporated with a capital of \$100,000, to manufacture filters and filtration plants, etc. The provisional directors include Peter Murray, M. F. Dirnberger, jr., and W. H. Baker, Buffalo, N.Y.

A public school building will be erected in connection with the Normal School at London, Ont.

A town hall will be erected at Stayner, Ont.

A trunk sewer will be constructed in Welland, Ont.

The Fairview hotel, Dorset, Ont., has been destroyed by fire.

An addition will be built to the jail at Hamilton, Ont.

An electric railway will probably be built from Point Ann to Belleville, Ont.

The Collegiate Institute, Hamilton, Ont., will be enlarged shortly.

A new school building will be erected at Ingersoll, Ont.

The congregation of the Yonge St. Methodist Church, North Toronto, Ont., will erect a new church.

A new concrete wharf will be erected at Lakefield, Ont.

A new technical school building will probably be erected at Toronto.

A new furniture factory will be built at Guelph, Ont., by the Lowden Mfg. Co., of that town.

An addition has been built to the general store of Smallman & Ingram, London, Ont.

Work on the new general hospital at Toronto, is soon to be commenced.

Mr. Jas. J. Grafton, Brantford, Ont., will erect a new store in that town.

A new sea wall will be constructed from Sunnyside to the Humber, Toronto.

New freight sheds will be erected at Central Station, Ottawa, Ont.

Messrs. F. J. Rastrick & Sons, Hamilton, Ont., will enlarge their store building.

The boat-house at the foot of Bathurst St., Toronto, has been destroyed by fire. The building was owned by Mr. E. Housey, Toronto.

The plant of the Laidlaw Lumber Co., Sarnia, Ont., has been damaged by fire to the extent of \$6,000.

The Ottawa Railway Co., Ottawa, Ont., intend building brick car sheds on Augusta St., Ottawa, at a cost of \$30,000.

The sewerage system of Brampton, Ont., will be improved shortly.

New municipal buildings will be erected at Verdun, Que.

A new catholic school will be erected at Quebec city.

A new armory will be built at Joliette, Que.

A new station will be erected at La Tuque, Que.

The Tombyll Furniture Co., Montreal, will erect a factory in that city.

An electric generator will be erected at the low level pumping station, Point St. Charles, Que. Specifications and any information can be obtained at the office of the superintendent of water works, City Hall, Montreal.

The Provincial Government is building a bridge across the River Lievie, Buckingham, Que.

The Intercolonial Railway will erect a machine and repair shops at Levis, Que.

The Stables of the Union Bag & Paper Co., Three Rivers, Que., have been destroyed by fire. Loss, \$3,000.

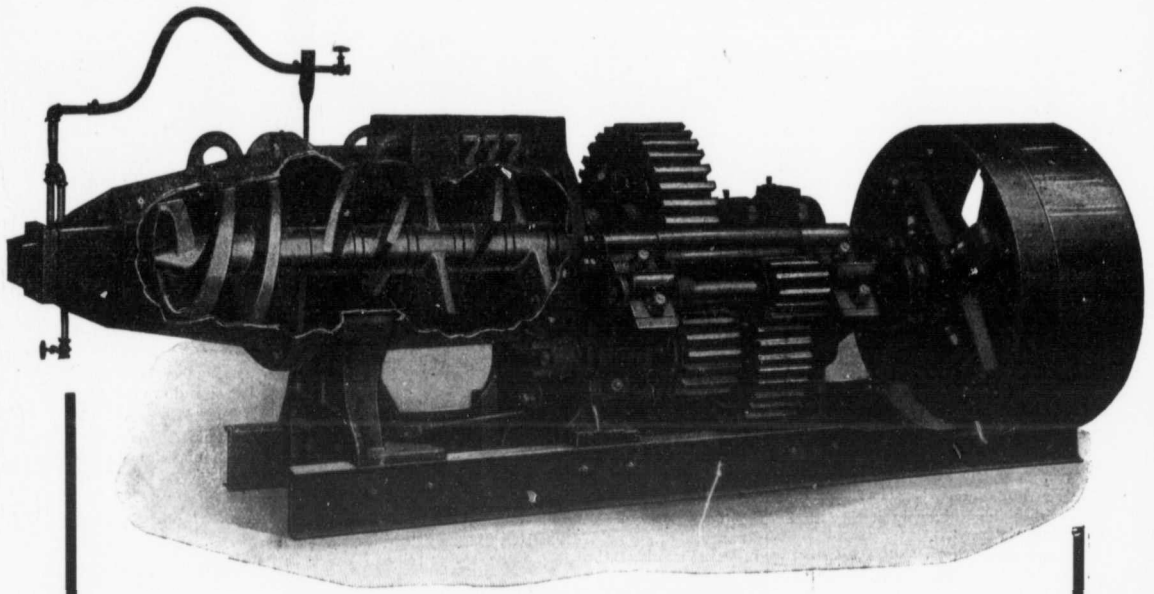
A part of the business section of St. Marie, Beauce, Que., has been destroyed by fire.

The Canada Cement Construction Co., Limoilon, Que., have installed a wire cut brick plant.

Construction will soon be commenced on the O.M. Railway to complete the line from Masonville, Que., to North Troy, connecting with the Canadian Pacific Railway at that point.

It is announced that the Government have taken over the assets, property and franchise of the Quebec Railway & Bridge Co., and will build the Quebec bridge, which collapsed while under construction last year.

The Canadian Cigarette Co., Montreal, have been incorporated with a capital of



Raymond "777" Brick Machine

Over six million brick made every day on the famous Raymond "777" Brick Machine.

It is the embodiment of strength, durability and performance—so with all of our manufacture.

We issue the following Publications, which may be obtained upon application to our Publicity Department

(a) **GENERAL CATALOG.** (b) **CATALOG OF DRAWINGS AND SPECIFICATIONS.** (c) **"SMILES."**

EXHIBITS:

2040—9ft. Heavy Duty Dry Pan.
 2042—No. 2 Rotary Automatic Cutting Table.
 2044—"999" Brick Machine.
 2045—Perfection Hand Represses.
 2046—Clay Conveyors.
 2047—Four Roll Crushers.
 2049—Niagara Hollow Ware Machine.
 2052—Victor Repress.
 2053—Granulators and Bevel Geared Pug Mills.
 2055—Clay Elevating Machinery.
 2056—Portable track.
 2060—Roofing Tile Designs.
 2061—Dry Presses and Dry Press Machinery.
 2062—Automatic Tile Cutter.
 2063—System of Open Air Drying.
 2069—Peerless Smooth Roll Crusher.
 2070—No. 3 Brick and Tile Machine.

2071—Standard Pug Mills.
 2072—Single Geared Pug Mills.
 2075—Semi-Automatic Cutter.
 2077—Radiated Heat Dryer.
 2078—Soft Mud Machinery.
 2079—Belt Apron Type Clay Elevator.
 2080—"555" Brick Machine.
 2081—Automatic Wet Pan Emptier.
 2082—Piano Wire Screens.
 2083—No. 1 Automatic Cutter.
 2084—Dryer Cars.
 2085—No. 3 Hand Dry Press.
 2086—Automatic End Cutter.
 2087—"777" Brick Machine.
 2088—Hoisting Apparatus.
 2089—No. 2 Combination Brick Machine.

THE C. W. RAYMOND CO.

The Largest Exclusive Builders of Clay Working Machinery in the World

Dayton, Ohio, U. S. A.

\$100,000, to manufacture cigarette machines, etc. The charter members include H. W. Beauleker, A. C. Calder and C. T. Jette, Montreal.

The Charles R. Cousins Co., St. Johns, Que., have been incorporated with a capital of \$45,000, to acquire general milling and flour business carried on by Chas. P. Cousins, and to manufacture flour, etc. The charter members include W. M. Hislop, St. Johns, J. H. Wadsworth and Thos. R. Ker, Montreal.

The Arbetter Felling Machine Co., of Canada, Montreal, have been incorporated with a capital of \$400,000, to carry on a business of manufacturers of felling and sewing machines, etc. The charter members include Philippe Durocher, A. C. Calder, and J. M. Montle, Montreal.

The Sweet Milk Condensing Co.'s factory at Laurentide, Que., was damaged by fire to the extent of \$15,000.

A new Inter-Colonial Railway station will be erected at Chatham, N.B.

A new school building will be erected at Tobique, N.B.

A new reading-room is being built in connection with the University of New Brunswick, Fredericton, N.B.

An extension will be built to the wharf at West St. John harbor, N.B.

A new wharf will be constructed at Whitney Pier, N.S.

A new town hall will be erected at Dominion, N.S.

The congregations of St. Andrew's Catholic church, Yarnmouth, N.S., will enlarge their church building.

The Grand Trunk Pacific will build a large hotel at Rivers, Man.

The congregation of the Swan River, Man., Anglican church will build a new rectory.

A Y.W.C.A. building will be erected on Elice Ave., Winnipeg, Man., at an estimated cost of \$85,000.

The congregation of St. Matthew's Anglican Church, Winnipeg, Man., will erect a new edifice.

A part of the business section of Emerson, Man., has been destroyed by fire.

The National Transcontinental Railway Commissioners, Winnipeg, Man., are calling for tenders for the construction of locomotive shops for the Winnipeg terminals.

A part of the business section of Altona, Man., has been destroyed by fire. Loss \$80,000.

The congregation of the Church of Christ, Winnipeg, Man., intend erecting a new church building.

The Atlas Elevator Co., Winnipeg, Man., have been incorporated with a capital of \$500,000, to carry on a business of millers, etc. The charter members include T. L. Metcalfe, W. J. Smith and L. J. Elliott, Winnipeg.

The contract for the construction and installation of a telephone system throughout the municipality of Morton, Man., has been let to Elliot & Welch, of that town.

The Winnipeg Theatre, Winnipeg, Man., will be remodelled.

The Massey-Harris Co., Toronto, will erect a new warehouse at Grenfell, Sask.

A new waterworks system will be installed at Lumsden, Sask.

A large elevator will be erected at Vermilion, Alta.

A new courthouse will be erected at Arcola, Sask.

A new collegiate institute is being erected at Regina, Sask.

A new school building will be erected at Whitewood, Sask.

A school building will be erected at Whitewood, Sask.

A farmers' elevator is being erected at Estevan, Alta.

The Street Railway Co., Edmonton, Alta., will erect new car barns.

The Blindman River Electric Power Co., Lacombe, Alta., intend installing a new auxiliary steam plant at Lacombe.

A new school building will be erected at Lang, Sask.

An electric railway system is proposed for Calgary, Alta.

A large business block will be erected on Carnarvon St., New Westminster, B.C., by L. Dat, Victoria, B.C.

Dr. Saunders, director of Government Experimental farms, has taken a tour of Vancouver Island, with the object of selecting a site for an experimental farm.

A new school building will be erected at Tynehead, B.C.

Two new firehalls will be erected at Victoria, B.C.

The isolation hospital at Victoria, B.C., will be altered and enlarged.

A large auditorium will be erected at Vancouver, B.C.

A new bank building will be erected at Fernie, B.C., by the Bank of Hamilton.

The congregation of Mount Pleasant Presbyterian Church, Vancouver, B.C., will erect a new edifice.

The Canadian Pacific Lumber Co., Vancouver, B.C., after being shut down for five months, have resumed operations.

The British Canadian Pulp & Wood Co., Vancouver, B.C., are to manufacture gas and turpentine by the Stanley system. They will erect plants in various parts of Vancouver.

The Chicago, Milwaukee & St. Paul Railroad Co. will construct a branch line into the city of Vancouver, B.C.

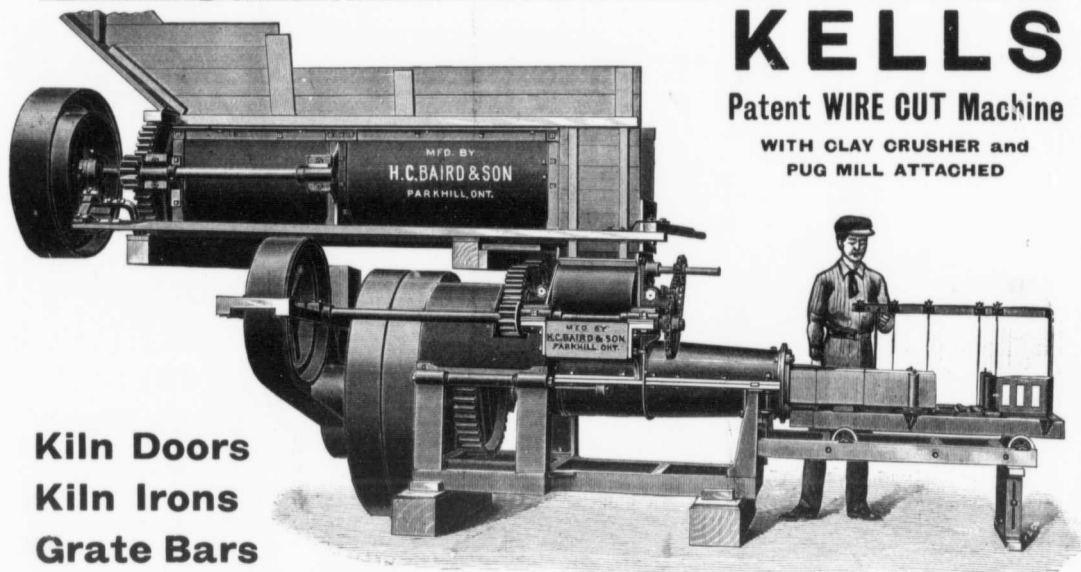
The Personal Factor in Connection With the Care and Inspection of Boilers and Machinery

PAPER BY J. W. RANCH, OF THE MARYLAND CASUALTY CO., OF BALTIMORE, AT THE CONVENTION OF INTERNATIONAL ASSOCIATION OF FACTORY INSPECTORS AT TORONTO.

In this paper I wish in a general way to say a few words regarding the personal factor in connection with the care and inspection of boilers and machinery. It is an old axiom that "Men are different and always will be different." I question whether there is anyone who appreciates this more keenly than an inspector who is constantly in touch with all kinds and manner of men. Indeed, I feel sure that you inspectors will agree with me that there is often a very material difference of opinion regarding things about a plant, especially if the question pertains to the necessity or practicability of guarding certain machinery, and it is this difference of opinion that brings into play the various personal factors, which often make the inspector's duty a most trying one. At some plants care is exercised to keep everything in first-class condition. The work is done in an orderly and systematic manner, and everything possible consistent with the nature of the business appears to be done for the welfare and safety of the employees. It is a pleasure to make an inspection at a plant of this kind, not because the inspection is less thorough, but the inspector knows that if he does find anything which is dangerous and liable to cause accident, such dangerous defects will be remedied if a practical way can be devised.

Unfortunately, however, there are many plants where the conditions are just the opposite. The inspector at the outset is looked upon with suspicion. The superintendent or manager at the plant may be more interested in turning out large quantities of goods at the least possible expense than in the safety of the employees. He may be aware of the fact that certain safeguards recommended by the inspector are absolutely necessary for safety, but is afraid that they will hamper the work, and instead of giving the improvements a fair trial, a letter is liable to find its way to the office of the Chief Inspector, complaining that the inspector is too critical and is insisting upon impracticable things. Thoroughly competent engineers are sometimes of an exceedingly jealous and sensitive disposition, and are under the impression that their ability is questioned when an inspection is made of the machinery, boilers and other appurtenances, of which they may be in charge. This is all wrong. Banks and trust companies are periodically examined by government examiners, yet no one would question the ability of the officials of the banks and trust companies because of such examination.

It should be remembered in these times of rapid development that new appliances and devices are constantly being put on the



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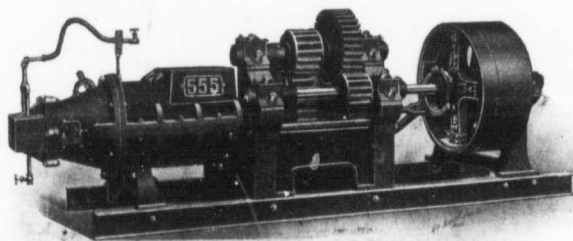
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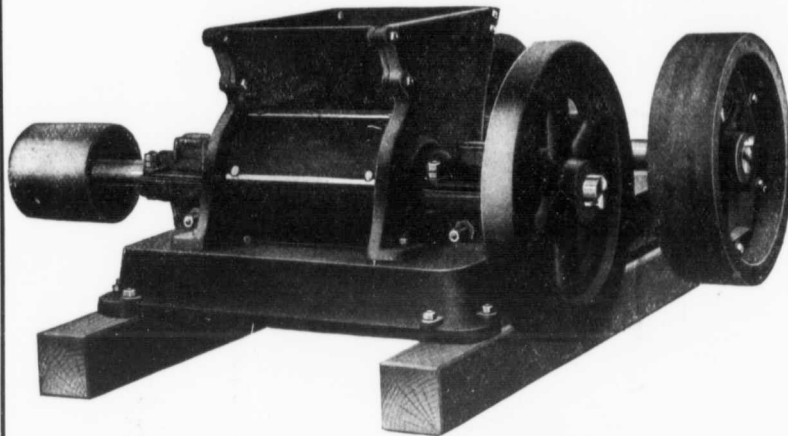
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DISINTEGRATORS.



No. 1 DISINTEGRATOR

The
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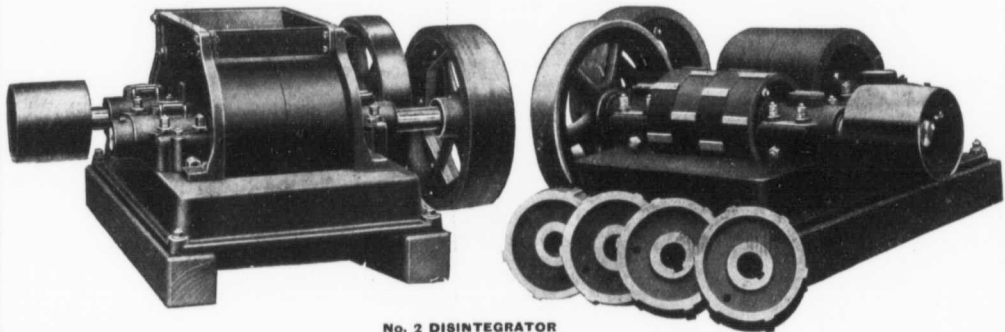
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**CLAY
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It is a well known fact that in the working of clay, that the more the clay is prepared by being worked and pugged, the more plastic it becomes, and consequently the product is improved. No other machine better prepares the clay than a good Disintegrator, and no better Disintegrator is manufactured than this one, and it is equal to any duty exacted of it. The main frame is heavy and solid, being cast in one piece. The large roll is a slow speed feeding roll with hard chilled face, the bearings of which are adjustable, so that the distance between the rolls can be regulated to any degree of fineness. This roll is 24 inches in diameter, and 18 inch face, and has driving pulley 24 inches in diameter by 6½ inch face, which should be run 70 to 80 revolutions per minute.

The small roll which is 12 inches in diameter by 18 inch face, has steel bars running continually across the roll which can be easily and cheaply replaced when worn. The driving pulley of this roll is 10 inches in diameter by 10 inch face, and should run from 700 to 800 revolutions per minute. It is provided with a heavy balance or fly wheel, which insures steadiness of operation and uniform speed. This machine will disintegrate clay for from 40,000 to 60,000 brick per day. Approximate weight 3,500 lbs.



No. 2 DISINTEGRATOR

This Disintegrator is constructed practically on the same line as our No. 1, but is not so large, and is designed for yards of smaller capacity, being able to thoroughly prepare clay for from 20,000 to 40,000 brick per day. It thoroughly shreds or separates the clay and leaves it in a loose and open condition and in proper shape to absorb water rapidly when being worked in a pug mill. It also pulverizes the small stone and separates the larger ones, putting the clay in the best possible condition. The slow roll is of hard chilled iron, and is 18 inches in diameter by 16 inch face, and is in two sections. The shaft in this roll runs in adjustable bearings so that the space between the rolls is easily adjusted. It is provided with a driving pulley 24 inches in diameter by 6 inch face, and should run from 70 to 80 revolutions per minute.

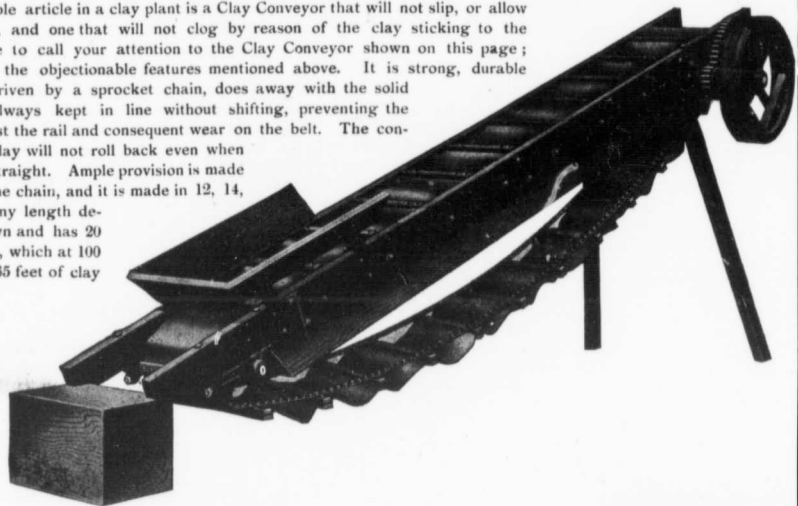
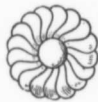
The speed roll is composed of four chilled iron sections, having lugs or teeth set alternately one with the other, and by this construction the clay is taken gradually, which gives evenness of motion. These sections are keyed on to a large shaft in such a manner that they are interchangeable and reversible, and when one cutting edge becomes worn they may be reversed, and an entire new cutting surface presented to the material. The speed roll is fitted with a driving pulley 10 inches in diameter by 10 inch face, which should run from 700 to 800 revolutions, and this roll is also provided with a heavy balance wheel.

Approximate weight, 2,500 pounds.

CLAY CONVEYORS.

SPROCKET CHAIN CLAY CONVEYORS

An almost indispensable article in a clay plant is a Clay Conveyor that will not slip, or allow the clay to roll backward, and one that will not clog by reason of the clay sticking to the rolls or spools. We desire to call your attention to the Clay Conveyor shown on this page; it is entirely free from all the objectionable features mentioned above. It is strong, durable and positive, and being driven by a sprocket chain, does away with the solid rolls or spools, and is always kept in line without shifting, preventing the rubbing of one edge against the rail and consequent wear on the belt. The construction is such that the clay will not roll back even when the Conveyor is set almost straight. Ample provision is made for taking up the slack in the chain, and it is made in 12, 14, 16 and 18 inch widths and any length desired. It is geared as shown and has 20 inch by 4 inch driving pulley, which at 100 revolutions will give about 65 feet of clay belt per minute.



BELT CLAY CONVEYOR

While we do not advise the use of the old fashioned drag belt Clay Conveyor, there is a demand for them and we make them of the style shown on this page. They are very strong and serviceable and ample provision is made for taking up the slack in the belt. We make them in 12, 14, 16 and 18 inch widths and any length desired. They are back geared as shown and the driving pulley is 20 inches in diameter with 4 inch face, which at 100 revolutions will give about 90 feet of the clay belt per minute.



Send for our Catalog and write us in regard to anything you need in our line and we will be glad to give you information and quote you prices.

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Plymouth, Ohio
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market. This appears to be especially true in the engineering line, and we must indeed be wide awake if we wish to keep abreast of the times. The inspector visits different plants every day, and the very nature of his work is such that he picks up information and acquires a knowledge of matters pertaining to steam plants that could not be obtained in any other way. It is, therefore, reasonable to suppose that he can often suggest improvements even to the competent engineer, and he may also exchange ideas with the engineer to the mutual benefit of both. Then, there is the engineer who does things knowing that they are dangerous, but who is reckless and would rather take chances than encounter inconvenience. For example, inspectors often find the governor of an overloaded engine blocked. The engineer knows full well that the belt of an overloaded engine is under its most severe strain and that it is liable to break at any time. He also knows that if the belt does break, the engine will be adrift and race immediately, for the simple reason that with the governor blocked there is nothing to control the speed, and a disastrous fly-wheel explosion is inevitable; and this is only one of the many causes which, combined with a blocked governor, result in fly-wheel explosions. Strange to say this is being done every day and sometimes with the full knowledge of the management. This practice cannot be condemned too severely, for while the engineer may be willing to risk his life and the manager may be willing to run the chances of a heavy property loss, they certainly have no right to jeopardize the lives of the employes and other persons who may be about the plant.

Blocking the safety attachment of a passenger elevator is another favorite pastime with some men, who do this rather than take the trouble of adjusting the governor to the proper speed limit. Imagine an elevator full of passengers with the safety attachment purposely put out of commission because it

was found a little troublesome to adjust it—yet I have personally found cases of this kind, and in one instance was told by the man in charge that safeties as a rule did not work anyway in the event of accident. However, safeties do work, and the necessity of keeping safety attachments in proper working order can not be too strongly emphasized. It is true that no mechanical device is absolutely reliable under all conditions, but thorough inspections and the proper care of safety attachments have in actual experience prevented many accidents.

It may not be amiss to say a few words regarding the engineer who depends entirely upon his subordinates. It is true that the responsible head of a large engineering plant cannot be expected and neither would he have the time to look after every detail, but as will be shown by the following experience, which is only one of many, a personal inspection now and then will often pay well. One of our inspectors visited an unusually large power plant for the purpose of inspecting boilers. Everything about the plant was apparently in the very best condition. At this plant special men are detailed to do nothing but look after the repairs and the cleaning out of the boilers. The chief engineer pointed to one of the boilers, saying, "You may start on that one, but I hardly think it necessary to get inside as I have just received a report from the man in charge, who reports everything in first-class condition," and on holding a light inside of the manhole the boiler certainly did look to be in excellent condition. However, the inspector, like the man from Missouri, "wanted to see," and it is well that he did. He first got into the manhole above the tubes. The tubes were found fairly clean, but a solid mass of scale was found on the back head between the tubes and the shell. This scale extended down to the lower row of tubes, the water space being solid with scale for a distance of one foot from the back head; also both sides were practically the same. In breaking

out the scale we succeeded in getting a piece twelve inches long, three inches thick and six inches wide. An external examination showed that the shell plates at the points where the scale was found were very badly bulged and burnt. The rivets and the edge of the lap of the head seam were nearly gone. In order to put the boiler in safe condition, extensive repairs were necessary.

Recognizing the importance of the proper care and management of steam boilers and the necessity of certain definite action in case of an emergency, we have prepared certain rules and instructions. These boiler room rules are printed on cardboard eight and one half by twelve inches. We have found this a convenient size, and they are usually posted in boiler rooms by our inspectors so as to be constantly before the firemen. Careful attention to these rules will go a long way toward prolonging the life of boilers and preventing accidents.

In citing the above cases, I have tried to bring out a few of the conditions met with by the inspector, and how about the inspector himself? Is he always courteous, and is he always clear and concise in his recommendations? Then too, I believe we will have to admit that inspectors like doctors, do not always agree, and that in a controversy it is not always the fault of the management at the factory. The old adage that "You can catch more flies with sugar than with vinegar" cannot be more forcibly illustrated than when making inspections. The inspector with the requisite amount of tact and diplomacy can say things the right way. He will succeed in having improvements made where the other man will make an utter failure. If, for example, there is anything that makes a manager or superintendent indignant, it is to have an inspector come around and criticise or find fault with certain dangerous conditions without being able to show in a clear, concise and practical way how the danger can be overcome. Again, owners and managers do not like to have

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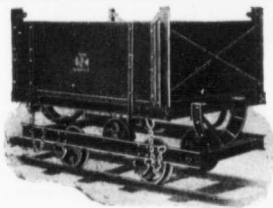
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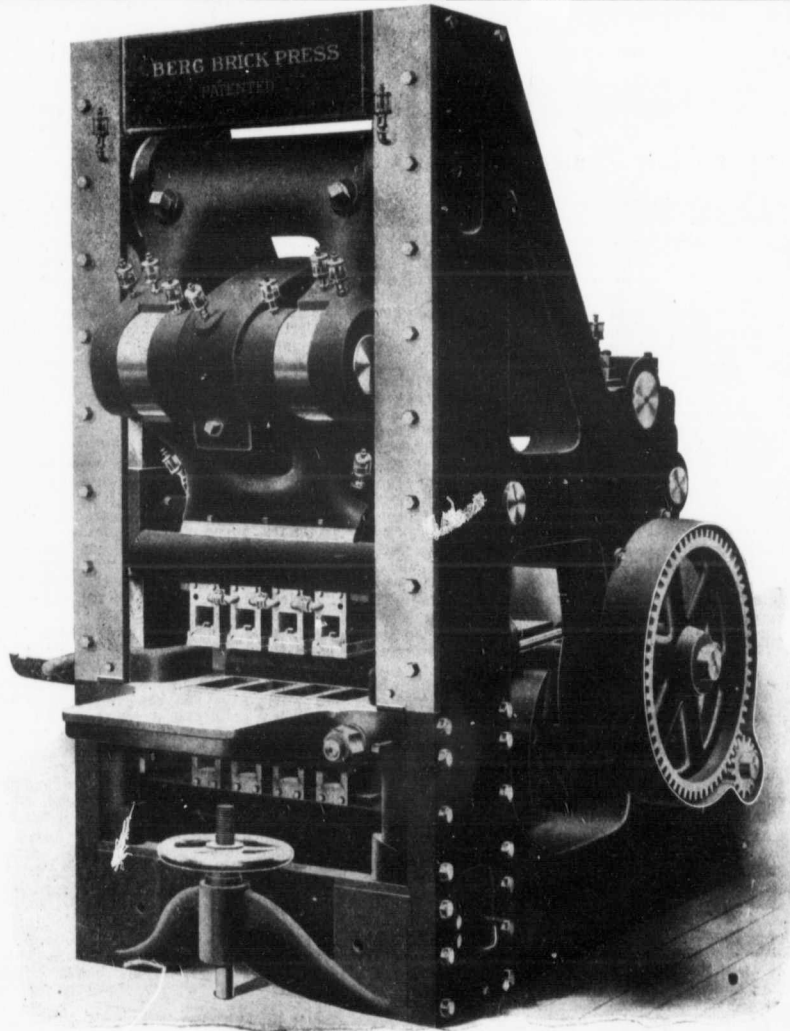
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matters pertaining to their plants discussed by outside persons, especially if dangerous conditions are alluded to. If then, the inspector finds anything about a plant which is dangerous, he should confine his remarks to the proper person or persons, and submit his report according to the instructions of his chief. It may at times be advisable in order to emphasize the necessity of certain safeguards to refer to other plants, and if the inspector will use discretion there can be no harm in this. On the contrary, it will go a long way toward convincing the management that certain safeguards are necessary if he can show from actual experience that acci-

dents have occurred due to the lack of them.

In conclusion I wish to say that the above criticisms are made in the most friendly spirit, and I hope that our good friends referred to and you inspectors will accept them in the same spirit. What we need is a better understanding between the management at the plant and the inspectors. Let the owners know that inspections are not made with a view of criticizing or finding fault, but that we want to help them. We are all working for one common good, and in order to obtain the best results, we must co-operate with each other.

Starting a New Hosiery Mill

BY DAN BUCKLIN IN TEXTILE WORLD RECORD.

In starting a new hosiery mill, either on a small or large scale, one of the hardest propositions the manager or superintendent has to face is securing of the necessary help. There are only two courses open to pursue in order to secure the desired help, either to obtain experienced help from other places, or break in green help. It depends largely on the location of the mill as to which of these plans is the most advisable. If located near a knitting centre it is advisable to secure experienced help if possible. In order to do this it is usually necessary to pay wages a little above the standard scale of the locality, as it is generally necessary to offer some inducements in order to induce experienced help to make a change from an old established mill to a new one with its uncertainties. An objection to this plan is that it places the new firm at a disadvantage with its competitors. It is a difficult matter afterwards to reduce wages to the standard scale. In rural districts or in a new territory where it is impossible to secure experienced help, the superintendent finds it necessary to break in green help. In such cases it is advisable to engage a few experienced operators, even though it is necessary to pay them considerably more than the regular wages. For one person to teach another properly it is necessary for the teacher to understand the subject thoroughly. For this reason I recommend that experienced help be secured to teach the green help. Then after the mill is in operation and things are going along smoothly it is an easy matter to equalize the wages of the operatives. The number of experienced operatives necessary to teach the green help depends on the size of the mill. It is possible to secure from any of the large mills girls who are experienced in all the different operations in the manufacture of hosiery. In starting a mill on a small scale, one or two of these girls should prove sufficient. In a large mill I would suggest at least one or two skilled operators for each department. These can be secured for about \$12 per week. The operatives which are the most difficult to train are: ribber hands, transfer girls, transfer machine operators or knitters, loopers and menders. We will now take up each of the operations separately and endeavor to show what an ordinary girl should be expect-

ed to do, and the standard prices usually paid for each class of work. The number of ribbed top machines an operator can handle successfully will depend largely on the gauge, quality of yarn, double or single feed, and whether with or without stop motions. However, on single feed machines of medium gauge without stop motions an operator usually runs about 16 machines. If equipped with stop motions they should be able to run about 20 machines. The price paid per dozen also depends on the size and gauge, but on medium gauges usually runs from 1 cent to 2½ cents per dozen, according to size; size 6, 1 to 1½ cents; size 7, 1½ to 1¾ cents; size 9, 2 to 2½ cents. This operation does not require a great amount of skill, an ordinary girl or boy should learn to handle a set of 16 machines successfully in 30 days. The next operation is the picking on or topping the ribbed top ready for transferring to the footers or transfer machines. This operation is one of the most difficult for the help to learn. The chief requisites are good eyes and neatness. It usually takes from 3 to 6 weeks for a girl to be able to learn this work without making much bad work, and from 3 to 6 months before she can make good wages at piece work. The worst feature with this work is the large amount of good tops which are usually spoiled by the girls when learning. An excellent plan to reduce this waste is to knit regular "learning" tops with slack rows about an inch apart, and have the new girls pick these on, pull them off, then pick them on again on the next slack course until she is able to pick them on neatly without leaving drop stitches or otherwise making bad work. When she is able to do this, she can be set to work on regular stock.

The amount of work and price per dozen also depends on the gauge and size. On half hose the quantity and price per dozen of the different gauges should be as follows: 76 and 84 needle, 30 doz. per day at 4 cents per doz.; 100 needle, 25 doz. per day at 4½ cents per doz.; 136 needle, 25 doz. at 5 cents per doz.; 160 needle, 20 doz. at 6 cents per doz.; 180 needle, 20 doz. at 7 cents per doz.; 200 needle, 15 doz. at 8 cents per doz. On misses' and youths' ribbed hose the number of dozen and price

paid for the various gauges are as follows:—

Youths' coarse gauges, sizes 6 to 9, price for topping, per doz., 7 cents for sizes 6 and 7; 8 cents for size 8; 9 cents for size 9. On this class of work a good girl can put on from 15 to 20 dozen per day, according to size. On youths', medium gauge, sizes 6 to 9, the prices usually paid per dozen are: 9 cents for sizes 6 and 7; 10 cents for size 8; 11 cents for size 9. A girl should be able to put on from 12 to 15 dozen per day on this class of work.

Ladies' and misses' fine 300 needle hose 1, sizes 6 to 9: the prices should run from 12 to 14 cents, according to size. A girl should be able to put on 10 to 12 dozen per day.

The next operation is transferring. The number of machines an operator can handle depends on the gauge, speed of machines and class of work. An operator can run more machines on size 9 than they can on the smaller sizes. Also can run more on men's half hose than on youths' or misses' hose. A machine operator should average from 40 to 60 dozen per day, and the prices should range from 3½ to 4½ cents per dozen, according to size and gauge. It usually takes from 3 to 6 weeks for an operator to learn to handle a set of these machines successfully.

We now come to looping or closing the toe. This is the most difficult operation in the manufacture of hosiery. It is very poor policy to try to teach this operation to a green girl. It is much more difficult than topping, owing to there being no loose course to follow. As a general rule topper girls make the best loopers, and as the work is very similar to topping they learn it much more readily than a new girl. When in need of girls in the looping department I have always found it advisable to transfer some of the best girls from the topping to the looping department, and use the new girls for toppers, when they soon become expert toppers. As looping is the last step in the manufacture of hosiery, and as new loopers are sure to spoil considerable work, after the work is nearly finished it is a good plan to try to avoid as much of this bad work as possible. By teaching the looper girls in this way poor work is reduced to a minimum.

The amount of work a girl should be able to turn out in a day also depends on the gauge and class of goods. The following table shows the number of dozen and price for the different gauges, viz:—

120 needle line,	50 doz. per day, 3½ c. per doz.
160 needle line,	45 doz. per day, 4 c. per doz.
136 needle line,	45 doz. per day, 4 c. per doz.
180 needle line,	35 to 40 doz. per day, 4½ c. per doz.
200 needle line,	25 to 30 doz. per day, 6 c. per doz.

After the looping comes the welting. This is a very simple operation and is easily learned, for speed is the main object in this work. This comes with experience only. An ordinary girl will welt 125 dozen per day at 1½ cents per dozen. This brings us up to the mending department. This is one of the most important departments in the mill, as neat mending will often result in making firsts of goods that otherwise would go for seconds. Neat girls only should be used in the mending room. The amount of work an inspector or mender can do in a day will of course depend on the condition of the work. If the goods come into the mending department with few holes and

Fire-Proofing Facts

The roof is the most vulnerable part of any building. If it is inflammable the building is not fire-proof.

"Galt" Galvanized Steel Shingles are the only practical fire proof roof. Their weighty and numerous advantages over "composition" and wood roofing make them pre-eminent on factories, warehouses, etc. Absolutely fire and lightning proof, they are very durable—will outlast 8 ordinary wood roofs. Easily laid and require absolutely no attention thereafter. Surprisingly low in cost.

Catalog B. 3 illustrates full line of Fire-proof Goods, including Roofing, Siding, Skylights, etc. Ask us for it.

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Manufacturers of....

**LINOLEUMS
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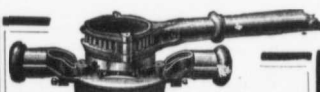
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require little mending, a girl will of course handle more work than if they require a great amount of mending. Under ordinary conditions, however, a girl should be able to inspect and mend 50 dozen per day at 3 cents per dozen. It is usually very hard to set a piece-work price on this class of work, as some work will require much more mending than others. In many mills this class of work is all by the day. By so doing they usually secure better results, as the help are more liable to slight the work when working by the piece. An excellent plan is to use the poorest help for inspectors and pay them by the piece; the neatest and best help for menders and pay them by the day. If this plan is followed, I would suggest that the menders be paid as much or a little more for their work than they could make anywhere else in the mill. By so doing there will be no trouble in securing the very best of help for this department.

This practically concludes the operations as far as the actual manufacturing is concerned. In addition to these we have several important operations in the finishing of the goods. The principal operations under this head are dyeing, boarding, pressing and mating. After the goods are dyed they must be boarded, dried and pressed. These operations are easily learned and green help become skilled at this class of work in a short time. The amount of goods an ordinary man can board and strip depends on the size and the class of work. The following table will show the work usually turned out on the different classes of goods, also the prices usually paid per hundred dozen: Ladies' wide hose, boarding and stripping, 80 doz. per day at \$3.00 per hundred; boys' ribbed hose, size 8, boarding and stripping, 100 doz. per day at \$2.50 per hundred; men's half hose, boarding and stripping, 160 doz. per day at \$2.50 per hundred.

The number of dozen a hand will press per day depends on the style of the press. On the ordinary hot press a man should average about 300 dozen per day, at about 75 cents per hundred dozen, while on presses of the Crawford type a man can press a great many more. After the goods are pressed they are sent into the finishing room, where they are mated, stamped, ticketed, trimmed and boxed. Of these operations, the mating is the most important. Mating is very important for the reason that this is the last time the work is inspected before being sent to the trade. A mater must also be able to mend neatly. When in want of maters I have found it an excellent plan to transfer menders from the mending to the mating department. The mater girls should mate the sizes very carefully, throwing out all goods which should go for seconds and mending all holes. The number of dozen a girl will do depends on the sizes, whether goods run even or uneven, amount of mending to be done, etc. A girl usually averages about 85 dozen per day at 2 cents per dozen. The other operations in the finishing department are of minor importance, requiring but little skill, and usually requiring help from 14 to 16 years of age, paid mostly by the day. I think this practically concludes all of the operations in the manufacture of hosiery where skilled help is required.

It must be remembered that the figures given in regard to the amount of work an operator should do are based on the ordinary class of help. The prices

quoted are taken from localities where help is scarce. In places where help is plentiful, the prices might be reduced somewhat.

Timely Advice to Concrete Men From a Cement Expert

By C. H. SONNTAG, IN CONCRETE.

The question of the lasting qualities of Portland cement has been before the public in various forms ever since it began to acquire its present enviable position among structural materials. From an inferior article, not much better than natural cement, and fit for use only as a substitute for lime in common mortar, it has progressed by leaps and bounds until it has made serious inroads in the sale of other older and better known materials. Its use in mortar and in massive concrete for unimportant foundations was but an evolution of the use of natural cement for these purposes, but its employment in the many ways in which it is exposed to weathering or to the action of water, has caused the discussion of its permanency to be reopened.

In the early days of the modern cement industry, when rough and massive concrete construction was about all that was attempted, much was heard to the effect that only unskilled labor was required for the work, and the cost was thereby cheapened. This was doubtless true at that time and for that class of work. But modern reinforced concrete construction is being reduced to a science, and an engineer would no more think of using excessive amounts of concrete over the requirements than he would of using excess steel. Each member is designed for the work it has to do, and on the assumption that it shall be well made, and of proper materials. This has gradually brought about a realization of the fact that in everything but the roughest work just as high-class men are required as in other building work. As a result, very few modern reinforced concrete structures have failed; and every one of these failures has been traced to the ignorance, cupidity or carelessness of the designer or contractor. Concrete construction is not alone in such failures, as witnesses the recent Quebec all-steel bridge disaster.

The foregoing remarks are in general applicable to the many smaller uses of cement, such as sidewalks, cisterns, building block, silos and farm and sewer tile.

When building block first entered the market, many people looked upon their manufacture simply as a get-rich-quick scheme. Block machines were bought and operated by men who had never mixed concrete in their lives, and who saw themselves the possessors of future fortunes. The machine manufacturers were partly responsible for this, for some of them seem to have known little more about the subject than their customers, and recommended absurdly lean mixes for the block. The result was in-

evitable—poorly mixed, slightly tamped and half cured block with not enough cement in them to hold them together, and when these blocks failed, did the block maker have to stand the blame? By no means; it was the cement that was at fault! We are glad to say that the better class of block machine manufacturers have seen this condition of affairs, and have made, and are making, every effort to make block manufacture a permanent success by giving proper advice to their customers. The result is a reputable business that is standing and growing on its own merits with apologies to no one.

Aside from the proportions of the concrete, the most important thing is mixing. This cannot be too thorough, and a little more time spent on it is amply repaid by the better quality of the work. The writer had a good demonstration of this recently. He was called to a neighboring town to look at a job of cement work made from the brand of cement with which he is connected. The work was a washing floor in a livery stable, and the complaint was that the cement would not set. On arrival, the stable man had a carriage on the floor washing it, and inspection showed that most of the floor was hardening up very well. There were two or three spots about a foot square that were so soft that they could readily be dug up with the fingers. Close examination showed that these spots contained no cement whatever, as near as could be told by the eye. The cement had never been properly mixed, but the first complaint had been against the cement and not against the man that used, or rather misused, it.

NECESSITY OF REINFORCEMENT.

Another matter that deserves careful consideration is that of structural design. This is as important in small work as it is in a large factory or warehouse. When an article made of concrete may develop tension strains in any portion, it should be reinforced at that place with steel. Concrete engineers do not believe that concrete is a reliable material to stand tensile stresses, and it certainly is not economical from the first cost standpoint to design with that end in view. Concrete, without reinforcement, is admirably adapted to withstand compression and should be used in that way only. Articles such as fence posts, which are subject to bending stresses, should be provided with longitudinal reinforcement. The writer has seen a photograph of concrete fence posts that had failed by breaking near the ground. The photograph showed that the posts contained no reinforcement. Had they contained even a piece of heavy wire in each corner they would

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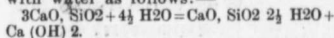
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have withstood any reasonable strain that might have been put upon them. The writer has in his yard a large concrete flower vase about 20 years old, and probably made of imported cement. The surface shows no sign of disintegration, but the hollow pedestal is cracked vertically. This is another instance of lack of reinforcement, for a few rings of heavy wire in the concrete would have prevented this. In Germany, where the use of reinforced concrete has been more developed than here, concrete poles 50 feet or 60 feet high, for telegraph and power transmission purposes, are becoming quite common, and have been found practically indestructible and much cheaper than wood. They are reinforced with steel rods to withstand bending.

Some discussion has arisen recently as to the effect of sewage, sewer gases and percolating water on concrete. The arguments are, of course, directed against the cement itself, not the aggregate. Now Portland cement is only one of a family of high lined substances used as binders in mortar. The most common mortar is that made with slacked lime. Any argument as to solubility directed against cement must have greater force against slacked lime, for this is chemically the most active and soluble form of lime. If lime were soluble to any extent in sewage, or affected by sewer gas, the thousands of brick sewers throughout the country that are laid with lime, natural cement or Portland cement mortar are doomed to destruction by disintegration of the mortar. What are the facts? In our eastern cities many old brick sewers laid in lime mortar fifty to seventy years ago have been dug up to make room for larger ones and have been found in perfect condition. This should dispose of any argument that sewage has a deleterious influence on cement construction.

FREE LIME IN CONCRETE.

Another argument that has been used to show that cement will disintegrate is that it will give up lime to water with which it is in contact. On the face of it, this looks serious, but those who use this argument lose sight of the fact that the setting free of lime is an essential part of the chemical reaction that we call the setting of the cement. Portland cement consists essentially of di-calcium silicate $2CaO, SiO_2$, with an additional molecule of lime in solid solution. This is equivalent to the formula $3CaO, SiO_2$, though as stated, this latter substance is not a true component, but a solid solution of CaO in $2CaO, SiO_2$. Now Le Chatelier has worked out the reaction that occurs when this solid solution is brought into contact with water as follows:—



It will be seen that two molecules of free slacked lime are set free by this reaction, and it is the solution of a small portion of this lime in water that has caused some people to predict that cement work will not be permanent.

This free lime, in fact, plays a very important part in hydraulic work, but its action is beneficial. When it comes into contact with the air, or with carbon dioxide dissolved in water, it is changed to carbonate of lime or practically common limestone. In this form it actually fills up the pores of the concrete and helps very greatly to make it

water tight. For this we have the testimony of one of the largest builders of concrete dams in this country, whose reputation depends on the permanency of his work. He says that a concrete dam when just completed is slightly porous, but the lime carried by the seepage water is soon deposited in the pores, making the dam water tight. That this must be so is shown by the fact that in some cases they put the electric power machinery in chambers built in the dam itself, and it is well known that electric machinery cannot be well operated in a damp place.

The use of concrete for farm tile is gaining favor rapidly. It has been claimed that the porosity of the tile would permit the cement to be leached out. In the light of the foregoing such a possibility is very remote if the tile are well made. The writer can see no object in insisting that a farm tile shall be porous. They are laid end to end with no cement on the joints, and the joints can admit as much water as a run of tile of any length can carry. They should be made of sand containing particles of all sizes, so as to make a strong tile, and should contain enough cement to merit the name of concrete.

SUMMARY.

In conclusion, it may be well to summarize the foregoing for the benefit of the man who is about to engage in concrete work.

1st. Purchase a reliable brand of cement.

2nd. Use clean sand that contains particles of all sizes, as it will make a denser concrete with the same amount of cement.

3rd. If you use crushed stone, see that it is free from dust and is not of a kind that will disintegrate when exposed. Clean gravel, limestone or trap rock is the best.

4th. See that the materials are well mixed dry, so as to distribute the cement evenly. If this is not done the cement will form lumps when wet that will be difficult to break up.

5th. Careful mixing after wetting and thorough tamping are essential.

6th. Use reinforcement if the article is to withstand bending, tensile or shearing stresses.

7th. Fight shy of the man that says that 8 to 1 is a good mix. 4 sand to 1 cement is none too rich, and if using stone, 4 stone to 2 sand to 1 cement is the best mix for small articles.

Some Practical Ways to Reduce Fire Losses

By F. W. FITZPATRICK, WASHINGTON, D.C., EXECUTIVE OFFICER INTERNATIONAL SOCIETY OF STATE AND MUNICIPAL COMMISSIONERS AND INSPECTORS.

But a few years ago a doctor was called in only in case of illness, and then was invariably expected to give medicine. And the nastier the medicine, the greater was the chance of recovery. At least, so thought the average layman. To-day our doctors are expected to, and actually do, a great deal to keep people well, and the best of them give mighty little medicine, prescribing, rather, sane and hygienic living and diet. So with fire; twenty years ago our fire departments existed solely to put out fires when they occurred, and the more water that could be thrown on, in spite of the damage it did, the more effective was considered the department. To-day our people look to the fire departments not only for fire extinguishing, but for advice and help in the prevention of fire, the minimizing of its dangers. Why, the very titles of the papers that have been and are to be read to you during this meeting, and the subjects that are up for discussion, tell the whole story of the wonderful progress, the modernizing of the methods, the widening of the scope and the marvellous efficiency of your several departments.

No one in this organization has the idea that the fire department is of minor importance in a city's affairs, but some of you perhaps have an inadequate idea of what fire means in the aggregate to the country. Only the biggest of figures can tell the story. Think of it, just one conflagration in San Francisco wiped \$320,000,000 out of existence; another meant devastation to the tune of \$90,000,000, and the conflagrations, or even individual fires of a million or two, are, alas, far from uncom-

mon. Six hundred thousand dollars a day is our average. Last year, one in which there were no extraordinary fires, \$215,000,000 was our total. This year, in January, we allowed \$24,000,000 of property to burn. That amount represented more by far than was done in the way of new buildings and repairs in the same period, for this work during the entire month only totalled \$16,000,000. A destruction of more than is produced means that, if unchecked, ultimate bankruptcy stares us in the face. Over and above what fire costs us in actual combustion, remember that your departments, the installation of high pressure water service, and all that sort of thing, the incidentals of fire, as it were, costs us another \$300,000,000 a year. Then, plus all that, we go to work and spend \$195,000,000 in buying insurance, an alleged protection that pays us back barely \$95,000,000 of that amount in adjusted losses per year. In fine, the aggregate of fire's actual havoc and of what we spend in fire fighting amounts to just about \$600,000,000 per year. It may not be amiss to add that the biggest year of our building history shows a record of about \$600,000,000 expended in new buildings and repairs! Eliminating all the incidentals, our actual fire loss is about \$2.30 per capita per year—a pretty heavy tax—while the same tax in the average of European countries is less than 33 cents per capita.

Over 99 per cent of the fires you are called upon to preside at occur in buildings. They, then, are the great basis of trouble. We have pretty nearly 12,000,000 of them, and their value is approximately \$15,000,000,000. The

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very minimum of value of their contents is another \$150,000,000,000. These two sums represent the total property value entrusted to your care! A responsibility that is blamable for many of your grey hairs. They tell us that we number 80,000,000, and we are safe in saying that every one of these people occupy buildings for many hours in the day. All those lives are, therefore, in your care, too. Work as you may and expose your lives as you will, and in spite of the heroism of your subordinates we pay the toll in blood as well as in money for our folly in the continued use of inflammable construction. Seven thousand human lives have been wiped out of existence by fire in this country in one year's time.

Build up your departments as you may, the fire loss is increasing at a ratio away ahead of the increase of population, or of the increase in buildings added, and what help are you receiving from the people in any effort you or any of us can make at fire prevention? After all, as Artemus Ward said: "To prevent, you have to prevent," and as the main cause of fire lies in buildings, the only thing to do with buildings is to make them so that they will not burn. When you do that, then, and only then, will there be a real prevention. All the "slow burning," semi-fireproof," and those other makeshifts are fond illusions. There is just one thing that will prevent fire, and that is fireproof construction. The people are beginning to know it, but they are going so slowly about it that of all the 12,000,000 buildings we have mentioned before, there are scant 8,000 in which any effort at all has been made at fireproofness, and of those 8,000 I doubt if there are more than six buildings in the entire country that can be termed fully and absolutely fireproof!

And the folly of it all is that the initial cost of such construction is only a trifle more than that of ordinary, combustible methods. In no case would fireproofing a building cost a man more than the sum necessary to produce in annual interest the premium for insurance that he has to pay upon his alleged "economical," ordinarily constructed building. There is positively no reason for combustible building to-day. It is an extravagance, national and individual, an insane, criminal extravagance, one indulged in simply because of the unthinking habit people have gotten into of so building.

You need no one to tell you what a fireproof building is, and what are the materials best suited to withstand the fiercest attack of the demon fire. You have too often seen granite and marble and stone and iron distorted and disintegrated to have to be told that those materials withstand heat and flame but little better than wood. You know that steel work has to be properly encased and protected and preferably in fireproofing tile; you know that brick and terra cotta external walls best stand the fiercest heat; you know that enclosed stairways and elevator shafts mean the confining of fire to some one floor in a building, and that it is always easy to handle it there, and that the smaller the units of space in a building the less chance there is for fire to spread, and that wire glass or other sufficient protection to windows means the salvation of many a building. For you also

know, of course, that fully 44 per cent. of our entire fire loss is traceable to the window route. All this constitutes what has been termed "standard fireproof construction." You know, too, that many substitute schemes have been tried, and most of them found wanting. Few among you chiefs have not been called upon to extricate workmen from the debris of collapsed reinforced concrete constructions, and therefore are you well qualified to go before your city authorities and demand extra precautions and safeguards to be thrown around such experimental and hazardous modes of construction, if they are to be permitted at all.

But your principal work lies, and will lie for many years, in spite of all our efforts, among the old and inflammable buildings of our cities. Many of them are hopeless, and when they go, if no loss of life accompanies the going, we may well sing "hallelujah." But in many of them much could be done toward fire prevention. The direction of new construction rightfully belongs to the members of my society, but the control of the old buildings, I submit, should be entirely in your hands, and you should clamor for drastic regulations anent their improvement. It is a crime for your cities to allow people to live in those buildings, to tolerate them in the community, and to expect you to endanger your lives fighting the fires that are bound to occur in them. Those old structures should have their windows protected and have their stairs and elevators enclosed, should have the maximum of fire appliances and automatic alarms about them, and everything done that modern science can devise to lessen the awful danger they represent.

In those old, as well as in all new buildings, little dependence should be placed upon the so-called "fire escape." Most devices under that name are delusions and snares, and you know it.

The one sane thing to do is to have the main stairway of every building, the one commonly used by people for ingress and egress daily, made absolutely fireproof in itself, served by self-closing doors at every story and opening directly upon the street. Then you have a real fire escape that will always be safe and to which people will instinctively go in case of danger.

There are a few other things that we, the Building Inspectors' Society, are clamoring for, and in which clamor you should join. We need your co-operation, and there is every reason in the world why you should give it to us. People pay infinitely more attention to what you say about fire than to anyone else in your city. Others can be called theorists, but your people know that you have practical experience in fires. Every day we see fresh signs of the tendency there is to place more and more the responsibility upon your departments. It is meet and just that you should have that responsibility. There may even be a time when the fire department and building department will be so closely knit as to be under one head. But in the meantime, and since they are separated, let us work in unison and for the single purpose of benefiting our cities.

Stricter building regulations are a prime essential in every city. At least in the downtown business district no halfway measures should be permitted,

and only absolutely fireproof buildings allowed.

As things are to-day, the man who does build fireproof is taxed extra for the privilege! He actually pays a tax upon the additional tax he imposes upon himself. This should not be. Property taxes should be graduated so that the owners of first-class buildings, requiring the minimum of fire protection, pay the lowest possible rate, while the owners of fire traps, for whom your expensive fire departments are maintained, should be compelled to pay the maximum. This is but equitable and sensible!

Architects and builders should have to pass an examination and be licensed before allowed to build or practice. Few of them know much and care less about fireproof construction. And the infraction by them of any of the building regulations should mean a revocation of the license.

Every building hereafter erected should be under the supervision of an inspector licensed by, and reporting to, the city, though paid by the owner of that building. He should, of course, take care of the interests of that owner, but his duty is first to the city. He would be a city official, virtually loaned to the owner to carry out that work, and any wrong-doing on his part or connivance at infraction of the building regulations should mean his debarment from superintendence in that or any other city.

To-day any man can, and many do, advertise and announce this and that building as being "absolutely fireproof." Owners of theatres and hotels are particularly inclined to do this, and most of those buildings so advertised are little better than match boxes. The layman who is not over-discriminating believes this, and tenants are obtained under false pretences, and many lives and much property are thus endangered. The building department should be called upon to label every building in the business district, and certainly every other building of a more or less public nature should be labeled "fire-resisting," "ordinary," and "dangerous." This would make the building departments rather keen in not having their labels proven wrong, and it should be made a grave misdemeanor for any one to advertise his building as belonging to a class superior to that in which it is labeled. In building a hotel, for instance, if a man knew beforehand that his structure was going to be called "dangerous," he would think twice before starting out on the proposed basis, and the chances are a hundred to one that he would build fireproof. No one greater step could be taken toward fire prevention than this very one of labeling the buildings.

You have done magnificent work, spectacular and heroic deeds in extinguishing fires; the great men of old established their greatness upon the battlefield. To-day there is a new order of things. The battlefield is a thing of the past. Statesmen and nations settle their differences by peaceful means, and peace is the watchword of our era. So with you, gentlemen. For a long time yet you will have to face the grim task of fighting fires, but you should keep steadily before your gaze another and paramount purpose, a greater one, too, that of doing all in your power to PREVENT fires!

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Works Management and Workshop Practice

BY JOHN ASHFORD, M.I. MECH. E., IN THE ENGINEERING REVIEW.

It is becoming increasingly necessary, in the present days of slack trade and keen competition, that manufacturers should know exactly what it costs to make their goods; for, without such knowledge, the conducting of business becomes a matter of speculation instead of certainty.

It is an old saying that "fools manufacture while wise men buy and sell," the underlying argument of which is, no doubt, that when an article is bought to sell again its cost is definitely known, and the simple difference between the cost price and the amount obtained from the sale constitutes profit. When manufacturing, it is a case of buying material, labor, shop accommodation, use of machinery, and a number of other items, all of which need to be taken into account before the cost price is known.

In a factory where a large number of men are employed, it is far from a simple matter to obtain correct particulars of the labor charges, partly because of the ignorance of the men who have to account for their time, and partly through either wilful or careless misrepresentation. The collection of information as to the cost of production is usually placed in the hands of a clerk, who, with his assistants, constitute the cost department. The money spent upon this department being non-productive, it is looked upon as so much loss to be cut down as low as possible, and the importance of the work to be done is much underrated; consequently, to quote the words of Messrs. Sinclair and Frank Pearn, in their recently published book, "the work done in this department is usually of a confused and chaotic character, devoid of all finality or practical result."

The successful and accurate costing of work is by no means a simple matter, and it demands that it should be done by men with practical knowledge upon a method that has been carefully adapted to the needs of the factory. The book on workshop costs already referred to contains full particulars of the method or system that has been developed by its authors at the works of Messrs. Frank Pearn & Co., Ltd., pump manufacturers, Manchester, of which firm they are directors. The information contained in the book is of very great value, embodying, as it does, so much that has been developed by practical experience. The key-note that runs through the whole work is struck in the opening words, thus: "Systemization, always an important factor in the economical production of engineering work, has become, in the face of present-day competition, an absolute necessity." Would that more of our engineering firms realized that fact, and reduced the whole of their work, both in the shops and offices, to orderly and economical systemization.

Speaking of cost-keeping in the introduction of their book, Messrs. Pearn make several statements which are of interest; for instance, the following:

"* Workshop Costs for Engineers and Manufacturers." Manchester: The Technical Publishing Co., Limited.

"A correct and up-to-date record of moneys expended, of the return in material and labor for that expenditure, and of the margin of profit attained, is an important adjunct in the upholding of any business on a sound commercial basis." Many directors feel concerned as to upholding their business on a sound commercial basis, but do they realize what an important factor the cost-keeping department may be in effecting so desirable a result, and when the costing method is unsound do those directors realize what a damning effect it has upon the business? The reviewer knows of large factories where, until quite recently, there was no cost-keeping system at all, and where at present it is so faulty as to be actually misleading.

The opinion of Messrs. S. & F. Pearn on this matter is clearly shown in the following extract: "Should this record, either from the want of a cost-keeping system or from the employment of a faulty one, be inaccurate or incomplete, then, far from being of assistance and affording guidance, it is misleading and harmful." "It becomes imperative, therefore, that any manufacturer or engineer desirous of progressing or holding his own with his competitors, should employ some method of ascertaining the true cost, both in detail and in bulk, of all material and of the operations performed thereon. Such a method, to be of practical utility, must be thorough in its character, i.e., it must not confine its working to the offices alone, but must extend them into the workshop, so that the course of material in the shops may be accurately followed step by step by the cost-keeping department in a systematic and progressive manner."

The authors' opinion of many old methods of costing is clearly shown in the following:—"In many establishments the cost office is a time-honored institution, only existing by the apparent importance of its appalling number of books and sheets, and the overwhelming accumulation of figures these contain." "There may have been some system to begin with, but its effects being of an indifferent nature, those subordinates to whom its control has been relegated... have become in process of time mere automatons, going through a daily routine of entering and re-entering from sheet to book and book to sheet, without troubling themselves in the slightest degree as to the ultimate usefulness of their work."

The function of a cost department is usually considered to be to keep a record of money expended, and to account for it in some way. The record is generally compiled from information sent to the department from the works, and the accuracy of the record depends upon the correctness of this information, which they usually have no means of checking.

The cost system advocated in the book under review evidently aims at much more than mere recording, for it is shown to be an important factor in works management. Instead of recording what has taken place, it begins at

the beginning, and says what is to take place. Instead of being a mouldy, fussy department of books, it is a leading department in the works, closely in touch with or controlled by the works manager. The system embraces the ordering of work from the shops in detail, the planning of the procedure of the work through its various operations, the recording of the progress made by the work up to date for the information of the management, the location of disproportionate costs and losses, the safe-guarding against irregularities and hiding of faults, in addition to the recording of costs.

To facilitate the work of booking, stores keeping, etc., the parts to be manufactured are identified by a code of symbols, so that the name of a part may be frequently omitted, the symbol being used instead. The code used by Messrs. Frank Pearn & Co., Ltd., is explained, the general idea being that similar parts of different pumps, alike in general construction, are denoted by similar numbers, and the type of pump is indicated by a prefixed letter, thus: "A1 and Sheet 1 is a pump body, A8 the flywheel, A10 the cylinder-cover of a well pump; while B1, B8, B10 are similar parts of a Manchester pump, as on Sheet 3." Where there are several similar articles of different sizes, the size is indicated by a second number, thus: K1.4 is a circular blank flange pattern 4-in. outside diameter; K1.4 1/2 is a circular blank flange pattern 4 1/2-in. outside diameter—and so on throughout the series.

The symbols used to denote the parts are also used as pattern numbers; the pattern racks bear the marks, and in the stores they appear on the bins; thus the stock of patterns, castings and parts can be recorded and kept in order with the greatest accuracy and facility. As the patterns are clearly marked with these symbols, they appear also upon the castings, and become of valuable assistance to the workmen in both finding the right casting and in correctly booking their work. Extracting from the book: "It can be easily understood how simple, among other things, is the task of the person who has to check the deliveries of castings from the foundry, and for the workman to give particulars of his labor to the time clerk, while the universality of nomenclature which this method leads up to is of inestimable value."

Castings of a special nature are given the job number of the engine or machine of which they form parts. For this purpose a special holder is described to carry brass figures to form the number, which the moulder impresses in the mould that it may appear upon the casting. In addition to this, the progressive number of the engine or machine is boldly marked on all castings specially made for it with the aid of rubber figures and aniline ink. Forged work does not escape the system of marking, a special steel holder for the figures being used to keep the figures in line and enable the marker to impress them all at once.

Undoubtedly a system of marking all castings and forgings, such as described in the book, is of great value in identifying the work and progressing it through the shops. It helps, too, in gathering together the finished parts in stores ready for the assemblers.

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of nomenclature and the registration of patterns and materials, the first part includes nine large sheets illustrative of Messrs. F. Pearn & Co.'s method of registering the pattern numbers to simplify the work of ordering.

Part II. treats of the recording and analysis of labor. To insure correct recording of quantity and job number, a job number ticket is issued from the casting stores with the castings, and this ticket remains in the hands of the workman until the work is completed, when the quantities are checked to it. This ticket has its use in securing the correct booking of the work, for "the time sheets are prepared from the workman's job tickets by time clerks, so that when the sheets are brought into the office they are clean and legible." Specimens of these time sheets are illustrated, and the method of making them up, comparing with the time book, etc., is explained.

The third part is entitled "Manufacture or Repetition Work," and it deals more especially with the preparation of the cost sheets by the cost clerk; the ordering of material from the iron foundry, brass foundry and smithy; the delivery notes accompanying from the foundry to stores; and the booking of the information acquired upon the cost sheets. It is interesting to observe that the cost sheets are made out at the beginning, before ordering the material, which is done from the cost department, and that they contain a full schedule of parts to complete the pump, and that against each part the programme of operations is put down. This "identifies the wages with material." As the job progresses, at each stage the time is booked as money against the operation; thus, as there is only one entry for each operation, a second booking in error or on work replacing waste is readily detected. To quote from the book: "The detail of operations on the cost sheets prevents the following mischances by causing immediate inquiry from the cost department on receipt of bookings from the shops: the same operation being booked twice; two men booking the same operation; the booking of fictitious operations. Thus a detective-like system is established by this detailed tabulation of material and labor."

As the sheets are schedules of all work to be done, and as they are filled up systematically as the operations are completed, they show upon inspection the progress that has been made and the amount of money spent; thus an estimate can readily be made of the time required to complete the contract.

Various sheets are illustrated that are used for posting and preserving the detailed information; such as stock sheets, a page out of the weight book in which the weights of all standard parts are tabulated, and the stocktaking sheet.

Part IV. cannot be strictly called cost keeping, although indirectly it has to do with it, as it deals with the operation of the finished work stores, and the issue of work to the assemblers. By the methods therein advocated economy undoubtedly results, for it provides that all details shall be collected ready for the erector and then issued to him to assemble. All parts being ready to the erector's hands there is no occasion for delay in carrying out the work. It also reduces to a minimum the work of charging up stock parts to an en-

gine number, as it is done all at once, the cost department being advised of the issue by the stores issue sheet.

The last section of the book explains the modifications for costing contract and special work where the details are not of the usual standard.

Speaking of the book as a whole, it is particularly interesting to works managers, for it goes into important details of workshop organization, as affected by the judicious operation and use of a complete system of cost-keeping in detail. The arrangement of the book is good, and its value is greatly enhanced by the full-size sheets and folios from various cost-books, etc., which show the columning arrangement and ruling.

The system as described is essentially a sheet-and-book system, and although the method of nomenclature reduces the actual clerical work to a low point, yet there is still a considerable amount of

it to do which by modification could be reduced. The general scheme of ordering from the cost department is the right thing, but the subsequent rewriting of information on job tickets, time sheets, lists of parts, etc., leaves room for further improvement. When time sheets are written up in the shops by time clerks in consultation with the men, it is slowly done, and the men's time is partly wasted by the interruption. Moreover, there is room for error, either accidental or deliberate; as the time clerk has to depend upon the man for the accuracy of the information as to time that he receives.

The book is a valuable addition to engineering literature, and it is with pleasure that the reviewer would urge every works-manager who desires to be well posted to become a possessor of this most excellent work.

The Problems of Fire Prevention

By POWELL EVANS, PRESIDENT MERCHANT & EVANS CO., PHILADELPHIA
IN AMERICAN INDUSTRIES.

In our cities to-day but few know the risk of some "Tarrant" explosion because some individual is permitted by carelessness or worse, and in secret for his own self-interests, to follow the dangerous course of storing explosives within thickly populated areas. Such instances as the Slocum disaster in New York harbor; the Iroquois Theatre fire in Chicago; the Boyertown, Pa., theatre holocaust; the Collingwood, Ohio, school horror, and numberless fatal fires in factories, hotels, stores, residences and every sort of place of assemblage, should make all citizens realize how constant is the life danger from present fire loss conditions to themselves and their families, apart from and above the money loss involved. Proper regulations may not exist, be applied, or be enforced; and all three or any one of these loopholes constitute a great and ever-present danger everywhere.

The average business man at present is not sufficiently alive to the situation to think or care much about it. The average municipal government is none too active in the matter because it might trouble some voter. The average insurance man is not troubling much about it, as he takes property as he finds it, and charges a sufficient rate to cover the risk, whatever it may be. It is necessary for some one to change his attitude, if this condition is to be bettered, and of all the possible avenues to an awakening in the matter of sufficient force to really set in motion an effective change, I believe that most progress can be made by organizing those interests which have most to lose—viz.: who pay the greater part of the cost—the American merchants and manufacturers.

Those not fully informed on the subject may now ask whether the means are known and understood which will operate, if applied, to materially reduce fire loss. I answer "Yes,"—that the de-

tailed experience of the fire insurance organizations in the field and in the laboratory—thoroughly detailed, classified and digested for years—provides a fund of sure knowledge, which, if widely known and applied would yield certain results (not conjectured, but proven by large practice over a long period). No one can sincerely question the fact that these great organizations—solely for their own interests if for no broader reason—are and have been earnestly seeking to learn the true causes and facts relating to fire loss, and to discover and apply remedies to lessen it. From my observation they know a host of important facts and remedies; but this knowledge is now bottled up in a small expert circle and is not sufficiently widely diffused among the public to enlighten, stimulate and guide the average individual.

The insurance organizations as commercial bodies selling fire policies may be as selfish and as much in combination to get good prices for their commodity as many other of our industrial aggregations, but as an expert fire prevention and protection body they are watchful, careful and accurate—and they now invite all interested in the great problem to share their knowledge and help reduce fire loss. The old trade device of committees to attack the insurance bodies and hammer the rate without touching the cause has always failed and always will. It is not a sound effort for one reason, as it attacks the effect instead of the cause, and for another it attacks an opponent who cannot be caught. To understand why this is true it is necessary at this point to inquire into the character of the insurance organization.

Insurance abroad is practically all written by stock companies, conducting their business with their own capital, at their own risk and profit, at fixed rates. The policies there are usually for ten years, and by virtue of this long term and their incorporation in mortgages

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and deeds of trust, they are very strongly entrenched, and no other system can get a start. In the United States, on the other hand, competitive insurance is obtainable on the best risks (mills, factories, warehouses, etc.) from the stock insurance companies on the one side, and from the factory mutual fire insurance companies on the other. The latter considered first—as the simpler organization—consist of about twenty-five companies co-operating through one central inspection bureau, who confine their risks to such buildings only as are properly built, protected and occupied—so as to be only slightly inflammable. The insured pays his assessed rate into a pool and recovers annually as a dividend his pro rata surplus over the payment of losses, expenses and a small investment fund—hence the term "mutual." This insurance has become very large; and is found cheap, careful and safe. To meet this particular class of competition prominent stock companies have combined into factory insurance associations which insure a large amount of like property at a comparatively low flat rate.

Stock insurance proper cares for all other risks—such as the bulk of city property; mills and factories of construction, protection and operation below the standard above mentioned; and miscellaneous country property.

To all these last named risks higher tariffs are usually charged, measured by the sum of hazards by items constituting the final rate. The officers and agents of the companies in different centres constitute rating boards, and these rates are applied to individual properties by survey or inspection boards which parcel out the entire country. The determination of rate is based on the facts discovered by local inspections, together with the laws based upon the engineering data collected by the engineering organization of the insurance business, aided by a technical test laboratory conducted by experts.

It may now be seen more clearly why a trade body committee cannot well influence a reduction in insurance rates. Either the committee represents a trade association, spread over the country and weak at any one point where it meets the local insurance rating power, or it represents any one community attacking one local rating board which has the support of all the others.

Hence I say do not start with an attack on rates, but rather the causes of fire loss which produce those rates. First better conditions and then let the rate become a commercial question of barter and sale between the business interests purchasing it and the insurance companies selling it. If insurance is made to cost less it must in time inevitably be bought for less.

Here I reach the final point at which I have been aiming—i.e., the suggestion for the practical step to be taken now.

The National Fire Protection Association, the engineering organization of the insurance world, is "an association to promote the science and improve the methods of fire protection, to obtain information on the subject, and to secure the co-operation of its members in establishing proper safeguards against loss of life and property by fire."

Its membership consists of "active, associate, subscribing and honorary members, but no one is pledged to any

course of action through this membership."

Active members, (each with a vote) are insurance boards and associations, having primary jurisdiction; and national institutes, societies and associations interested in the protection of life and property against loss by fire. The annual dues of active members are \$15.

Associate members are individuals engaged in the fire insurance business, and individual members of the organization represented in the active membership, and the annual dues of associate members are \$5.

The National Fire Protective Association was organized and is dominated to-day by the combined insurance organizations. Its active membership is constituted of the forty-five different boards, more or less, into which the stock organization is divided, as I have above outlined; and also of the inspection bureau of the Associated Factory Mutual Fire Insurance Companies, and of the following independent organizations, viz.: the American Institute of Architects, the American Institute of Electric Engineers, the American Society of Mechanical Engineers, the American Street and Inter-Urban Association, the American Warehouseman's Association and the American Water Works Association.

This National Fire Protection Association represents the technical engineering organizations of the country engaged in studying the science of fire prevention, composed of the entire insurance organization, as well as of the other organizations interested in the science of fire prevention.

I trust that in time an American Fire Prevention Association may come into being, organized nationally—with State departments and municipal bureaus, comprising in its membership in each municipality every business house and individual in sympathy with reducing fire loss. This membership, informed and animated with this object, can use city to better present conditions, and if such do not now exist, can exert their combined influence to demand the creation of the necessary authority. Every man and woman in the country should be an ally of this movement, and should become posted about the facts in the case; and should have under law authority to report any dangerous or illegal conditions noted in any building, anywhere, and at any time, to the proper authorities; be able to require prompt, effective and reasonable correction—just as agents and members of the Society for Prevention of Cruelty to Animals can now inquire into and re-

sist on the spot abuses of that nature. The constant fear of fire is in every breast, as witness the protection of a policy on most property, and the incorporation of fire insurance in most deeds of trust, and its usual requirement as a basis for mercantile credit. The final thought of the average householder throughout the land before retiring to rest is to look at the fire or furnace in his house. The fact that this danger is so ever present everywhere tends in itself to limit opposition to it, because the fear is a habit, and in a measure subconscious; but the moral support of the country, which is the basis of every great movement, could, beyond question, to my mind, be rapidly and effectively organized to oppose present fire waste. The frequent, irregular and unrelated newspaper comment on fire losses shows the disposition of the daily press in the matter, and its aid could doubtless be safely counted upon to regularly disseminate more systematized information, when the need of a thorough educational campaign on the subject is properly brought to their attention.

A final word on the subject in relation to forest destruction. I called the attention of the United States Inland Waterways Commission and Forest Service to the matter, and their approval and commendation was followed by an invitation from the President of the United States to attend the conference on the conservation of natural resources held at Washington. It is estimated that more than one-third of forest destruction arises from fire waste, largely preventable primarily by the force of thrifter and more enlightened public opinion. The country now sees, also, that too much timber is annually cut and used. Why not lessen this by substantially banishing wood from building construction in our cities, the use of which constitutes a large part of the timber demand, and is at the same time a prime cause of conflagration? Two admirable and practical causes can be effectively served by this one step of minimizing the use of wood in city building codes all over the United States, and the friends of both movements can certainly join hands in this issue. If the people of the country will generally unite in studying and working out this problem, I feel safe in estimating that in ten years more than two-thirds of the current fire loss in the United States will disappear, and upwards of \$200,000,000 of wealth, now absolutely and ruthlessly destroyed, will annually be saved—a satisfactory interest on \$5,000,000,000 added to our national assets, and countless lives and untold suffering saved.

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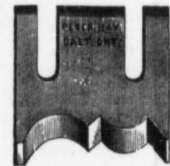
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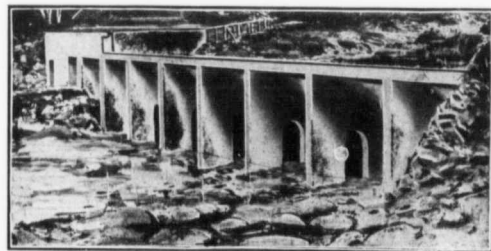
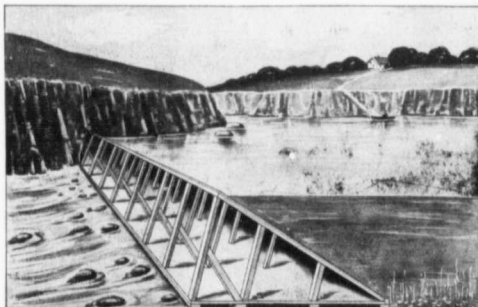
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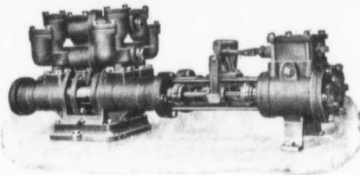
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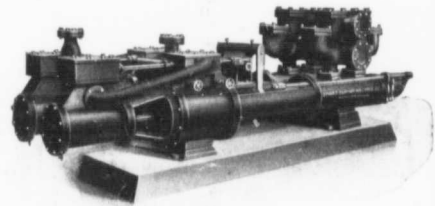
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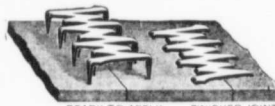
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