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BRITAIN AND HER COLONIES.

It will be remembered that in connection with the Colonial and Indian Exhibitions, held in the city of London in 1886, was held the first Congress of the Chambers of Commerce of the British Empire. This Congress was organized by the London Chamber of Commerce, and representatives were present from all parts, various subjects of Imperial interest being discussed. The opinion was generally entertained at that meeting that such congresses should be held frequently, in the hope that the broad consideration thus given to various important questions might considerably aid in their solutions, and lead to a more speedy adoption of reforms calculated to consolidate and extend the commercial relations which already exist between the mother country and her various colonies and possessions.

In this view of the matter the London Chamber of Commerce have decided to call a second Congress to assemble in London in June next, and proper committees have been appointed to carry out all the details. This organizing committee have issued invitations to the Boards of Trade and similar organizations throughout the Empire to appoint delegates to represent them at the forthcoming Congress, and the Canadian Manufacturers' Association is included in the list.

It is thought that the programme of the Congress should

comprise the following economic and non political subjects. (1) Commercial relations of the mother country with her colonies and possessions, with special regard to the renewal of European treaties, and the recent commercial legislation of the United States. (2). Boards for conciliation for labor disputes. (3). Codification of the commercial law of the Empire (4) Imperial registration of trade marks, and the adoption throughout the Empire of the Merchandise Marks Act. (5) Bills of Lading reform. (6). Factory legislation throughout the Empire (7) Commercial education. (8) Emigration and colonization. (9). The necessity of an Imperial system of decimal currency, weights and measures. (10). An Imperial system of penny postage. (11). Direct telegraphic communication throughout the Empire.

With regard of the first item of the subjects suggested for consideration by the Congress it will be remembered that when deputations from the London Chamber of Commerce waited on Lord Salisbury, last June, to learn his views upon the subject, he stated in effect that it was impossible for any practical progress to be made towards either commercial union or Imperial federation until some definite scheme was brought up for discussion. In view of this position it is to be hoped that all the organizations sending delegates to the Congress will formulate their views in distinct shape on this question in resolutions or otherwise, sending the same to the organizing committee of the London Chamber of Commerce, and that the delegates will be prepared to support the proposal at the sitting of the Congress.

The Imperial federation feature of the programme possesses a great deal of interest to Canada, and it is to be hoped that the discussion of it will result in the formulation of some scheme which will commend itself most favorably to the British Government, and result in the adoption by it of a fiscal policy which will give Canadian and all other colonial products some preference in the British market as against foreign nations. Other features of the programme which are of much interest to Canada are those referring to an Imperial system of decimal currency, weights and measures, penny postage and direct telegraphic communication throughout the Empire.

The Canadian Manufacturers' Association will, no doubt, be represented at the Congress.

RETALIATORY DUTIES.

A FEW weeks ago, diplomatic notices were sent by Secretary of State Blaine to the representatives in Washington of Austria Hungary, Columbia, Hayti, Honduras, Nicaragua, Spain, (for the Phillipine Islands) and Venezuela, under the provisions of Section 3 of the McKinley tariff Act, authorizing the President after January 1, 1892, to suspend by proclamation, the free admission of sugars, molasses, coffee tea and hides, against such countries producing these articles as, after that date, maintained tariff duties on American products which, in the opinion of the president, are unequal and unreasonable. Secretary Blaine's notes were sent out in accordance with the opinion of the attorney-general that it was the duty of the president to collect the usual duties upon these articles coming from the countries named, if the terms of Section 3 were not complied

with. These notes were all of the same import, and were all signed by Mr. Blaine. That to the Minister of Venezuela read as follows:—

I am directed by the President to again bring to your attention the provisions of the Tariff Law of the Congress of the United States approved October 1, 1890, in which provision was made for the admission into the United States, free of all duty, of the following articles to wit: All sugars not above No. 16 Dutch standard in color, molasses, coffee, tea and hides. In Section 3 of this law, it is declared that these remissions of duty were made with a view to secure reciprocal trade with countries producing those articles; and it provided that on and after the first day of January 1892, whenever, and so often as the President shall be satisfied that the government of any country producing and exporting sugar, molasses, coffee, tea and hides, or any of such articles, imposes duties or other exactions upon the agricultural or other products of the United States which, in view of the free introduction of such sugar, molasses, coffee, tea and hides into the United States, he may deem to be reciprocally unequal and unreasonable, he shall have the power and it shall be his duty to suspend, by proclamation to that effect, the provisions of this act relating to the free introduction of such sugar, molasses, coffee, tea and hides, the production of such country, for such time as he shall deem just; and in such case, and during such suspension, duties shall be levied, collected and paid upon sugar, molasses, coffee, tea and hides, the product of or exported from such designated country, at the rates set forth in said Section 3.

I am further directed by the President to inform you that in view of the free introduction into the United States of the articles named, the product of Venezuela, he deems the duties imposed upon the agricultural and other products of the United States on their introduction into Venezuela, to be reciprocally unequal and unreasonable, and that unless on or before the fifteenth day of March next, some satisfactory commercial arrangement is entered into between the Government of the United States and the Government of Venezuela, or unless some action is taken by the latter Government, whereby the unequal and unreasonable state of the trade relations between the two countries is removed, the President will, on the date last named, issue his proclamation suspending the provisions of the tariff law cited relating to the free introduction of sugar, molasses, coffee, tea and hides, the production of Venezuela, and during such suspension the duties set forth in Section 3 of said law shall be levied, collected and paid upon sugar, molasses, coffee, tea and hides, the product of or exported from Venezuela.

In asking you to transmit to your Government the foregoing information I desire to repeat the assurance which has been given to you and your Government at various times since the enactment of the law cited, of the earnest desire of this Government to maintain with Venezuela the most intimate and friendly trade relations, and to express the hope that you may yet be empowered by your Government to enter with me upon a commercial arrangement reciprocally equal and mutually advantageous.

This is retaliation pure and simple, and an exhibition of power on the part of a strong nation, which the weaker nations dare not disregard; and it is in line with the action of this strong nation in bullying Canada to remove the export duty on saw-logs. As we have before argued, the United States has the right to practice such retaliation, and it is only a question of ability to withstand it with the weaker nations interested. No doubt if these latter could find other markets for their products they would disregard the threat of exclusion from the American market, but unfortunately for them they have no other market, and they are forced to submit. In other words they are obliged to allow the United States to dictate their tariff

laws for them. It is a good thing to possess the strength of a giant, but it is cowardly to use it in oppressing the weak and helpless.

In considering the situation from the Canadian standpoint, we discover that in some respects the United States stands in its relation to us, as the South American States stand in their relation to it. The position may not be so exaggerated, for with the South American States they are obliged to accept the situation for the sake of making any sales at all of their sugar, molasses, coffee, tea and hides; while with the United States their pine forests are fast being denuded of their timber, and much of their dependence for occupation for their saw-mill industry, especially in Michigan, is upon Canada for saw logs; and it is impossible for the American navy to be armored in the most effective manner without the nickel which they can obtain only from Canada. While depending so largely upon Canada for pine saw-logs, with characteristic selfishness, our American friends have made it virtually impossible for Canada to send them any pine lumber, and what little we do send them is at the sacrifice of a much needed revenue arising from an export duty on saw-logs. They squeezed us into removing that duty, and now we find that we cannot export to the United States any but our very best and finest lumber; that we cannot export any of the cheaper grades at all, and that hundreds of Canadian saw-mills are idle for lack of this trade, while the saw logs cut in their very vicinity are being carried past them to give occupation to American mills and American workmen. If our American friends could possibly have done without these logs—if their own forests were not well nigh exhausted, and if they could have obtained their logs from any other source on as favourable terms, perhaps it might have been well for us to accede to their demands; but even this would have been a questionable policy. We were deriving a large revenue from the export duty, and our Canadian saw-mills were busy cutting lumber for the American market. On the demand of the retaliatory feature of the McKinley tariff, we removed that duty and we shut down our saw-mills, throwing thousands of Canadian workmen into idleness, or forcing them to follow their business to the United States where they were then forced to become citizens. If the Canadian Government had responded to the demand to remove the export duty by doubling it, the American people would have had to pay the higher duty provided for by the McKinley tariff, and the American saw-mill men would also have had to pay the higher duty into the Dominion treasury if they desired to keep their mills in operation. Under these circumstances the American consumers of lumber would have found themselves in the same fix from the operation of the retaliatory feature of their beloved McKinley tariff, that the American brewers and malsters now find themselves from the imposition of thirty cents per bushel on Canadian barley.

So too as regards nickel. The production of nickel in the United States was never greater than about a hundred tons per year, and the requirements of the mint for the manufacture of subsidiary coin, and of the art's necessitated importations in addition to the home production of about 150 tons per year. Under the circumstances the tariff duty of fifteen cents per pound—\$300 per ton was all right, and under it, and in view of the greater imports, every nerve was strained to develop the American nickel industry; but even the stimulus of a very

high duty did not develop any increased production at home, demonstrating the fact that the mineral did not exist in that country in sufficiently large quantities to meet the requirements of the consuming demand. But coincident with the discovery that nickel was exceedingly valuable in the manufacture of armor plates for war ships, the American Government determined to build an armor clad navy, and it was discovered that Canada possessed inexhaustible supplies of nickel ore. The importance of this discovery to the American Government was shown in the fact that they sent a commission of experts to Sudbury to investigate the extent and availability of our nickel wealth, the report of the commission being that, like the glory of King Solomon as seen by the Queen of Sheba, the half had not been told. This was at the time that the McKinley tariff was being formed; and we believe it to be a fact that up to the time of the making of their report by the American commissioners, it was not proposed to make any change in the tariff as regards nickel. Nickel in all forms, whether in ore, in matte or refined, was subject to a uniform duty of fifteen cents per pound. The Secretary of the Navy was conducting experiments with nickel steel armor plates, made, some of them, in France, and the result of these tests, just at that time, demonstrated the value of nickel for that purpose. And then it was, at the last moment as it were, before the final action on the McKinley Bill, the whole nickel schedule of it was changed. Nickel ore and matte were placed upon the free list, and the duty upon refined nickel reduced to ten cents per pound. The spirit of selfishness which was prevailing in every thing else, was developed with much vigor as regarded nickel. Their navy would require thousands of tons of nickel, where their home production could not be increased far above a hundred tons per year, and of course the deficit must be made up from abroad—from Canada; but the same spirit that impelled a duty of five cents per dozen on Canadian eggs and thirty cents on barley, excluded Canadian refined nickel by a duty of \$200 per ton, at the same time the crude forms of the article being admitted free. Last year the American requirement for Canadian nickel amounted to more than two thousand tons of the refined metal. If the metal had been refined in Canada where it was mined, the American tariff would have exacted over \$400,000 on it; but it went there in the cruder forms of ore and matte, upon which there was no duty, and the Canadian capital and Canadian labor which otherwise would have been employed in the refining processes, was not thus employed. All that Canada had to show for this enormous wealth, were the holes in the ground from which it was taken.

Is Canada to submit to this state of things indefinitely? Do we never intend to profit by the example set us by the United States and use our peculiar advantages for our own benefit? If the United States can squeeze the South American States into conforming to their wishes, why could not Canada administer some similar medicine? Impose an export duty on saw-logs. It is true that under Section 3 of the McKinley tariff President Harrison would be forced to impose a higher duty on Canadian lumber, but the American consumers would have the additional duty to pay; and the American millmen would also have the export duty to pay, or else go out of business. Canadian saw-mills would then go into operation, and the Canadian treasury would absorb a great many good American

dollars. Impose an export duty on nickel ore and matte. There could be no retaliation in that direction, for the American Government, not the individual Americans, would have to pay the duty or go without the nickel. This would also put a great many good American dollars into the Canadian treasury, for it is certain that they would be compelled to have the nickel at any cost, and they could not obtain it from any other source. Herein lies our opportunity to force some reciprocal arrangement from the United States by which Canada would be benefited.

It is a poor rule that don't work two ways.
Impose the duty.

THE NICKEL DUTY.

THE CANADIAN MANUFACTURER for some time past has advocated that the Dominion Government should take prompt and effective action to secure for Canada the benefit of our nickel wealth, by the imposition of an export duty upon the nickel contained in ore and matte taken out of the country. On this point, as applied to the principles of protection to Canadian industry, the MANUFACTURER'S ideas are somewhat mixed. Should an export duty be placed upon our ore and matte, the result would be that none from Canada would be purchased, and no exports would be made to the United States or Europe. The action would have the effect of raising the price of a Canadian product of as yet fluctuating value and of comparatively small sphere of application for industrial purposes, and of which we have a supply in excess of our own very small demands. Export trade is the only means of keeping alive this industry, and to impose an export duty would be simply suicidal to the industry now started. As Canada has vast supplies of nickel ores, there is no fear of a shortage of that product for Canadian needs, even if the exports were largely increased, and on that account there is no necessity for curtailing this young industry. The United States or other countries are by no means dependent on Canadian supplies, hence the export duty is uncalled for and would only have the effect of crushing this young industry and promoting the mining of nickel ores in other quarters. In other words, we recommend the MANUFACTURER to "shut up."—*Canadian Mining Review*.

Our esteemed contemporary is not only badly astray in its conclusions but also in its facts. Our total exports of nickel contained in ore and matte last year amounted to 5,352,043 pounds, valued at \$240,499, of which 4,504,383 pounds, valued at \$210,319, went to the United States, the balance going to Great Britain. Why this great demand for nickel in the United States? The cause of it has been frequently explained in these pages. The United States is building a navy and the armor for their war ship is being manufactured of nickel steel. The production of nickel in the United States for a number of years past has been only about a hundred tons per year, and this amount was entirely insufficient to meet the demand there for the manufacture of subsidiary coin and in the arts and trades, the imports of ten years averaging about fifty per cent more than the domestic supply. The value of nickel for armor plate purposes became known just at the time when armor plates were being required for the American navy, and we know that the American Government sent a commission of experts to Sudbury to discover the extent of our nickel mines there and whether the article could be made available for their purposes. The *Mining Review* published the report

of this commission, and it was that report which influenced the American Government to a large extent in determining to make their armor plates of nickel steel. Secretary Tracy, in his report to Congress, stated that the requirement of nickel for the armor plates for the twenty-two war ships then under construction would be about 16,000 tons; and since then the number of ships has been increased, necessitating a corresponding increased demand for nickel. Mr. David T. Day, Chief of the Division of Mining Statistics of the United States Geological Survey, in a note to the editor of this journal, says that the world's production of nickel in 1889 was estimated at about 2,000 tons, the countries contributing to this supply being New Caledonia, Canada and the United States. The Trade and Navigation Returns for 1890 do not mention either fine nickel or nickel contained in ore or matte exported from Canada that year; but we presume the exports under the head of copper matte must have included nickel matte also, or copper matte containing nickel. In that year our exports of this article included 1,797,848 pounds sent to the United States against 478,483 pounds to Great Britain. Mr. Day says: "It is thought that Canada could produce nickel enough to supply the world independently of New Caledonia, which has been the largest producer of nickel for the last ten years." If, then, the world's production of nickel in 1889 was only 2,000 tons, and not considering the insignificant production of the United States, nor of Canada in that year, and assigning the whole production to New Caledonia, it will be seen that the output of New Caledonia and all other countries except Canada must be very largely increased to meet the increasing demand of the world for the article. This increase may possibly occur, but it is not very likely. Considering the geographical location of New Caledonia, it is not likely that that Island will ever become a formidable rival of Canada in the production of nickel. Transportation is too expensive to allow of the shipment of the raw ore, and even in the form of matte the charges would be very large indeed. Further, it is not likely that France would sacrifice her interests by allowing the New Caledonia nickel to be thrown into the world's market while she herself has use for more of the article than is likely to be produced there for some years to come. If nickel steel is essential in the manufacture of armor plates, France will not be found neglecting the use of it. New Caledonia's production of nickel will all be required by France. From whence then will come the nickel to meet the requirements of the rest of the world? Last year the United States took more nickel from Canada than all the world had produced two or three years before; and the demand from that country will not probably be diminished for many years, if ever. Great Britain, too, must have nickel for armoring her navy, and all the other nations are in the same condition. From whence is this nickel to be obtained? How ridiculous, then, for the *Mining Review* to say that nickel has a fluctuating value and a small sphere of application for industrial purposes. How supremely ridiculous to say that neither the United States or other countries are dependent on Canada for their supplies of nickel.

Under the circumstances Canada would do a wise thing to impose an export duty upon nickel, particularly upon that going to any country that imposes a duty of five cents per dozen upon Canadian eggs. We have a virtual monopoly of

the article, and the American demand for it is imperative. It is a club ready to our hand which could be used to much advantage in counteracting hostile tariffs. Our American friends do not hesitate to use such weapons when they have the opportunity to do so. They thought they had such an opportunity when they bulldozed Canada to remove the export duty on saw-logs. With an export duty on nickel we would accomplish one of two things—perhaps both. With an export duty equivalent to the American import duty—\$200 per ton—and a demand from the United States only as large as that of last year—2,000 tons—the Canadian treasury would be enriched to the extent of \$400,000 per year; and with only a small portion of this sum judiciously expended in encouraging the erection of refining works in Canada, we would also have such works. The terms of such a duty might be conditional; for we might follow the example of the United States and impose it only upon exports to such countries as imposed onerous and hostile duties upon Canadian products.

Impose the duty.

THE AMERICAN LUMBERMAN'S DILEMMA.

THE *Pacific Coast Wood and Iron* of a recent date, alluding to the fact that efforts were being made in the United States to place lumber on the free list, says that such legislation would be a crime; that half the American lumber producers would be ruined; that the lumber situation between Canada and the United States is an irrepressible conflict which will remain such until the united action of American lumbermen results in the control of their own market; that the manufacturing capacity of that country is restrained to the extent of the quantity of lumber imported from Canada, and that the cinch Canadians now have on the American market makes the situation one of extreme danger. We are really sorry for our distressed contemporary, but we assure it that the general interests of Canada demand a course which would make the American situation even more unpleasant if our Government would place an export duty on pine saw logs. If this were done, the American duty upon pine lumber would be increased, of course, under the retaliatory provision of the McKinley tariff, and that would probably enable the Oregon and Washington saw-mill men to get more for their lumber; but it would play havoc with the Michigan men. An important feature of the situation should not be lost sight of. Saw-logs are the raw material of the saw-mill men, even as iron ore is the raw material of the furnace men. But there is a great difference in the character of these raw materials. The earth is full of iron ore, and as far as our knowledge goes the supply may be inexhaustible. The furnace man in making pig iron has no cause to fear the exhaustion of his raw material, and if he is prudent he regulates his production by the demand. On the other hand, the earth is not covered by growing timber, and we may estimate to an almost certainty, that all the available timber growing on the land will be consumed within a given time, considering the rate at which it is being manufactured into lumber. We know that the United States Census Bureau discovered two years ago, that at the current rate of denudation, the timber supply of Michigan, Wisconsin and Minnesota would last but for a very few years. This fact does not

affect the demand for lumber, and we know that that demand is constantly increasing. The question, then, with Michigan saw mill men is as to where their future supplies of logs are to come from. The American forests being in a condition of exhaustion, and the demand being great, they find that their most available source of supply is Canada. American consumers do not enquire whether their lumber was cut from American or Canadian logs, or in American or Canadian mills; and they are indifferent as to where the Michigan millmen obtain their logs as long as they obtain their supplies of lumber. As long as the American supply of raw material—logs—was most bountiful, the Government acted wisely in protecting the lumber industry by the imposition of heavy duties on Canadian lumber; and as long as this situation prevailed, the Canadian saw-mill men had to submit to it. But this situation does not prevail now, for the American millman is forced to obtain his raw material—logs—from Canada. We here find that Canada is an important factor in this situation; and if Canadian millmen were allowed to share the American market with the American millmen, seeing that Canada supplies the raw material for both of them, no objection would be made by Canada to the American millmen obtaining their saw logs from her.

But with characteristic selfishness the American Government listens to no such proposition. It is willing to admit saw logs from Canada, duty free, but a heavy duty is imposed upon lumber made in Canada. In other words, the American supply of logs being about exhausted, and the activity of American mills being dependent upon supplies obtained from Canada, Canadian lumber is rated at a high duty when sent to the American market. Canada's store of standing timber is very large, it is true, but it is not inexhaustible, and when it shall be all used up we would find ourselves in just the same position that the United States is in to-day. For the sake of enjoying some of the benefits which we reasonably ought to desire from our wealth of timber by giving occupation to Canadian capital and labor, bearing in mind the fact that a heavy duty was laid on our lumber going into the United States, our Government imposed an export duty on Canadian saw-logs going to American saw-mills. This was but fair justice to ourselves, and the duty would not have been imposed if the United States had not so heavily taxed our lumber. The retaliatory section of the McKinley tariff, demanded that Canada should either remove this export duty or submit to a double duty upon her lumber, and in an hour of unfortunate weakness this insolent demand was complied with. We were bull-dozed into it.

Canada's plain duty, then, is to correct the wrong committed upon herself and restore the duty, or a much higher one. The capacity of the United States to produce pig iron may be unbounded, but the raw material for its saw-mills must be brought from Canada, and herein do we find the cinch we have on that country. American millmen may not find themselves able to pay our heavy export duty on logs, but we are not weeping for them at this time. Instead of resisting the inevitable they had better get their Government to give Canada a fair showing. But in the meantime, Canada should impose a heavy export duty on saw-logs.

Impose the duty.

RECIPROCITY'S NOT SWAPPING JACK-KNIVES.

Our esteemed *Home Market Bulletin*, of Boston, endeavors to tell "Why the Canadian Mission Failed," and of course it failed in giving the correct "Why." Speaking of the recent visit to Washington of the Canadian commissioners, it tells us that they had no authority to treat, and this fact makes it obvious that they could not suggest commercial union, for that would necessitate extending the American tariff or a new one over both countries alike. The objections the *Bulletin* raises to such an arrangement are (1) Canada is not prepared for closer relations with the United States than with Great Britain; and (2) that it is against the uniform policy of the American Government to enter into any such arrangement. It declares that we were balked in an effort to form a treaty under the McKinley Act, and that there are but three courses open to Canada: (1) To keep along as we are and fail in competition with the United States; (2) to federate with the British Empire; and (3) to ask for political, as well as commercial, union with the United States.

The Canadian commissioners, being intelligent men, did not go to Washington for the purpose of negotiating a treaty. If satisfactory terms could have been agreed upon, possibly a treaty might have been the result; but a formal treaty would not then have been absolutely necessary. If the arrangement had included only changes of tariff of the two countries these could have been made without reference to Britain. The *Bulletin*, however, seems to be under the impression that in any reciprocity that might have been agreed upon, there would have been Canadian discrimination against the Mother Country. If Canada had contemplated doing such a thing, the consent of Britain would have been necessary; but no loyal man in Canada would ever consent to such an arrangement. Further, it is against the well-established policy of Canada to enter into any entangling alliance with any foreign country, whereby that country would have any voice in collecting our revenues or regulating our commerce. Regarding the only three courses the *Bulletin* sees open to Canada, it should be conversant with the fact that she has kept along as she now is for many years, competing with the United States in many things, and that she has not failed in any of them. She is not built that way. It is to be hoped that the day is not far distant when British federation will be a fixed fact; but when that day comes, if the federation is effected along the lines which commend themselves most strongly to Canada, the American export trade of agricultural products will receive a very black eye. Without abandoning our policy of tariff protection to Canadian manufacturing industries, it would give us much pleasure to make a considerable reduction in our duties upon British goods, in consideration of the free entry of Canadian goods into Britain, while that country maintained a corresponding discrimination against American products. See? Then as to Canada ever asking for either commercial union or annexation to the United States—that is a question which Canadians decline to consider. If our esteemed *Bulletin* would but dig a little beneath the superficial covering which obscures the question it would discover that a reciprocal trade arrangement might be made which would not be as much like swapping jack-knives as it

seems to think. Canada has valuable fishing interests which the United States would like to enjoy, and reciprocity might have given the enjoyment. Canada does not consider Behring Sea a *mare clausum*, and reciprocity might have quieted the tumultuous wrangle now prevailing regarding it. Canada has the only waterway between Chicago and Liverpool, and reciprocity might have facilitated the American use of it very considerably. We know that the pine forests of Michigan, Wisconsin and Minnesota are almost denuded of timber, and that even now a very large portion of the American market is dependent upon Canada for pine logs. Under reciprocity our vast Canadian forests might have been at the service of our American friends. We know that the United States is building a navy and that the ships must be armored with nickel-steel; we know that the Secretary of the Navy estimated some months ago that about 16,000 tons of nickel would be required for the purpose; we know that the American production of nickel is only about a hundred tons per year; we know that the only available large deposits of nickel are in Canada, and we know that the United States took over two thousand tons of Canadian nickel last year. Reciprocity might have ensured free access to this important metal, while in the absence of reciprocity the United States might be forced to pay a very heavy export duty upon the article. It is true, as the *Bulletin* states, that the products of the two countries are very similar in many respects, and therefore reciprocity would offer no valuable advantages to either, but we have pointed out a few things which might be of very decided advantage to the United States under reciprocity, but which it would find quite inconvenient to be deprived of, as might possibly be the case if no reciprocity were had.

EDITORIAL NOTES.

THE new English warship *Empress of India*, which has just been finished, is the farthest advanced of her class, and is one of the largest battle-ships afloat. This vessel is of 14,500 tons displacement, and her engines are of 13,000-horse power.

A MISTAKE that some owners of Canadian nickel mines make, is in supposing that Canada has no interest in the mineral riches with which bountiful nature has endowed her, or that those riches may not be controlled for the benefit of the whole country.

WE may never hope to see the manufacture of nickel steel a prominent industry of Canada, until we check the export of nickel ore and matte, and encourage by the imposition of duties or the bestowment of bounties, the establishment of the industry.

AND now in the face of the non-intercourse between Canada and the United States threatened by the Yankees, let Canada gird up her loins and go resolutely to work building up such industries as we do not now have, and thus make us independent of an unfriendly people.

INSPECT the Trade and Navigation Returns, and discover what lines of manufactures we are now dependent upon the

United States for, and let them be the solicitude of our Government. Let us build up just such industries, thereby making us independent of an unfriendly people.

THE *Kingston News* says that Sir Richard Cartwright intends starting up a brush factory at Napanee in which he is interested, and will ask the council of that town to exempt his property from taxation and grant him a bonus. As soon as Sir Richard becomes a full fledged Canadian manufacturer he will also be a supporter of the N.P. He is now opposed to it for revenue only.

OUR usually dignified and respectable contemporary, the *Canadian Mining Review*, finding no other argument with which to answer our demand for an export duty upon nickel ore and matte, drops its dignity and respectability and resorts to impudence. It is a weak cause that answers an argument by an appeal to "shut up." Our contemporary should not allow its feathers to become dragged.

THE Trade and Navigation Returns for last year show some of the same ridiculous features that have characterized them in previous years. For instance, fine copper is classified as a product of the mine; and the valuation placed upon that article is also quite ridiculous. We are told that the exports of fine copper last year amounted to 3,116,508 pounds, valued at \$171,308. This is less than six cents per pound, and fine copper cannot be bought at that price anywhere in the world.

THE *Jewish Trade Unionist*, a paper circulating among Hebrew workers in the east end of London, states on what it alleges to be reliable authority that Government contracts have been given to Jewish tailors who have sub-let them, paying men with large families two, three and five shillings per week, in defiance of the fair wages law. The paper denounces this state of affairs, and says the fact that the offenders are people of their own race will not prevent the Jews from calling them to account. The matter will be made the subject of an interpellation in the House of Commons.

OUR exports last year of fine nickel contained in ore and matte, amounted to 5,352,043 pounds, valued at \$240,499. This is less than five cents per pound, and the value of refined nickel in the United States is about sixty cents per pound. The difference in these values shows the profit there is to the refiner. If this nickel was refined in Canada, this profit would accrue to Canada and not to our American friends, who admit the ore and matte free, but who impose a duty of ten cents per pound upon the refined nickel. Canada will never be benefited by her wealth of nickel ore until an export duty is laid. Impose the duty.

A SHIP without its complement of seamen is a costly and inefficient machine, and a navy of such makes more noise in peace than it could in war. The fact is that sailors are not made in a day nor improvised by bounties. From figures tabulated in a New York paper it seems that 43 per cent. of the enlisted men in the American navy are citizens of foreign countries; 37 per cent. have made no attempt to be naturalized, and 17 per cent. declare their residence to be in foreign countries. During last year 1,388 men deserted—17 per cent.

of the whole force, and of 694 American apprentices enlisted last year, 329 deserted and 330 took their discharge, the navy gaining just 45 American apprentices in one year.

SENATOR MORGAN, of Alabama, is real mad at England because Lord Salisbury won't give Uncle Sam a *modus vivendi*. He is so mad that he wants to wreak his vengeance on England by preventing all railroad traffic between Canada and the United States. This is a sly way the brave Southern brigadier has of also getting even with the Yankee boys who thrashed the rebels back into the Union. Brigadier Morgan is a typical Southern Bourbon who never learns and who never forgets. He wants to hurt Canada if possible, but he also wants to even up a little with New England and the West by interfering with their traffic which happens to be over Canadian railroads.

THE tailors of Canada would apparently be benefited by free trade with the United States. The lower price and excellent workmanship have their attractions for those on the other side of the line, and quite a brisk smuggling business is carried on. At Marine City there has been quite a raid on wearers of smuggled clothes, and thirty seizures were made.—*Montreal Herald*.

Of course free trade with the United States would mean adopting the American tariff; and if Canada adopted that tariff, pray how could the tailors of Canada obtain their materials any cheaper than the American tailors? Clothing is very much cheaper in Canada than in the United States, and this is because the Canadian duty upon clothes is very much lower than the American duty.

QUITE a wordy war is being waged in Toronto between the Leaseholders' Association, representing a large number of those whose leases of land are about expiring, and the landlords who own the land. The existing method of leasing land is a curse which will retard the prosperity of Toronto as long as taxes are levied as they now are. A manufacturer has but little show here, when every dollar he puts into his business is taxed, and the land owner goes almost untaxed, or insufficiently taxed. There is but one way out of the difficulty—tax the land and let the improvements thereon go untaxed. Tax all the land, that upon which churches and universities are built, and the vacant corner lots held on speculation, as well as that upon which our factories and the homes of the working people. Tax it all. Grant no exemptions whatever.

DETROIT grocers are advertising twenty-five pounds of granulated sugar for one dollar. All that grocers in London and other western cities can give for one dollar is eighteen pounds. The difference goes in tribute to the sugar combine, the chief members of which live in castles in England, or in million dollar mansions in Montreal. The N.P. is a great institution—for the combines.—*London Advertiser*.

Let's see. The Canadian duty upon sugar is three tenths of a cent greater than the American duty. Detroit grocers sell sugar at four cents per pound and London grocers at about five and a half cents. Add the difference in duty to the Detroit price and the London price ought not to be more than four and three-tenths cents. London grocers could afford to buy foreign sugar and pay the duty on it, and sell it for less than five and a half cents. This sort of thing is wearisome.

THE commerce of England for 1891 is reviewed by the *London Economist*. The imports were £17,000,000 larger than in 1890, and the re-exports £3,000,000 larger, while the British exports are £16,000,000 smaller. Of the increase in imports £2,000,000 is due to higher prices, and the rest to an increase in quantity. But of the decline in exports £2,000,000 arises from lower prices, and £14,000,000 from diminished quantities. The decrease in exports due to quantity was equivalent to £6,293,000 in textile manufactures, and only £87,000 due to lower prices. In the department of metals and machinery the loss due to quantities was £5,644,000, while the loss resulting from lower prices was £1,333,000. In miscellaneous articles the loss in quantities was £1,156,000, and the loss due to lower prices £1,037,000. The decrease in articles of food was in quantity only, some increase appearing in the values.

Farm and Home, a farmers' paper published at Springfield, Mass., gives a table showing the value of a large number of farm products in different cities, on and about February 20th; and while it was not so intended, it possesses considerable political significance, showing as it does the relative value of the sixty million American market and the five million Canadian market. It quotes oats: New York, 37 cents; Chicago, 32 cents; Toronto, 33 cents. Rye: Boston, 95 cents; Chicago, 88 cents; Toronto, 90 cents. Barley: Boston, 75 cents; New York, 74 cents; Chicago, 53 cents; Toronto, 89 cents. Hogs, per 100 pounds, live weight: Boston, \$5.12; New York, \$5.25; Chicago, \$4.80; Toronto, \$6.10. Eggs: Boston, 25 cents; New York, 23 cents; Chicago, 18 cents; Toronto, 25 cents. Hay, per ton: Boston, \$18; Chicago, \$12; Toronto, \$15. Potatoes: Boston, 50 cents; Chicago, 33 cents; Toronto, 50 cents.

THE *Canadian Mining Review* publishes a letter from Mr. H. P. McIntosh, secretary of the Canadian Copper Company, who own extensive nickel mines at Sudbury, in which he says, "We expect to push our business very vigorously this year unless we are hampered by a Canadian export duty, for which some of your journals are howling." We believe that there is not a Canadian included in the personnel of the Canadian Copper Company, not even Secretary McIntosh—they are all foreigners. They are sending the products of their mines to the United States as fast as possible to be manufactured into refined nickel, the refining works being at or near Cleveland, Ohio. The "howling" that Mr. McIntosh says some Canadian journals are indulging in consists in their asking that an export duty be laid upon nickel ore and matte, with a view to the building up of refining works in Canada. Mr. McIntosh is inclined to be impertinent.

LAST year the value of "household effects" entered for export to the United States, amounted to \$790,000! Just imagine the pile of furniture and other goods represented by this amount, and think of the army that goes with the goods. "We are coming, Father Abraham, 100,000 more," was the old war song, but pathetic is the fact that for the past ten years we have been sending 100,000 of our population a year to Uncle Sam.—*London Advertiser*.

We are told that this exodus of men and money is a direct result of the N.P. If it is, according to the same theory the

immigration of men and money should be attributed to the same cause. According to the Trade and Navigation Returns, the value of the imports of settlers' effects into Canada last year, aggregated \$1,778,556, of which \$1,412,867 was from the United States. This is nearly twice as much coming from that country into Canada as went the other way. Of course these "effects" were brought in by actual settlers. In the language of the *Advertiser*, "Just imagine the pile of furniture and other goods represented by this amount, and think of the army of people that came with the goods." Will the *Advertiser* please notice this fact.

A DEPUTATION from the Toronto Rate-payers' Association waited upon the Ontario Government a few days ago, for the purpose of protesting against the granting of power to the Toronto City Council to assess only land values. A motion was then pending in the City Council to ask for such power, and it was being strongly supported by the Toronto Trades and Labor Council and the labor element generally. The time should now be here when the question should be submitted to the vote of all the electors of this city; and if it should be so submitted, there can be no doubt as to what the result would be. If the system of taxation in Toronto was made to conform to this idea, this city would fairly hum with manufacturing enterprises. The system which now prevails is an anaconda which chokes and stifles enterprise, and forces the venturesome manufacturers who attempt to do business here, and the employes in their factories also, to support an unproductive aristocratic element which is not in accord with the best interests of the city. A system which forces capital invested in manufacturing industries, and the workmen employed in them, to pay the bulk of the taxes, should be abolished.

THE beet sugar industry, which now supplies more than one half of the world's sugar product, is the creature of protection. It was fairly forced into existence by Napoleon, and but for this forcing process, there is something like a certainty that mankind would to-day be dependent upon cane-sugar at prices far higher than those now demanded. Under this system it has come about that many of the nations of continental Europe produce enough sugar for their own people and have a considerable surplus for export. The progress made by Germany in this particular, during the last two decades, has been remarkable. In 1871 Germany produced 186,442 tons of raw sugar. In 1890 the product had grown to 1,213,689 tons, the increase being stimulated by bounties. In 1879 the exports were 130,000 tons. In 1890 they were 720,000 tons. Germany now sends to the United States annually \$15,000,000 worth of sugar, every pound of which might be grown on our own land, to the advantage of farmers who are now kept poor by over-production of cereals, and to the equal advantage of the industries which supply the wants of farmers. The bounty system, just now introduced, aims at this result; and if the means have attained the result in Europe, there is fair reason for supposing that they will attain it here. The triumphant success of beet-sugar culture offers one of the most striking arguments that can be discovered for the wisdom of the protective system; and not unlikely that is the reason why our free traders hate the provisions for its encouragement.—*The Manufacturer*.

DID Custom Houses exist at the time of Christ? We read the following in the ninth verse of the ninth chapter of St. Matthew:

And as Jesus passed forth from thence he saw a man named Matthew sitting at the receipt of customs, and he said unto him, Follow me.

We judge from this that some sort of a National Policy existed in that country at that time, and that Matthew was a collector of customs, or duty. It was an honorable occupation, too, and from it Jesus made his first choice of a disciple. On another occasion some one, who in these days we might know as a free trade Grit of the Sir Richard Cartwright stamp, asked one of the disciples, most probably Matthew, if the Master paid the tribute, or duty. This seemed to be an economic question which was not quite fully understood, and so when the disciples came to Jesus they asked him concerning it. The reply was characteristic and conclusive. "Of whom," said He, "do the kings of the earth receive tribute, of their own children or of strangers." They replied, "Of strangers." "Then," said Jesus, "are the children free." If the strangers paid tribute, or duty, it was that they might have access to the home market; and they were granted this access to the home market on condition that they pay duty, or tribute, for the privilege. Who pays the duty? We have good authority for saying that the stranger pays the duty.

JONATHAN ELLIS, of Port Dover, is one of the largest manufacturers of knitted goods in Canada. He says the want of his trade to-day is a wider market. At the present he and his son, Mr. James Ellis, have preparations well advanced for opening a branch of their factory in the United States. Give them unrestricted reciprocity and they will not think of sending any part of their business out of Port Dover, they say. Mr. Boas, of Quebec, says he would double his factory if reciprocity were established. He now employs 300 hands; under reciprocity he would find work for 600. Why should our young men and women not stay with us and do the work here, instead of going over to the States to do it? It is because the market is restricted. Nothing else.—*London Advertiser*.

Mr. Jonathan Ellis is but one of many hundreds of knitted goods manufacturers in Canada, not one of whom agree with him regarding the wider market. Under the benign influence of the N. P., Mr. Ellis has grown wealthy in his business, and desires to enlarge it. His competitors are well satisfied with the situation, and the people of Canada are also satisfied, for they are buying knitted goods cheaper at home than they could be bought for in the United States. If Mr. Ellis desires to start another factory from which to supply the American market, he would do well to locate it on the other side of the line. Likewise Mr. Boas. About all the knitted goods worn in Canada are now manufactured in Canada by the young men and women of Canada, and that is all that should be expected of the N. P.—it is all it ever promised.

THE council of the Vancouver Board of Trade recently had under consideration a matter which should enlist the co-operation with that body of the Boards of Trade of the other cities of the Province. It refers to one of our most important industries—that of lumbering. When the McKinley Bill was passed, among its provisions was one authorizing the United States Government to reduce the import duty on certain classes of lumber from any country which gave reciprocal advantages. When the Dominion Government reduced the export duty on logs, the American tariff on lumber was reduced to one dollar per thousand feet, board measure. But the regulation prescribing this mentioned the classes of lumber

which would be favorably affected by its provisions, did not mention Douglas fir. Consequently, while the lumbermen of Eastern Canada enjoy the benefit of this reduction, those of British Columbia do not have the same advantage, and their trade with the United States is injured, since with the severe competition which prevails, a difference of one dollar per thousand feet is often sufficient to cause the loss of an order. Then again, pitch pine from the Southern States is admitted free into Canada. This wood is very similar in many respects to the fir of this Province, and is largely used for car sills and other purposes requiring timber of long dimensions. If the United States do not reduce the tariff on Douglas fir, it is considered that it would not be unreasonable to ask the Dominion Government to impose a duty on the pitch pine from the Southern States, since an impost of two dollars per thousand feet would about balance the additional cost of the freight to the coast on the product of this Province, and open for our lumbermen a market now monopolized, to a considerable extent, by the pine from the Southern States.—Vancouver, B.C., *Commerce*.

SENATOR MORGAN, of Alabama, asks the United States Congress to retaliate against Britain for not acceding to a *modus vivendi* this year as was done last year, preventing Canadian vessels killing seals in Behring Sea. He wants to put a stop to the foreign trade of Canada passing through his country. It is true Canada finds it convenient to use Portland and Boston as transshipping ports during the winter months, when the St. Lawrence river is closed by ice, but Canada is not alone interested in the bonding privilege accorded over our railways. A very considerable portion of the traffic between Michigan, Minnesota, and other portions of the West and New England, is carried on via Canada; and it is this feature of the American transportation problem which saves the sections alluded to from the rapacity of certain American railway combinations. The present arrangement not only gives a great deal of Canadian business to Portland and Boston, but it also enables the East and the West of the American Union to trade together to better advantage than if they were denied Canadian railway facilities; and it also enables the farmers and millers of the West to place their wheat and flour in Liverpool much cheaper than if they had to depend upon New York alone. It is not likely that New England will tamely submit to an unnecessary situation, where its chief seaport cities would be deprived of so much of their business. But our American friends can suit themselves in the matter, and whatever they may do, Canada can stand it. A certain amount of inconvenience would result from non-intercourse, but the situation would intensify the fact that even Yankee hostility could not keep us from utilizing the ports of Halifax and St. John even in the winter. We are fast learning that the American people are no very warm friends of Canada, and that the greater dependence we put upon our own resources and possibilities, the better it will be for us.

A DEPUTATION from the Toronto Ratepayers' Association waited upon the Ontario Government a few days ago, to protest against some of the proposed legislation now under consideration in the Legislature, affecting the levying of taxes, which they say discriminates unjustly against the owners of real estate. The present assessment of Toronto is about:—Land, \$82,000,000; buildings, \$49,000,000; personalty, \$10,000,000, and income, \$5,000,000, against which, we believe, a uniform rate is levied. The contention was made, that if all property but land was exempt from taxation, or if taxes were

levied upon land values only, and not also upon income, personality, building, corporations, etc., the burden would bear unjustly upon laborers, tradesmen, artisans, clerks, and all those who have homes of their own. Objection was also made to the proposition to exempt capital invested in trade and manufactures; against giving the City Council power to pass money by-laws without first submitting them to the qualified electors and owners of real estate, and against the abolition of property qualification of aldermen. This is an age of progress, and we rather think the gentlemen comprising the Ratepayers' Association are at the tail end of the procession. Toronto can never reach the height of prosperity until a more equitable system of taxation prevails, and it is in the direction of this system that the Legislature is moving, and against which the Association protest. Under the proposed system the owners of small homes in Toronto would be increased by thousands, and those who desired to beautify their homes and accumulate the evidences of thrift and prosperity about them, would not be taxed for doing so; nor would manufacturers who would like to establish workshops and factories in this city be kept out of it as they now are by the pernicious system which now obtains. It is true that the land sharks and speculators who are now being made rich by the increase of values caused by the energy and enterprise of the working classes, the manufacturers, and business men generally, will be forced to abandon their speculative schemes, but the community will be quite able to stand it.

WE have received from the publishers the first number of Vol. IV. of *The Canadian Poultry Journal and Pigeon Fancier*, issued semi-monthly at Beeton, Ont. The Journal is neatly gotten up, and illustrated with a splendid frontispiece. The reading matter is of interest to all keepers of poultry, and especially to the farmer whose "hens don't pay." To those desirous of obtaining practical information in reference to poultry, no better investment can be made, we think, than a dollar spent in a subscription to *The Canadian Poultry Journal*.

AN authentic account of what treatment the Catholic Church actually gave to Galileo and his discoveries and writings will be given by Dr. Andrew D. White in one of his *Warfare of Science* papers in the *Popular Science Monthly* for April. Attempts have been made to disprove or explain away much of this ecclesiastical persecution, but Dr. White's statements are fortified by copious citations from authors of unquestioned orthodoxy. The same article tells just how far into the present century the Catholic Church held to the notion that the earth does not move, and shows that certain Protestant sects displayed much less wisdom by clinging to the antiquated delusion even longer.

HECH mon! Hae ye no read the Epistles o' Airlie? Whaur hae ye been leevin' gin ye hae na heard tell o' Hugh Airlie? Ma conscience, but it's a gran' buik—no that lairge ye ken, for it's no but 25 cents, but fu' o' hameley cracks an' pawky screeds about ane thing an' anither in guid braid Scotch. Mon, when I got thon buik I jist lauched till I thocht a' wad dee. It fairly dings them a.' It tells a' about the adventures o' a chiel new tao the ways o' the kintra, an' many a ane wha has been in the varra same prodeccament will ken hoo tao sympatheeze wi' the pair birkie. Dinna fail tao speer at your buikseller for the "Epistles o' Airlie," an' gin he has na got it sen' 25 cents tao the Grip Printing & Publishing Co., Toronto.

MR. JAMES M. SWANK, the author and compiler, has sent us his "Directory of the Iron and Steel Works of the United States," to which is added a complete list of the iron and steel works of Canada and Mexico. The book embraces a full list of the blast furnaces, rolling mills, steel works, tin-plate works, and forges and bloomeries in the United States; also of all the cut nail works, rod mills, wire nail works, wire mills, car axle works, car wheel works, car builders, locomotive works, cast iron pipe works and wrought iron pipe works. This is the eleventh edition of this valuable work, and is corrected to February, 1892. In addition to the old features of

this Directory, the entirely new ones embrace a complete list of the tin-plate works established or undertaken in the United States since the passage of the McKinley tariff of October 1, 1890, and a complete list of existing iron and steel works in Canada and Mexico.

The March number of *Good Housekeeping* is filled with matter of so uniform excellence that it would be unjust to mention a few of the many good articles which are contained in its handsome pages, while omitting others of equal merit. It is a journal for the home and the home interests, sensible, modest, and entirely free from the sensational, vaporing methods which are adopted by many of the publications of the present day. It opens with an illustrated poem, by way of frontispiece, under the title of "My Baby Boy," which vividly portrays the sweet, sad period when so many a mother sheds tears of mingled grief and pride, as her darling baby unmistakably merges into the sturdy boy. The number is interesting throughout, having a number of articles on culinary topics, led by Miss Parlow's "Many Meals for Many Millions;" an excellent paper on table service, based on a choice dinner menu; good stories, pleasing poems and admirable miscellaneous articles and selections. Not a bad thing about this magazine is its low price—\$2.40 per year—which brings it within the reach of every family. Clark W. Bryan & Co., Springfield, Mass.

One of the most beautiful specimens of pamphlet advertising that has come to this office is the brochure sent out by Merchant & Co., of Philadelphia. "What Visitors will be Shown at the World's Fair by Merchant & Co.'s Brownies," represents the famous little folks acting, as the title implies as guides, to the Chicago World's Fair visitors, almost every country having its representative, the same characters being preserved throughout the pamphlet. The idea is novel, the half-tone plates are exquisite examples of the engraver's art. That the brownies are more than successful in their efforts to show Messrs. Merchant & Co.'s specialties consisting of aluminium, antimony, bismuth, cadmium, copper, lead, nickel, tin, and other metals, including their Star ventilators, is at once apparent upon turning the pamphlet's pages. The visitors are shown a ventilator 4,000 feet high, a giant seamless tube, a mammoth cornice toboggan slide, and finally take their departure laden with souvenirs. The brownies evidently believe that what is worth doing is worth doing well, and we extend to Messrs. Merchant & Co. our congratulations upon their good fortune in securing the services of these bright, hustling little folks, and also our thanks for a copy of this superb specimen of advertising ingenuity.

There is an interesting group of bright girls at the New England Conservatory of Music, in Boston, who represent the quality of push characteristic of the American girl. There are some thirty-five of these girls, and they are being musically and vocally educated by the *Ladies' Home Journal*, of Philadelphia. Some time ago this magazine offered, as a stimulant to girls to get subscriptions for it, free educations at the Conservatory. The American girl is quick to see a chance, and one by one these thirty-five girls have come from all parts of the country to Boston. They receive the very best the Conservatory affords, the most desirable rooms in the building are theirs, and they have all their wants carefully looked after by a wealthy periodical. Perhaps in no other country on the face of the globe could such a thing be possible. These girls, too, the reporter was told, belong to nice families, but they preferred to earn their own musical education rather than depend on the family purse. Of course, the particular girls are unknown to the scholars at large, and to all intents and purposes they are paying their own way. And they certainly are. It is said that the magazine is also educating a number of other girls at Wellesley, Smith and Vassar Colleges.—*Boston Journal*.

The Cobbar Manufacturing Company, Toronto, have sent us a copy of a new catalogue just being issued by them, having reference to the mirror plates, beveled glass, framed pictures, looking glasses, picture frame and other moulding, etc., manufactured and handled by them. The general index makes mention of about a hundred different articles, and the moulding index to nearly six hundred different styles of moulding. Every article and every style of moulding alluded to is illustrated by descriptive cuts, so that he who may be interested is able to judge correctly of their appearance, and accompanying each cut is a description of the different colors and other peculiarities of the article referred to, and the list price thereof. The catalogue forms quite a large book—13½ x 10 inches, with 100 pages—and is intended specially for the picture frame, hardware, photograph and furniture trades. The Cobbar Manufacturing Company are probably the largest concern of the kind in Canada. Their factory and premises at Hayter and Terauley streets cover nearly an entire city block. The buildings are of brick, three stories high, of most substantial character, and

equipped with every desirable appliance, in the way of machinery, tools, etc., for producing high quality goods at the shortest notice. They make a specialty of silvering mirrors, this being the most important silvering works in the Dominion.

MANY highly instructive facts bearing on the progress of Canadian newspapers appear in a new handbook of the Canadian Press, just issued by A. McKim & Co., Newspaper Advertising Agents, Montreal, to whose enterprise we are indebted for the first Directory of Canadian newspapers that at all approaches completeness. It is certainly time that Canada had a newspaper directory of its own, instead of looking to foreign sources for information of its press, and the work just issued reflects credit upon the skill and enterprise of the publishers. It has over 200 more papers than are reported in any other directory, and the information is very comprehensive indeed, as the "Canadian Newspaper Directory" gives a gazetteer of each newspaper town which embraces everything that could be of interest, from a business point of view. Regarding each newspaper it gives full particulars, touching every point on which accurate information is obtainable. One of the most interesting features of the work is a history of Canadian journalism, in which an account is given of the first papers published in each province, with a sketch of the rise and progress of the most noteworthy papers down to a comparatively recent period. Many curious facts are given about these early papers, and the sketch, which contains much material that has not hitherto seen the light, is the most comprehensive one yet published on the subject. Accompanying the history is a facsimile of the first newspaper printed in the Dominion. It was supposed that the *Quebec Gazette* was the first Canadian newspaper, but the *Halifax Gazette*, here reproduced, appeared in March, 1752, twelve years before the *Quebec paper* saw the light. It consisted of only two pages, 9 x 15 inches, and it is a lamentable fact, strikingly illustrating the mortality of the early newspapers, that not a single copy of the *Halifax Gazette* is known to exist in Canada. A copy, supposed to be unique, is in the library of the Massachusetts Historical Society, in Boston; and after some trouble and expense, Messrs. McKim & Co. obtained a photograph of it. This souvenir alone is worth the price of the book, which is \$2.00. To give an idea of the labor required in a work like the "Canadian Newspaper Directory," it may be stated that the book contains 30,000 separate facts, apart from its history.

The March *Wide Awake* is a timely and attractive issue of a favorite magazine. Its frontispiece, illustrating Miss Brastow's characteristic story of "A March Mood," capably suggests the lingering snow of the departing winter, and there are March pictures and poems suitable to the season. The most important illustrated descriptive articles are Mrs. Stanton's interesting description of Gray's Forest—the famous tract of the Burnham Beeches near to London, and the quaint churchyard of Stoke Pogis, where the writer of the immortal "Elegy" was laid away, and Miss Eliza Ruhamah Scidmore's capital account of a visit to the palace of a Chinese noble. Mrs. Harriet Maxwell-Converse concludes her entertaining chapters on Iroquois life with a spirited account of the Indian children's "Fire-fly Song." Lieut.-Col. Thorndike contributes to his series of "One Man's Adventures" an account of his startling experience "As War Correspondent," when his sagacious dog saved his life, and Mrs. E. F. Bonsell tells of the elephant's bath at the Philadelphia Zoo. A bright and spirited story is one by Mrs. Edith Perry Estes, entitled "My Spanish Princess." Rebecca Mays Nadal tells a capital historical tale of King James V. of Scotland: Margaret Johnson has a girl's story, "The Red Necklace," to which Jessie McDermott has given some quaint, old-fashioned pictures; Mary Catherine Crowley tells a frontier story of two generations back, "The Lost Darning-Needle of Fitzroy," and there is a humorous story of "How Joey Rang the Bell," by J. T. Harbour; a funny account of an encounter between "A Boy and a Bear," by Caryl D. Haskins, and also one of the over-confident young Oriental, whom people called "Lionel." The serial stories, "Jack Brereton's Three Months' Service," by Maria McIntosh Cox, and "The Lance of Kanana," by the entertaining story-teller who conceals his identity under the Arabic "Abd el Ardavan," are both of them absorbing. The poetry is from such verse-makers as Herbert D. Ward, who sings of the loyalty of a beautiful Collio; Elsie Kendall, who has a capital doll poem, "The Woes of Noll;" Jane Ellis Joy, Mary Catherine Crowley, Clara Doty Bates and others. There is reading matter enough, and pictorial matter enough in the March *Wide Awake* to last the boys and girls for a long time, for everything in the magazine is worth the reading and the re-reading which its army of admirers will give it. *Wide Awake* is published at twenty cents a number, \$2.40 per year. At the newdealers. D. Lothrop Co., publishers, Boston.

Captains of Industry.

This department of the "Canadian Manufacturer" is considered of special value to our readers because of the information contained therein. With a view to sustaining its interesting features, friends are invited to contribute any items of information coming to their knowledge regarding any Canadian manufacturing enterprises. Be concise and explicit. State facts clearly, giving correct name and address of person or firm alluded to, and nature of business.

THE Corticelli Silk Company, St. John's, Que., has been incorporated with a capital stock of \$60,000, to manufacture silk thread, braids, twist, etc.

THE McMaster Manufacturing Company has been incorporated at Orangeville, Ont., with a capital stock of \$30,000, to manufacture agricultural implements.

THE Rosedale Pressed Brick and Terra Cotta Company, Toronto, is being incorporated with a capital stock of \$30,000, to manufacture terra cotta goods, brick, etc.

A NUMBER of capitalists from Tacoma, Wash., are negotiating for the purchase of W. P. Sayward's saw-mill and plant at Vancouver, B.C. The price is said to be \$350,000.

MESSRS. TEBB & YELLAND, late of the Ontario Canoe Company, Peterborough, Ont., are opening works at Victoria, B.C., and will build canoes, skiffs, steam launches, etc.

THE Strathroy Canning and Preserving Company has been incorporated at Strathroy, Ont., with a capital stock of \$50,000, for canning and preserving fruits, vegetables, etc.

THE Northwestern Wire Company has been incorporated at Winnipeg, Man., with a capital stock of \$50,000 to manufacture plain wire, fencing wire, wire nails, staples, etc.

MESSRS. BAIRD & SCHURMAN, of the Valley Woolen Mill, Southampton, N.S., are putting in a new spinning jack of 340 spindles, which will largely increase the capacity of the mill.

MESSRS. MACKENZIE, Ross, Holt, Mann and Nanton, of Edmonton, Alberta, N.W.T., are forming a stock company with a capital stock of \$35,000, to build a roller flour mill at that place.

THE Vancouver Dynamite and Powder Company, Vancouver, B.C., will be incorporated with a capital stock of \$100,000 to manufacture dynamite, nitro-glycerine, blasting powder, etc.

THE New Westminster Slate Company, New Westminster, B.C., have recently shipped another carload of slate to Seattle, Wash., and expect to make a shipment to Japan by the next steamer.

THE Northwestern Sampling and Milling Company has been incorporated at Nelson, B.C., with a capital stock of \$100,000, to sample, reduce, concentrate and refine the ores of precious metals.

THE William Hamilton Manufacturing Company, Peterborough, Ont., have recently supplied the Pacific Coast Lumber Company, whose mills are near Westminster, B.C., with shingle and other machinery.

THE Drury Nickel Company, has been incorporated with a capital stock of \$500,000 to work nickel mines in the Sudbury district, and to erect and operate smelters. It is composed of American capitalists entirely.

THE Edison Electric Co., have recently sold a large amount of electrical machinery, including a 268 h.p. railway generator, and two complete car equipments to the Victoria Tramway Company, Victoria, B.C.

THE Gutta Percha & Rubber Manufacturing Company, Toronto, have recently furnished to the fire department of Vancouver, B.C., a duplex re-charging chemical fire engine which has a capacity of 100 imperial gallons.

C. B. CASEY & SON, tanners, Amherst, N.S., are doing a good steady business. Their annual output is about 23,000 hides, and they employ twenty hands. A new shop has been built and is in good running order.

MR. WILLIAM MORRISON, Toronto, manufacturer of chemical fire engines, has been awarded the control for a two-cylinder machine for the Toronto fire department. In a recent issue, allusion was made to these machines and the deservedly large reputation they have acquired.

MESSRS. GAST & Co., Toronto, have merged their business into that of The Canada Mineral Wool Company, with a capital stock of \$10,000. Messrs. Gast & Co. are manufacturers of mineral wool,

asbestos goods, patent steam pipe covering, non-combustible insulating material, etc.

THE Drury Nickel Company has been incorporated with a capital stock of \$500,000, to acquire and develop nickel mines in Drury township, Algoma, Ont. There are quite a large number of incorporators, only one of whom, the mining superintendent, is a resident of Canada, the others being foreigners.

FALCONER'S Victoria Vinegar Works' goods are now carried by the leading wholesale grocers, comprising pure malt vinegar, tomato catsup, Worcestershire sauce, mushroom catsup, apple and quince cider, lemon and vanilla extracts and fruit syrups—of home manufacture.—*Victoria B.C., Commercial Journal*

THE Malleable Iron Company, Montreal, have a very attractive and unique advertisement in our pages, in which they announce that they are manufacturers of all classes of steam and gas fittings and malleable iron castings, including iron pipe elbows, tees, couplings, unions, bushings, flanges, S cocks, etc.

MESSRS. GANONG BROS., confectioners, St. Stephen, N.B., have sold out to a joint stock company called Ganong Brothers, Ltd. The capital stock of the new company is \$150,000. They purpose enlarging the business. In 1891 they sold goods amounting to \$255,000, and look for increased trade in 1892. During the past year several shipments have been made to British Columbia. From 60 to 175 hands are employed in the manufactory.

MR. W. C. WHITE, Montreal, is building a 100 h.p. steam boiler for the steamer *Nellie Reid*, 7 feet 6 inches diameter by 12 feet long, to carry a pressure of 125 pounds of steam. Mr. White is building quite a large number of steam boilers for cheese factories, the orders for them this season being greatly in excess of any previous year. Each of these boilers represents a new cheese factory, which indicates that the cheese industry is in a flourishing condition.

GOOD progress has been made on the steamer that is being built on English Bay by the Vancouver Steamship Company. The framework is all finished. Instead of spikes, rivets will be used, so that it will have additional strength. The company have not yet decided whether they will use the boat for passenger trade or go into the fishing and towing business. This will, however, be decided within the next few days, and then the contract for the machinery will be let.—*Victoria, B.C., Commercial Journal*.

MESSRS. DARLING BROS., Montreal, have just placed in the power house of the Citizens' Electric Light and Power Company, that city, a 125 h.p. Nordberg condensing Corliss steam engine. We are informed that this is the first Nordberg engine ever built in Canada—that they are cheaper than other similar engines, and that as good results are derived from them as from any other Corliss engine made. Messrs. Darling Bros. have also just placed in the same electric works three 300 h.p. Claussen clutch pulleys manufactured by them.

THE Belmont Bessemer Ore Co., have been completing and improving their buildings at the iron mine and are preparing for active work as soon as the railway is completed. Ties are being delivered along the line, rock-cuts made, and they are building the railway bridge over Beaver Creek at the village of Marmora. The railway from Belmont mine will strike the Central Ontario Railway about three miles from Marmora, a short distance north of the C.P.R. Junction, and the Company expect to have it running during the month of May next.—*Mining Review*.

MR. COCHRANE, manager of the Canmore mines, sent about 100 tons of the semi-anthracite smokeless coal from Canmore aboard the *Empress of China* on her last trip to Vancouver. The coal will be tested, and, if satisfactory, Captain Tillett will strongly recommend the C.P.R. Steamship Company to adopt it altogether on the Pacific liners. Mr. Cochrane is pushing the merits of the Canmore coal before the greatest users with a view to extending trade. Some of it was tried on the ships of the Pacific Squadron and proved satisfactory.—*Victoria B.C., Commercial Journal*.

MESSRS. CLAYTON & SONS, wholesale clothiers, Halifax, N.S., employ in their cutting department and factory 150 hands. This is the largest number of people employed in any one factory for the manufacture of ready-made clothing, in the Dominion of Canada. There is no factory either in Montreal, Toronto or Hamilton that employ so many, or have as much modern machinery as the Messrs. Clayton & Sons have for the manufacture of clothing. The number employed stated above is exclusive of a very large number of outside workers who are employed at their homes.—*Halifax Critic*.

THE new wire nail works of James Pender & Co., St. John, N.B., are completed, and the manufacture of nails will commence in a few days. This enterprise was just under way last year when

the election came on. The firm had begun negotiations for land, but refused to complete the transaction until after the election. One member of the firm made the statement that nothing would be done if the country declared for unrestricted reciprocity, as the concern would not undertake to compete with those of Pennsylvania, which had already closed out similar establishments in New England.

MR. WILLIAM JOHNSON, late of the William Johnson Company, manufacturers of paints, etc., Montreal, have sent us a circular announcing that the company with which he had been connected, having sold their business to the Canada Paint Company, he had severed all connection with it, and had started a new business in his factory in that city, where, with new equipment added to the existing plant, he has the best facilities for manufacturing paints, colors, varnishes, etc. Mr. Johnson has associated with him the principal men who in the past assisted him in establishing the enviable reputation which the Johnson colors now enjoy.

For the past two years the Government buildings at New Toronto have been burning natural gas, accidentally struck when putting down a well for water. The supply, notwithstanding the limited depth of the well subsequently sunk, having kept up steadily a company was formed to ascertain the extent of the store. Operations have been in progress for three months with the result that on Saturday last a large flow of natural gas was struck. This is the fourth and largest flow encountered. The first was at 775 feet, the second at 912 feet, the third at 1,085 feet and that on Saturday afternoon at 1,340 feet. The pressure is so strong that the company deem it unnecessary to bore any further. The capital stock has been increased to \$400,000, and numerous other wells will be put down with the object of piping the gas into the city.

The rolling mill at Acadia Mines, N.S., which has been idle for some months, is to be started again. The puddlers are going to undertake the manufacture of puddle-bar. The iron company is putting the mill in thorough repair and will furnish the pig iron to them at cost as well as fuel, etc., and agree to take their productions at the market price. This plan will lessen the cost of production materially, as it will do away with the salary of a mill superintendent and other expenses. Some of the most experienced of the workmen will have the oversight of the work as well as the selection of the pig iron to be used. The men want to arrange the work so that the furnaces can be run "double turn," and at six heats each, so that there may be no waste of fuel. The work will begin soon and will make a great difference to the place.—Halifax, N.S., Critic.

From the reports so constantly being published it would seem that the skill of the nefarious burglar is proving too much for the safemakers, and inventors who have been for some time racking their brains for a new and improved method of counteracting their evil designs. A patent just issued at Washington to T. Mower Martin, artist, of Toronto, seems likely to prove an entirely new departure in this matter of protecting moneys and valuable papers. Mr. Martin's idea is to turn the burglar's usual method of warfare against himself by coating the safe with hidden panels of explosive substances, which, if attacked by either the drill or the blow pipe, or even by electricity, would incapacitate the toiler of the night from further pursuing his chequered career. Six different claims are granted in this patent, some of them being for methods in which the explosive machinery can be set to go off or not at the option of the owner when closing the safe at night.—Toronto World.

The Canadian Paint Company, the incorporation and organization of which was recently noticed in these pages, have absorbed the following well-known Canadian paint manufacturing concerns: The A. G. Peuchen Company, Toronto, and Fergusson, Alexander and Co., and the William Johnson Company, of Montreal. The directors of the new company are Messrs. S. F. McKinnon, president; W. H. Howland, vice-president; H. M. Pellatt, Samuel Trees, Thomas Walmesley, William Bell, A. G. Peuchen and Mr. Munro. The head office will be in Montreal. The factory in that city will be that formerly operated by Messrs. Fergusson, Alexander & Co., of which Mr. Munro will be manager. The Toronto works will be those heretofore operated by the Peuchen Company, and Mr. Peuchen will manage them. The authorized capital of the Canada Paint Company is \$450,000.

The Polson Iron Works Co., of Toronto and Owen Sound, have all the frames up for the second cruiser for the Dominion Government. She is under construction at their yards at Owen Sound and is 125 feet in length overall, 19 feet 6 inches beam and 9 feet 6 inches draft. The engine is an inverted compound with cylinders 18 inches and 36 inches bore by 24 inches stroke. Boilers 10 feet 6 inches diameter, 11 feet in length with two Fox

corrugated furnaces 36 inches diameter. Speed estimated fifteen miles per hour. This cruiser is intended for fishing service in the Bay of Fundy. Another contract has been awarded them by the Dominion Government for cruiser No. 3, for service on Georgian Bay and upper lakes. Dimensions 125 feet long, 22 feet beam and 9 feet draft, with compound engines 18 inches and 38 inches bore by 22 inches stroke. Boiler 10 feet 9 inches by 11 feet with two Fox corrugated furnaces 36 inches diameter. Speed estimated fifteen miles per hour. This vessel will be built of extra heavy steel throughout so as to be able to carry two or three quick firing guns.

The Telfer Manufacturing Company, Toronto, have begun the manufacture of patent metallic edge paper boxes for which they claim great excellence, and they are also offering to the trade the machinery, etc., necessary in the production of these goods. Among the advantages obtained in these boxes are enumerated the saving in the cost of material, which is very considerable, as they can be made unlined and uncovered, and yet possess greater strength and a more attractive appearance. They are perfectly dry as soon as made, no glue or paste being used. Cleanliness is particularly apparent, the boxes being free from the smell which is unavoidable in boxes made in the old way, and which is usually so detrimental to their contents. Some of the great disadvantages attending box making are well known, such as the inability to increase the output in times of pressure, the dampness of goods newly made, the great amount of warehouse space required, etc., etc., all of which are overcome by this new process; and, consequently, consumers can have their boxes delivered much quicker and perfectly dry, and with the promptitude which is so essential, but hardly ever attained.

The Robb Engineering Company are setting up one of their new automatic engines, "Robb-Armstrong" pattern, for the Canada Electric Company here. This is the fifth of these engines placed in electric lighting stations during the past three or four months. The first went to the Chambers Electric Company, Truro, and has been running night and day since the first of November. The second and third which went to the Sydney and Sackville Electric stations have been running regularly every evening, without showing the slightest defect or wear, and are considered by the engineers in charge marvels of perfection in every way. The fourth was started at Digby a few weeks ago, and Mr. Smith, proprietor of the electric light plant there, writes that he is delighted with the engines. Each one of these engines is driven from a "Monarch Economic" boiler, thus completing a steam power plant which gives the highest rate of economy in fuel that can be obtained from non-compound engines. The Electric Company here now have in use three engines and three Monarch boilers, giving them a total of over two hundred horse-power, which with new dynamos now in course of construction, will greatly increase their lighting capacity.—Amherst, N.S., Press.

MESSRS. J. L. O. VIDAL & SON, Quebec, have invented a water wheel which has developed remarkable power, and for which they are applying for a patent. The Quebec Morning Chronicle of March 7th has the following to say regarding it:—On the 25th February last at the Rev. Fathers Redemptorists' work shop, Mr. Leclerc, the chief mechanic for the Quebec, Montmorency and Charlevoix Railway and Mr. Marquis, Manager for the Rev. Fathers, being present, a regular test was carefully made of a new water wheel of five inches diameter. The water head is claimed to be 250 feet high, but the pressure gauge has shown but 40 lbs at the most to the square inch. The water pipe supplying the wheel has four inch diameter. The speed was taken, the wheel on belt and running a main shaft of 55 feet long by 2 inch diameter. It made regularly 3,240 revolutions per minute as shown by means of a break (dynamo meter), the scale attached at 22 inches on the lever from the centre of the wheel, balancing 25 to 30 lbs. The speed being then at least 2,000 revolutions per minute. The supply of water was about 42 feet cubic per minute. From the above, it appears that the wheel is given more than 16 horse-power and that it can give even up to 20 horse-power. The efficiency is certainly 95 to 96 per cent. of absolute weight of the water; it is probably the most perfect hydraulic motor existing. The wheel was devised and supplied by Messrs. J. L. O. Vidal & Son, mechanics of this city, who have applied for a patent.

REFERENCE has frequently been made to the value of our Pacific Coast fisheries, but, as yet, they have not been appreciated to any great extent. Mr. Harry Abbott, of Vancouver, has just sent to the Premier at Ottawa a box of fish, caught on a recent excursion of the tug *Eliza Edwards*, containing three halibut and a quantity of black cod. These fish have been distributed amongst the ministers of the Crown and in several other quarters, with a view to their

PRESIDENT.
W. K. McNAUGHT.

SECRETARY,
J. J. CASSIDY.

TREASURER,
GEORGE BOOTH.

The Canadian Manufacturers' Association.

THE OBJECTS OF THIS ASSOCIATION ARE:

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

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

To maintain Canada for Canadians.

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

CORRESPONDENCE WITH MANUFACTURERS REQUESTED.

Office of the Association: Room 66 Canada Life Building,
KING ST. WEST, TORONTO

J. J. CASSIDY, Secretary.

TELEPHONE 1274.

being tried, and, so far as can be learned, the quality is excellent, notwithstanding its long journey. The fish are accompanied by a statement from the captain of the *Eliza Edwards*, certifying that the halibut are part of a catch of 847 similar fish, estimated to weigh, in the aggregate, 40,000 pounds, which were caught by eight men in three boats in three days, within five miles of the coast of British Columbia, and in land-locked waters where fishing can be carried on in any weather. The largest halibut in the lot weighed 175 pounds, and measured six feet four inches in length. This great catch, by so small a party in so short a time, must open the eyes of our Atlantic fishermen, and there seems to be no doubt that the most abundant results may be expected from the exploitation of our fisheries on the Pacific Coast.—*The Empire*.

The only cheese factory in operation in this Province during the past season has been the one situated at Cornwall, about six miles from Charlottetown. This factory is owned by a company of enterprising and well-to-do farmers living in Cornwall and vicinal settlements, who run the business on a mutual and economical system. The costs of manufacturing, incidental expenses, such as driving milk wagons, etc., and all profits arising from sales going back to the farmers or patrons of the factory, of which there are some thirty or forty. The annual meeting of the factory was held January 5, 1892, and by the showing of accounts they have closed a very successful year's business. The total number of pounds of milk manufactured during the four months in which the factory operated were 566,101, equal to 283 tons, which produced 51,863 pounds of cheese, or nearly twenty-six tons, requiring 10.92 pounds of milk to a pound of cheese. This cheese, which is of first-class quality, having been awarded first prizes for three years in our Provincial Exhibition, is manufactured by Mr. Richard Hood, of Cornwall. The cheese has met with a fair demand, being all disposed of in the home market. The total sum realized from the sale of cheese was \$5,168.22, which represents about 10 cents per pound. The patrons received 68 cents per 100 pounds of milk, and some farmers keeping good milking cows have averaged as high as \$20 per cow for the term of four months. Last season was not so good for pasturage as the previous summer, and 4,000 pounds less cheese were manufactured, which represents a loss in two ways to the patrons, as the larger quantity could have been manufactured at nearly the same cost. Mr. Geo. Toombs, of this city, has for the past three years been agent for the Cornwall cheese factory, and has conducted the business in a manner highly satisfactory to all concerned.—*Charlottetown, P.E.I., Guardian*.

The Standard Drain Pipe Company, St. Johns, Que., of which Mr. W. C. Trotter is manager, have sent us a circular having reference to the vitrified sewer pipes and drain tiles manufactured by them. A letter written by P. W. St. George, C.E., City Surveyor of Montreal, is reproduced, in which he states that the strength and durability of the vitrified tile pipes and inverts furnished by the Standard Company to the Road Department of the city of Montreal have been good. The tests made as to crushing strength were most satisfactory, a proof of which was that in 1890 that city used of these goods 12,175 yards of 4, 6, 9, 12 and 15 inch pipes; 34,992 feet of inverts, and 3,507 bends. A letter from C. H. Rust, Esq., of the Toronto City Engineer's Department, states that, the City Council of Toronto having awarded a contract for sewer pipes for 1892 to the Standard Company, he took much pleasure in saying that from inspections he had made of these pipes then in use, and of a quantity then being held for future use, he was very much pleased with their quality and finish, and that they

were quite equal to Scotch and American manufacture. A letter from A. O. Graydon, C.E., City Engineer of London, Ont., speaking of some of these pipes in use in that city, says: "I found them most satisfactory in every respect." Mr. J. Gallagher, Waterworks Engineer of the city of Quebec, speaks of having, within the past two years, received over 200 carloads of these Standard pipes for that city, and that he considers them in glaze and finish equal to the best brand of Scotch pipes imported, and superior to them in point of strength. Speaking of the custom with many engineers and architects to specify foreign pipes to the exclusion of pipes of Canadian manufacture, this company says: "To all such we earnestly appeal to allow us the privilege of meeting any foreign brands in equal competition, in any way suggested, to determine the relative merits as to glaze, vitrification and crushing strength—the three prime requisites of a good serviceable pipe."

The John Doty Engine Company, Toronto, have on exhibition a drawing of a new type of cargo steamer, which is exciting considerable attention. It is the design of Mr. W. E. Redway, of London, Eng., who is superintendent of construction for the Doty Engine Co., who has had a long and varied experience in marine engineering and naval architecture in Great Britain. Mr. Redway calls his new type of steamer the *Monitor*, and claims for it all the advantages of the whalebacks, which in some respects it very much resembles, while it is free from many of the defects which have been found to exist in those vessels. The machinery of the *Monitor* is placed nearly amidships, thus making the vessel trim better when light. Instead of the cigar-shaped bow of the whalebacks, the *Monitor* has a ram bow, with a fore-castle deck forward, the top sides of which flare outwards slightly, something like the mould board of a plough, thus entering the water easily, and throwing it to one side, making the vessel easy to drive. She is also fitted with seven self-trimming hatches, the openings being raised about three feet above the top of rounded deck, and so arranged as to be easily accessible for loading and unloading cargo. The Doty Engine Company are now constructing one of these vessels for the Canadian Steel Barge Co., to be engaged in the grain and coal carrying trade between the Upper Lakes and Kingston. The new vessel will be 255 feet keel (full Welland Canal size), 38 feet beam and 20 feet depth of hold. She will be fitted with fore and aft compound engines, having cylinders 26 and 50 inches diameter and 40 inches stroke, with two cylindrical boilers 12 feet in diameter and 11 feet long, and will have a speed of 13 knots on a coal consumption of about 1,000 pounds per hour. She will register about 850 tons and will have a carrying capacity of about 2,200 tons dead weight, on about fifteen feet draught of water. Mr. Redway has secured patents on his design in Canada, the United States and several foreign countries, and has already received several very flattering offers from builders for the right to construct these vessels in the United States, their sea-going qualities and large carrying capacity rendering them very desirable as cargo steamers. In addition to the *Monitor*, this company have on the stocks a steel side-wheel passenger steamer for the St. Catharines-Toronto route. She will be 180 feet keel, and fitted with compound engines, cylinders 28 and 54 inches diameter by 48 inches stroke, and is to have a guaranteed speed of 16 knots per hour. They are also constructing for George Gooderham Esq., the well-known distiller, a steel yacht from designs furnished by Watson, the celebrated designer of Glasgow, Scotland. This yacht will be 119 feet keel, fitted with triple expansion engines of high power and water tube boilers to carry 200 pounds steam pressure. She is expected to be very speedy.



INVENTIONS.



This department of THE CANADIAN MANUFACTURER is devoted to the interests of inventors, of patentees of inventions, and of manufacturers of patented articles. Patents are granted in Canada for fifteen years, the Government fee for which may be paid by instalments. Arrangements have been made by which the issue of all patents by the Canadian Patent Office and all renewals and extensions thereof will be promptly noticed in this department, and a brief description thereof given. Enquiries on these subjects are invited and will receive prompt attention. No charge will be made for answers by mail when return postage is sent. Information given free regarding patent laws and the obtaining of patents in Canada, United States, Great Britain and all foreign countries. Claims for inventions, as embodied in Letters Patent, also the illustrations of them, will be inserted in this journal at moderate charges. The attention of manufacturers is specially directed to the opportunities for lucrative business which may be acquired by close observation of whatever may appear in this department.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office from February 20 to 29, 1892, inclusive.

Information in regard to any of these patents may be had free on application to THE CANADIAN MANUFACTURER, or copies of American patents corresponding to these, where the American patent has been previously granted, can be procured through us for the sum of twenty-five cents.

MECHANICAL PATENTS.

- 38,319 Saw sharpening machine, Milo Covel, February 20th.
 38,320 Tag wiring and bundling machine, Albert R. Tiffany and Wesley Young, February 22nd.
 38,321 Dies for cutting off and pointing pieces of wire. American Screw Company, February 22nd.
 38,324 Screw driver, Edward A. Eggert *et al*, February 22nd.
 38,325 Earth closet, Hamilton A. Jukes, February 22nd.
 38,326 Oscillating engine, Julian Moss *et al*, February 32nd.
 38,327 Stove pipe and collar fastener, John J. Travis and Henry G. Ide, February 22nd.
 38,328 Key fastener, John J. Travis and H. G. Ide, February 22nd.
 38,330 Reversible disk harrow, Jay S. Corbin, February 22nd.
 38,331 Water engine, Henry Jerger, February 22nd.
 38,332 Electric soldering iron, Willard M. Miner, February 22nd.
 38,333 Saw swedge, Peter Payette, February 24th.
 38,336 Weather strip, Harvey W. Ogg, February 24th.
 38,337 Spike, Alexander C. Trotter and Algerman Granville, February 24th.
 38,338 Pencil, Frederick E. Blisdell, February 27th.
 38,339 Check hook, Harry E. Kelley, February 24th.
 38,340 Wrench, Daniel H. Carpenter, February 24th.
 38,341 Turbine, William H. Elmer, February 24th.
 38,342 Bicycle lock, Cornelius J. Brosnan, February 24th.
 38,343 Improvements in slat waggon, Hermidas Quenville, February 24th.
 38,344 Packing for stuffing boxes, Hamlet E. Forrest, February 24th.
 38,345 Load binder, Joseph H. Johnson, February 24th.
 38,346 Fire proof floor, Thomas A. Lee, February 24th.
 38,347 Tuno stamp, Robert H. Thompson and Henry D. Norris, February 24th.
 38,348 Saw set, John McIntosh and Moses Bricker, February 24th.
 38,349 Clothes line, Solomon Smith and Lucien Rawdon, February 24th.
 38,350 Automatic railway switch, Joseph R. Matthews, February 25th.
 38,351 Duplicate memorandum book or sale slip, Wilson Morton, February 25th.
 38,353 Dry kiln furnace, William Ketcham, February 25th.
 38,354 Dust guard for car axle box, John A. White, February 25th.
 38,355 Tuning pins for pianofortes, Ivers and Pond Piano Company, February 25th.
 38,356 Machine for producing metal lathing, Walter W. Bostwick, February 25th.
 38,357 Saw swage, John Hauchett, February 25th.

- 38,359 Cheese press, Charles Richardson and Wm Webster, February 25th.
 38,360 Holder for shoe button fastener, Alexander G. Wilkins, February 26th.
 38,361 Car coupler, Charles A. Pooloy, February 26th.
 38,362 Life preserver for floating or sustaining persons in the water, Alvis Zadák, February 26th.
 38,363 Combined soot door, ventilator and check draft for chimney apertures, William O. McRoke, February 26th.
 38,364 Cartridge loader, George B. Jacobs, February 26th.
 38,366 Washing machine, Leonard Stapleton, February 27th.
 38,367 Dry closet, Thomas B. A. Chamberlain, February 27th.
 38,368 Automatic railway signal, Frank Robinson, February 27th.
 38,369 Window jack, Douglas A. Thurston, February 27th.
 38,370 Improvements in and connected with lamps, Alfred E. Harris, February 27th.

SCIENTIFIC PROCESSES.

- 38,322 Process of spinning and welding metal, New Process Welding and Spinning Company, February 22nd.
 38,323 Manufacturing tubes by electrolysis, Elmore's American & Canadian Patent Copper Depositing Company (Ltd.), February 22nd.
 38,329 Manufacture of gas, Charles H. and Luke A. Wilder, February 22nd.
 38,334 Means for securing merchants and others from excessive losses of bad debts, Levy Maybaum, February 24th.
 38,335 Process of manufacturing phosphoric acid from phosphatic material, Charles Glaser, February 24th.
 38,358 Manufacture of compound plates or slabs of cement, plaster and like material, Emile Dupont, February 25th.
 38,365 Composition of matter to be used for steam and cold water packing, Isaac H. Culp, February 26th.
 38,371 Process for tanning hides, Tilmon L. Crafton, Feb. 27th.
 38,374 Device for tying bags, sacks, etc., Madison C. Kimball and Charles L. Pattison, February 29th.

ELECTRIC.

- 38,352 Galvanic battery, Walter A. Crowds, February 25th.
 38,372 Automatic telephone and other electrical exchanges, Stowger Automatic Telephone Exchange, February 29th.
 38,373 Method of electric welding, Thompson International Electric Welding Co., February 29th.
 38,375 Band saw-mill, The Waterous Engine Works Co. (Ltd.), February 29th.
 38,376 Secondary batteries, Standard Electric Co., February 29th.

CURIOUS INVENTIONS.

The history and growth of inventions are subjects in which all are interested. The difficulties and rebuffs which inventors have had to undergo in the perfecting of their ideas, their perseverance and ultimate success, form most interesting reading.

Vast sums of money are brought in by apparently simple inventions requiring no great mechanical knowledge. The accounts of these read more like the wildest fiction than simple fact, and are sufficient to make the least covetous among us yellow with jealousy. The stylographic pen brought in £40,000 a year; the india-rubber

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tips to pencils, £20,000; metal plates for protecting the soles and heels of boots brought in £250,000 in all; the roller skate £200,000. A clergyman realized £400 a week by the invention of a toy; another toy, the return ball (a wooden ball with a piece of elastic attached), brought in an annual income of £10,000; the "Dancing Jim Crow," £15,000 a year. The inventor of a copper cap for children's boots was able to leave his heir £400,000; whilst Singer, of sewing-machine fame, left at his death nearly £3,000,000.

There are, however, other and wonderful things which people have thought it worth while to patent, strong in the hope of making a big fortune in the near future, only to find in so many cases that their inventions were impracticable and very often perfectly ridiculous.

Among such may be mentioned a child's bib with a trough attached, the whole formed of some waterproof material; a pocket which cannot be picked; a muff and boa filled with air to save you from a watery grave; cuffs and collars made of steel, prised or enamelled white; trousers with double legs—on the outer legs getting soiled or bespattered you tuck them up, and behold a clean pair. This arrangement would be suitable, I should say, only when worn with an overcoat.

Under the head of umbrellas and walking-sticks we find some marvellous inventions. One is an umbrella which, in some wonderful way, is converted into a walking stick, and so formed that a spear can be attached, when it is used as a weapon of offence and defence. I recommend it to elderly ladies in the dog-days, as a protection against the sun and mad dogs.

The next invention is a rain absorber, to prevent rain from running down from hats and umbrellas. The absorber is formed either of uncovered sponges or of sponges covered by a fabric. We are told that the absorber can be readily removed from the article, squeezed and replaced.

We come next to an article which the inventor has named (take a long breath and shut your eyes) the "Rhabdoskidophorus." This is an umbrella which can be taken apart, the silk and ribs being hidden within the stick; it is thus transformed into a stout washing-stick.—J. H. Roberts in *Strand Magazine*, London.

TROUBLES OF INVENTORS.

The fact that a very large proportion of patented inventions are a disappointment to their originators, because of their failure to yield profitable returns for time and money expended on them, is a subject often discussed by inventors and those who are directly interested in their work. It is probable that in no other field of human effort are there so many bitter disappointments, so many crushed hopes, and so much of genuine heartache, as among inventors. Although thousands of them annually achieve success and enter on a career of prosperity, other thousands find little or no reward. The devices from which they confidently expected affluence have only added to their poverty.

Many an intelligent man toils for years, denying himself all the luxuries and most of the comforts of life, to bring out an invention seemingly full of promise, but destined to utter failure. The reasons for this extended area of disappointments are not very numerous nor hard to find. First among them is insufficiency of practical knowledge on the part of the inventor. For example, a man who knows nothing of the practical work of steam engineering may invent and patent a device in that line which will

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appear to him and other non-professionals to be a great advance on existing methods for generating or utilizing steam, but which will be condemned by most competent judges. In all kinds of machinery the same cause is a prolific source of disappointment.

The thing invented may be very ingenious and cost a vast deal of mental labor, and may attest the intellectual superiority of the inventor, but if it be deficient in practical utility, if its introduction will not be profitable to those for whom it is intended, it goes into the lumber yard of oblivion. Persons who are utterly ignorant of gunnery frequently invent something in that line, but they very rarely attain success. The same rule holds good in all the industrial arts, including agriculture, mining, manufactures, shipbuilding and railroading. Brilliance of intellect and originality in conception are offset by lack of practical knowledge.

Another reason why failure is so frequently encountered is lack of capital to perfect, construct and demonstrate. Many inventions of great value are lying dormant because a good deal of money would be required to show the world what they are and what they possess. This is especially true of inventions that menace great interests. When a patent threatens annihilation of vast values, when it proposes to sweep away plants that represent millions of dollars, capital hesitates to develop it, for its introduction means a fight to the death between gigantic conflicting interests.—*Inventive Era*.

It has been discovered that the half-burned carbons used in the arc electric lamps have the power to cut glass. They possess many of the characteristics of the diamond.

ELECTRIC welding is now applied to the work of manufacturing iron wheels. The process of welding the hub, spokes and tire of a wheel is now accomplished in thirty seconds.

A SUBSTITUTE for India rubber, known as kalgum, has been invented by Henry Kellogg, of New Haven. It is not changed by the action of heat or light. It is more durable than rubber, and the *American Analyst* says it is applicable to all purposes where rubber is now used.

AN ILLINOIS inventor has discovered that incandescent lamp filaments possessing long life with high incandescence can be produced from the roots of a certain plant, commonly known as the "rice plant," a native of tropical countries. The root of the plant is remarkably dense and free from pores.

To mark steel tools—Warm them slightly and rub the steel with wax or hard tallow until a film gathers. Then scratch your name on the wax, cutting through to the steel. A little nitric acid poured on the marking will quickly eat out the letters. Wipe acid and wax off with a hot, soft rag, and the letters will be securely etched.

AN inventive youth connected with a Missouri hardware store is said to have discovered a compound which, if applied to the tin-ware, brass, etc., of wares exposed for sale, will keep the flies off the same during the summer. He expects to make a small fortune

out of the discovery, and ought to ; for any man who can keep the flies off the hardware business in any form deserves to succeed.

Electricity in legitimate medical practice is being more largely employed than ever. One of the recent applications in this direction is for the treatment of deafness. The apparatus for this purpose comprises a battery, a belt, an electrode supporter on the belt and shaped to rest on the ear, and connections between the electrode and the battery. This provides a convenient and efficient mode of receiving the current, which can be applied in finely graduated strength.

RECENTLY, near Riverside, Cal., a telephone wire of the Trust Company broke between two offices, about fifteen miles apart, yet an ordinary conversation could be carried on over the wire after it was broken, though the magnetic bell would not ring. There being no other wire on the same poles, at that part of the line where the break occurred, it is supposed that the current was carried between the ends of the broken wire through wet ground. A few feet below the surface, there is what is known as hard pan, which possibly acted to some extent as an insulator between the upper and lower strata of earth.—*Practical Electricity.*

A PHILADELPHIA inventor has perfected an ice harvester which is to be run by electrical power. The cutters upon this machine revolve, and the only weight of any consequence to the whole apparatus is of a small electric motor, which is geared to the wheels and cutters. By the use of this machine ordinary ice may be grooved through almost to the water, and the whole thing travels lightly and smoothly, thereby rendering it invaluable in cutting ice that will not sustain the weight of a team and plow. The machine also removes the snow and does the corrugating. The current that propels the motor is communicated therewith by means of either a reel of wire or light, movable trolley ; thus the same current may be applied to the housing of the ice and the lighting of the place when the work is going on.

THE evolution of the electric motor seems now to be making better progress than that of the dynamo machine, though the latter shows a steady and progressive improvement. Among the later types of electric motor the one invented and made by Mr. Warren S. Hill, of Boston, is one of the most remarkable in size, weight and operation, for the results obtained from it. His 5-horse power motor weighs only 550 pounds, and delivers its power 1,000 revolutions a minute. His 10-horse power motor weighs only 800 pounds, and makes 1,000 revolutions a minute. The 5-horse power machine at its maximum load is retarded only 36 revolutions per minute, while the 10-horse power machine at full load loses only six revolutions per minute, which is something very remarkable. The diameter of the armature of the latter machine is only 7½ inches, and its length 15 inches. The armatures and field magnets of these machines are of laminated iron, and they mark a distinct forward step in electric motor construction.

By means of currents alternating with very high frequency, Prof. Nikola Tesla has succeeded in passing by induction through the glass of a lamp energy sufficient to keep a filament in a state of incandescence without the use of connecting wires. He has even lighted a room by producing it in such a condition that an illuminating appliance may be placed anywhere and lighted without being electrically connected with anything. He has produced the required condition by creating in the room a powerful electrostatic field alternating very rapidly. He suspends two sheets of metal, each connected with one of the terminals of the coil. If an exhausted tube is carried anywhere between these sheets, or placed anywhere, it remains always luminous. The extent to which this method of illumination may be practically available experiments alone can decide. In any case, our insight into the possibilities of static electricity has been extended, and the ordinary electric machine will cease to be regarded as a mere toy.—*Prof. William Crookes, in The Popular Science Monthly.*

A RECENT English invention is a water cartridge, some very interesting experiments with which were recently tried in an English mine. An explosive charge of tonite is placed in a tube of a size suitable for a shot hole. The tube is filled with water, and the

cartridge is suspended in it by means of a wire connection with the detonator. The tube is securely plugged, the cartridge placed in the shot hole and rammed in the usual way. The advantage claimed is that when the charge is exploded there is no flame, and consequently no danger of igniting gas, while at the same time the coal is not shattered as in ordinary blasting. At tests made with the cartridge four ordinary shots were fired in the coal with four-ounce charges of tonite without any flame being observed. In a severe test two blown out shots were tried in hard metal with no indication of flame, while as a final test, a loaded cartridge was fired on the mine floor, and again there was no indication of flame. These tests were regarded by the mining experts present as conclusive as to the absolutely flameless properties of the cartridge.

THE *Indian Jurist*, published at Madras, India, notices the fact, which it had seen in a Canadian journal, that Messrs. Fetherstonhaugh & Co., patent barristers and solicitors, of Toronto, had deviated from what it calls "the fine old crusted superstitions and prejudices so dear to the profession in the Mother Country," in favor of "a most sensible arrangement," i.e., making a specialty of patent business as connected with the profession. It says: "A new and doubtless most lucrative business in the courts has grown up in connection with disputes about patents of a particular class, and to meet the wants of customers who do not desire to go about to half a dozen firms, and pay half a dozen bills, upon one business, this company of barristers and other experts set up a house where clients can get all they want done cheaply and expeditiously, and with the certainty that trade secrets will not be revealed." These kindly remarks concerning Messrs. Fetherstonhaugh & Co. by our Indian contemporary are timely and well-deserved. They have the confidence of the community and of the officials of the Dominion Patent Office, and are of great service to those who entrust their business to them.

THE residence or office building in a large city is not only subject to the possible causes of fire within itself, but it is always more or less at the mercy of its neighbors. Its interior arrangements may be perfect, the utmost care and the most vigilant watchfulness may be exercised day and night, but in the midst of a storm of fire assailing and surrounding it from without all this forethought and effort come to naught. Something, however, it is possible to do in the way of outside protection, a matter which, relatively speaking, does not often receive the attention it deserves. An example of what appear to be very effectual safeguards of this nature is afforded by the offices of the *Herald* newspaper in Glasgow, Scotland. The building has several times been threatened with destruction by fires originating in adjacent structures, and in one instance was partially surrounded by fire, but escaped with only a damaged roof. The manager of the establishment became convinced that there was more danger of this kind from without than from within his building. He therefore devised and put in operation a system of roof-drenching by means of pipes supplied with water from a tower and tank, and carried along the ridge and over all the windows. In case of need, the whole exterior of the building can be flooded in a few seconds and kept under flowing water as long as circumstances may require.

ONE of the most curious inventions of this inventive age is what is called platinized glass, says the *Youth's Companion*. A piece of glass is coated with an exceedingly thin layer of a liquid charged with platinum, and is then raised to a red heat. The platinum becomes united to the glass in such a way as to form a very odd kind of mirror. The glass has not really lost its transparency, and yet if one places it against the wall and looks at it he sees his image as in an ordinary looking-glass. But when light is allowed to come through the glass from the other side, as when it is placed in a window, it appears perfectly transparent like ordinary glass. By constructing a window of platinized glass one could stand close behind the panes in an illuminated room and behold clearly everything going on outside, while passers by looking at the window would behold only a fine mirror or set of mirrors, in which the person inside remained invisible. In France various tricks have been contrived with the aid of this glass. In one a person seeing what appears to be an ordinary mirror approaches it to look at himself. A sudden change

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in the mechanism sends light through the glass from the back, whereupon it instantly becomes transparent, and the startled spectator finds himself confronted by some grotesque figure which had been hidden behind the magic glass. What wonders might not a magician of the dark ages have wrought if he could have had a piece of platinized glass.

A new kind of tubing, of interest to steam power users and electrical engineers, has been brought out in England, says the *Electrical Engineer*, London. The tubing is flexible, and is made in a machine from metal strips of the necessary length, width and thickness, according to the purpose for which it is required. In passing through the machine the strips, which are of steel, galvanized steel, or otherwise, have formed upon one side two corrugations in a longitudinal direction, one being large and the other small. The corrugated strip is then coiled in the form of a spiral round a mandrel, this operation being so performed that the small corrugation enters the large corrugation and interlocks with it. This forms what is known as a piston joint. The tubing, which is unaffected by ordinary liquids or gases, has been tested both at high and low pressures—steam up to 60 lb., and hydraulic up to 1,000 lb. to the square inch. The tubes are made from 5-16-inch to 3-inch internal diameter, and plant is now being laid down for the manufacture of tubes up to 12 inches diameter. This kind of tubing is now in use for a variety of purposes, including gas and steam pipes, compressed air, speaking tubes, and also as sheathing for electric light cables, whilst it can likewise be used for running ordinary house leads. A special type of coupling, which will not give way under the pressure mentioned, is used for joining lengths of tubing.

WEBER was the first who established a permanent workable telegraph line, and thereby demonstrated the practical value of the electric telegraph. Weber's house in the city was connected with the astronomical and magnetic observatories by a line between three and four kilometres (over two miles) in length. The signals were made by the deviations of the needle of a galvanometer to the right and left and were interpreted according to a conventional alphabet. The use of interrupted or reversed currents did not permit the transmission of more than one or two words a minute, but the speed was increased to seven or eight words by the use of induced currents. The following first notice of this telegraphic connection was published in one of the numbers of the *Göttingischen gelehrten Anzeigen* (or *Göttingen Scientific Notes*) for 1834: "We can not omit to mention an important and, in its way, unique feature in close connection with the arrangements we have described [of the Physical Observatory], which we owe to our Prof. Weber. He last year stretched a double connecting wire from the cabinet of physics over the houses of the city to the observatory; in this a grand galvanic chain is established, in which the current is carried through about nine thousand feet of wire. The wire of the chain is chiefly copper wire known in the trade as No. 3. The certainty and exactness with which one can control by means of the commutator the direction of the current and the movement of the needle depending upon it were demonstrated last year by successful application to telegraphic signaling of whole words and short phrases. There is no doubt that it will be possible to establish immediate telegraphic communication between two stations at considerable distances from one another."—*The Popular Science Monthly*.

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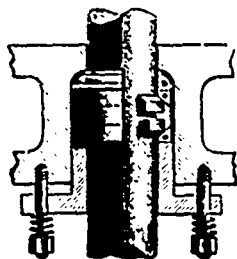
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STEAM SEPARATOR,

For Supplying Clean and Dry Steam to Engines, Dry Houses, etc.

Screwing Flanges included with each Flanged Separator.

Place Separator as close to engine as possible. The steam taking a spiral course between the threads causes the water to be thrown by centrifugal force against the outer walls, while the dry steam goes through the small holes to centre of pipe. Steam can enter at A or B as convenience may require; also used in conveying steam long distances for Steam Hammers and Dry Houses.

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ALL-STEEL, NICKEL-STEEL, OR COPPER-STEEL.

Upon no one question is the attention of the iron and steel world more intently concentrated at present than upon the production of the highest form of armor-plate. English, French and American steel manufacturers are making history, these days, and the outcome of it all will be a marked advance in the art of modern warfare. Recent tests, both at home and abroad, have shown results of the utmost importance and are worthy record. Three distinct lines of development seem to be going on. The best product of American steel works seems to be the Harveyized nickel-steel; the most remarkable results so far obtained in England have been from all-steel armor, while the French manufacturers appear to be directing their efforts toward the production of cupreous steel.

The Harveyized nickel-steel comes with the prestige of a most successful series of tests near Washington and the official endorsement of our Navy Department. The treatment of the high-carbon nickel-steel by the Harvey process is as follows: The armor plate of ordinary mild steel is laid, perfectly flat-wise, upon a bed of dry sand or clay, deposited upon the bottom of a firebrick cell or compartment erected within the heating chamber of a suitable furnace. The face to be heated is left exposed, and the compartment partly filled with granular carbonaceous material, which having been rammed down upon the plate, is covered with a stratum of sand, upon which is a layer of fire-brick. The furnace is raised to an intense heat, about that required to melt cast iron, which is continued for such a period of time as may be required for the absorption by the metal near the upper surface of the plate of an additional one per cent. more or less, of carbon, by virtue of which the surface metal acquires the capacity of hardening. After carbonization is complete, the plate is taken from the furnace, and, without removing the carbonaceous material from its surface, is allowed to cool down to a proper temperature for chilling. During cooling, the carbonaceous covering protects the metal and prevents the formation of scale, which, if present, could prevent proper hardening of the metal beneath it. When the metal has cooled to a dull cherry-red, it is plunged into water for chilling or tempering, the result being a hard face with a tough backing. The plate thus produced stood the severest tests at the recent trials, but the results are by

no means considered conclusive as to the Harvey method, and still further tests will be made, at an early date, of high-carbon nickel steel with or without the treatment above described. While nickel-steel appears to be held in highest favor by our naval officers at present, it is not without its critics, and it is stated that a ship of war built in this temperate climate of ordinary steel, and clad with say 3,000 tons of nickel-steel armor, would be destroyed by a visit to the Arctic regions, owing to the contraction of steel by the extreme low temperature.

While these noteworthy experiments are taking place in the United States, the English Admiralty have been achieving some quite as remarkable results with all-steel plates. In a recent test, wherein the ordeal to which these plates were subjected was exceptionally severe (consisting of five rounds from a six-inch breech-loader at a range of ten yards, with 100-pound chilled shot) the projectiles rebounded from the same or were shattered, while the plate was not only free from penetration but failed to show so much as a crack. Our American experimenters will no doubt take due note of this.

With the Bethlehem and Pittsburgh people carrying forward their tests in the United States, and the Cammells in England, the Schneiders in France have by no means been idle. Recent important patents have been granted them by the French Government for a new process of manufacturing cupreous pig iron and cupreous steel, the end reached being the production of armor plates showing very remarkable qualities of elasticity, resistance and malleability. To manufacture cupreous steel, either in the crucible or by the open-hearth process, either ordinary copper or cupreous pig is employed, avoiding, in the manufacture by the open-hearth process, oxidation of the copper before it is alloyed with the steel. This result is obtained by introducing the cupreous pig or the copper, either at the beginning of the fusion into the interior of bath which is protected by the layer of slag, or at the end at the moment of adding the decarbonizers. This process is applied to all the existing methods of manufacturing steel in the crucible or on the open hearth.

Here is, indeed, an international contest of intellect in peace for the highest forms of resistant material in steel, and may the results redound to the spread of peace and good will throughout the world. —Cleveland Iron Trade Review.

THE MONARCH ECONOMIC BOILER

Patented Can. May 6, 1866;
Feb. 10, 1887.

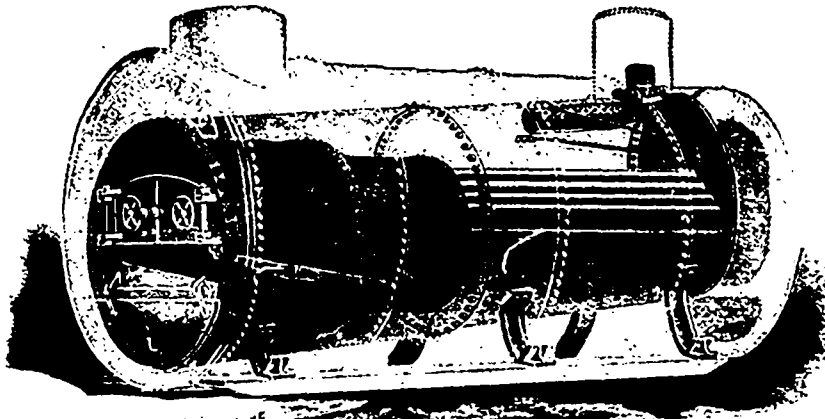
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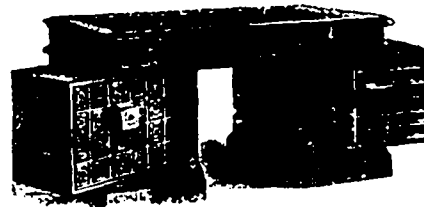


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3. To reduce the cost of insurance to the lowest point consistent with the safe conduct of the business.

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All risks will be inspected by a competent officer of the company, who will make such suggestions as to improvements required for safety against fires, as may be for the mutual interests of all concerned.

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The most perfect method of insurance must, in the nature of things, be one in which the self-interest of the insured and the underwriters are identical, and this has been the object aimed at by the organizers of this company.

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J. H. WALKER, Manager.

TORONTO.

JANUARY 1, 1892.

STATEMENT OF THE CONDITION

OF THE

Manufacturers' Life Insurance Co.

OF TORONTO.

ASSETS.

| | |
|----------------------------------------------------------------------------------------|--------------|
| Dominion Government Bonds..... | \$53,000 00 |
| Huntsville Municipal Debentures..... | 4,975 00 |
| West Toronto Junction Debentures..... | 41,847 40 |
| Call Loans on Bank Stocks (Dominion and Imperial Banks, market value \$26,750.00)..... | 25,000 00 |
| Mortgages on Real Estate..... | 200,243 30 |
| Reversions and Life Interests..... | 3,003 00 |
| Bills Receivable..... | 2,051 14 |
| Office Furniture..... | 4,457 75 |
| Agents' Ledger Balances..... | 3,208 47 |
| Outstanding and Deferred Premiums, less 10% held for cost of collection.. | 63,600 24 |
| Interest due and Accrued..... | 5,319 25 |
| Loans on Policies..... | 2,123 85 |
| Cash on hand and in Bank..... | 31,784 47 |
| | <hr/> |
| | \$431,969 47 |

LIABILITIES.

| | |
|------------------------------------------------------|--------------|
| Reserve (10% 4%) on all existing policies in force.. | \$259,162 00 |
| Death Claims unadjusted, not resisted..... | 6,000 00 |
| Contingent Fund for Medical Fees, etc..... | 1,610 84 |
| | <hr/> |
| | \$266,772 84 |

Surplus on Policy Holders' Account **\$135,200 63**

INCOME FOR THE YEAR (1891.)

| | |
|-------------------------------------------|--------------|
| Cash received for Premiums..... | \$104,020 35 |
| Cash received for Interest and Rents..... | 15,457 14 |
| | <hr/> |
| | \$207,480 49 |

DISHURSEMENTS.

| | |
|-----------------------------------------------------------------------------------------------|--------------|
| Expenses of Management, including Salaries, Commissions, Rents, Taxes, Medical Fees, etc..... | \$77,024 27 |
| Death Claims..... | 35,208 52 |
| Surrendered Policies..... | 2,660 79 |
| Reinsurance Premiums..... | 9,345 00 |
| | <hr/> |
| | \$124,239 18 |

Capital Stock Paid Up..... **\$127,300 00**

Surplus as above on Policy Holders' Account **\$135,200 63**

GEO. GOODERHAM,
President.

JNO F. ELLIS,
Managing Director.

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REED ORGANS
 — AND —
CHURCH PIPE ORGANS

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IN DESIGN, AND CONTAINING ALL THE LATEST
PRACTICAL IMPROVEMENTS KNOWN.**

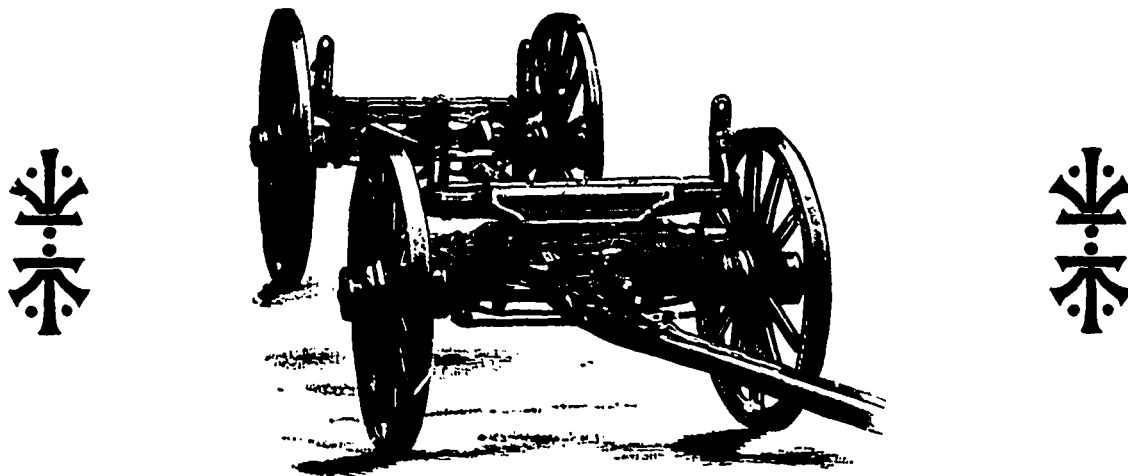
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 7 70
 5 60
 3 18
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Ten Narrow " " " " " "

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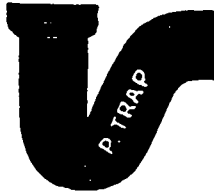
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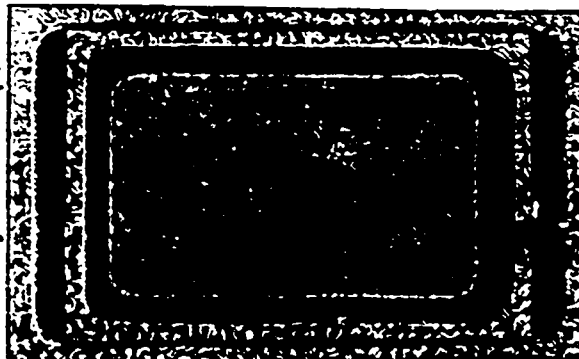
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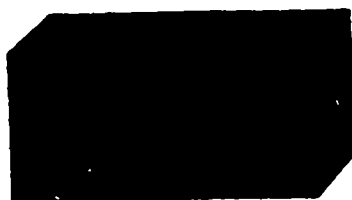
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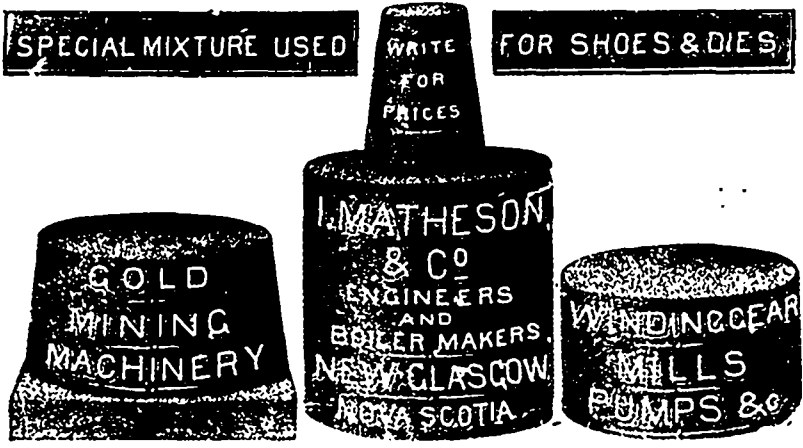
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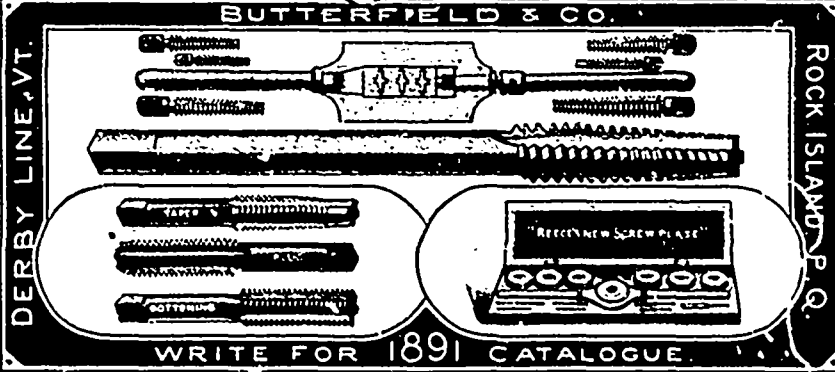
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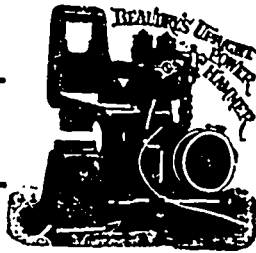
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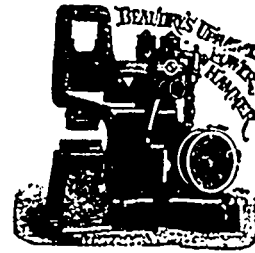




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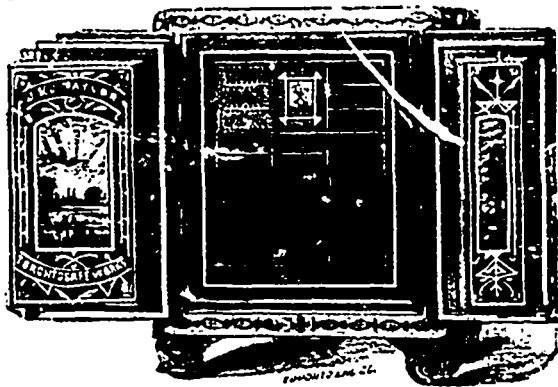


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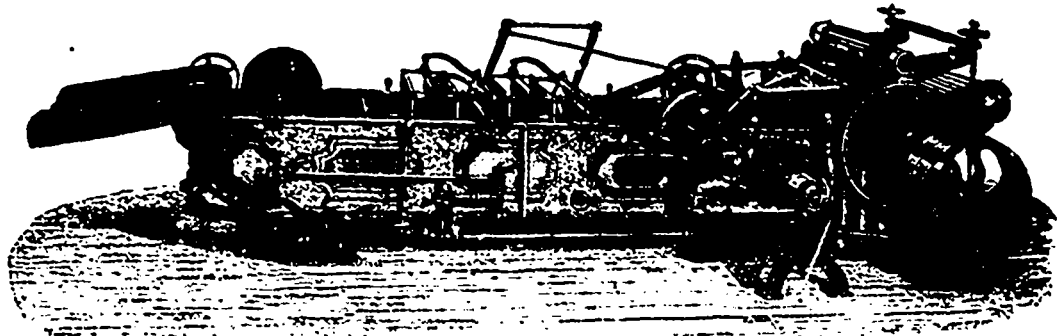
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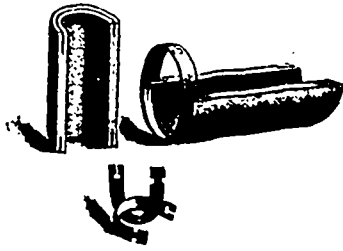
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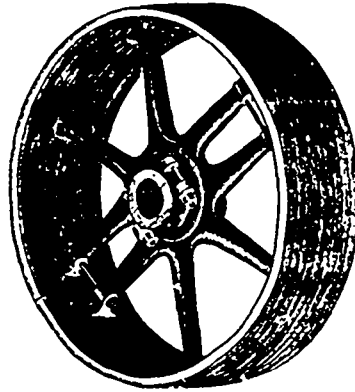


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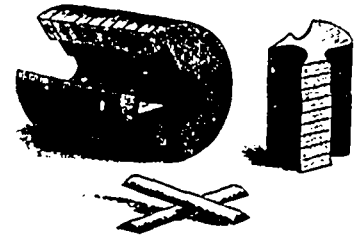
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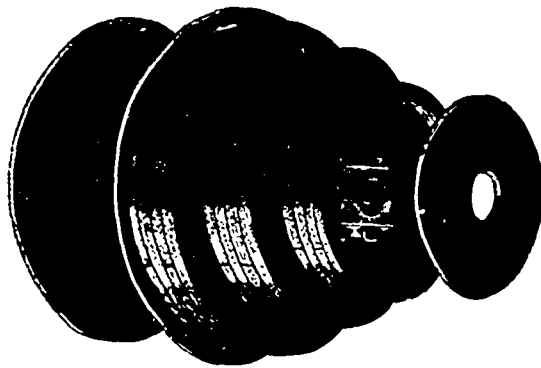
Our Collar Pulley



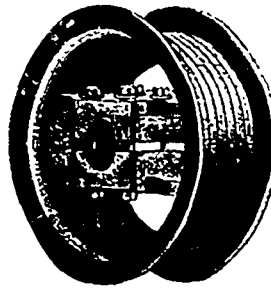
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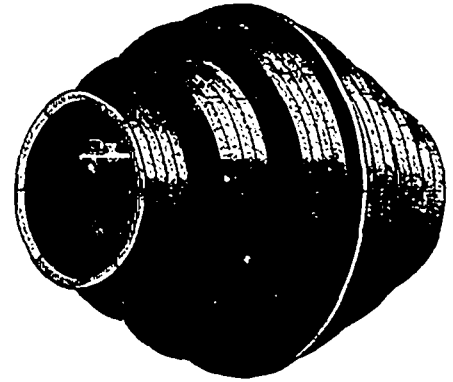
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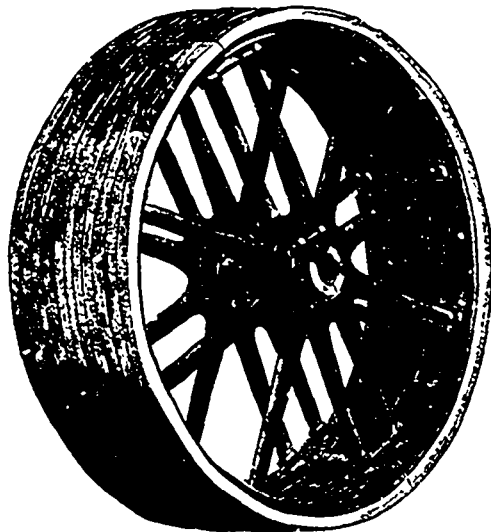
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Double Cone Pulley



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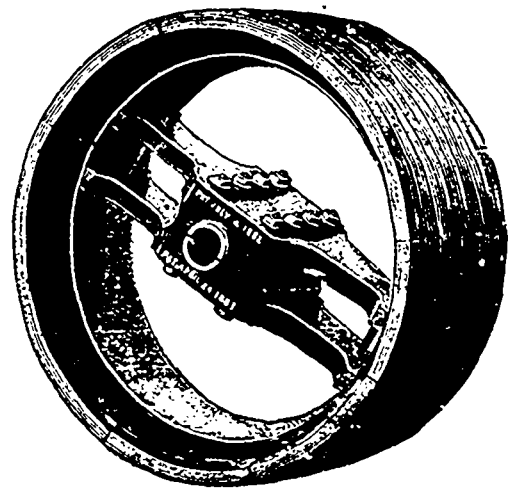
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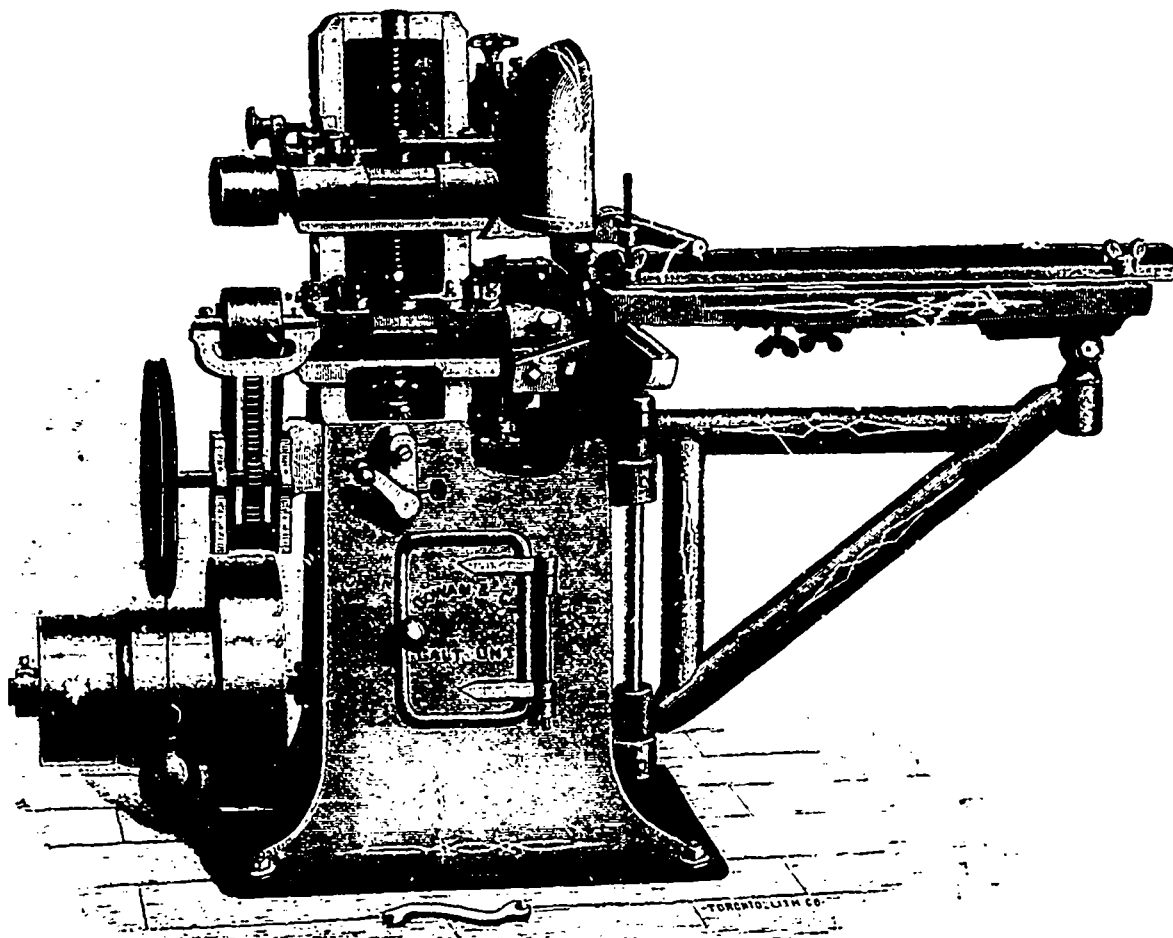
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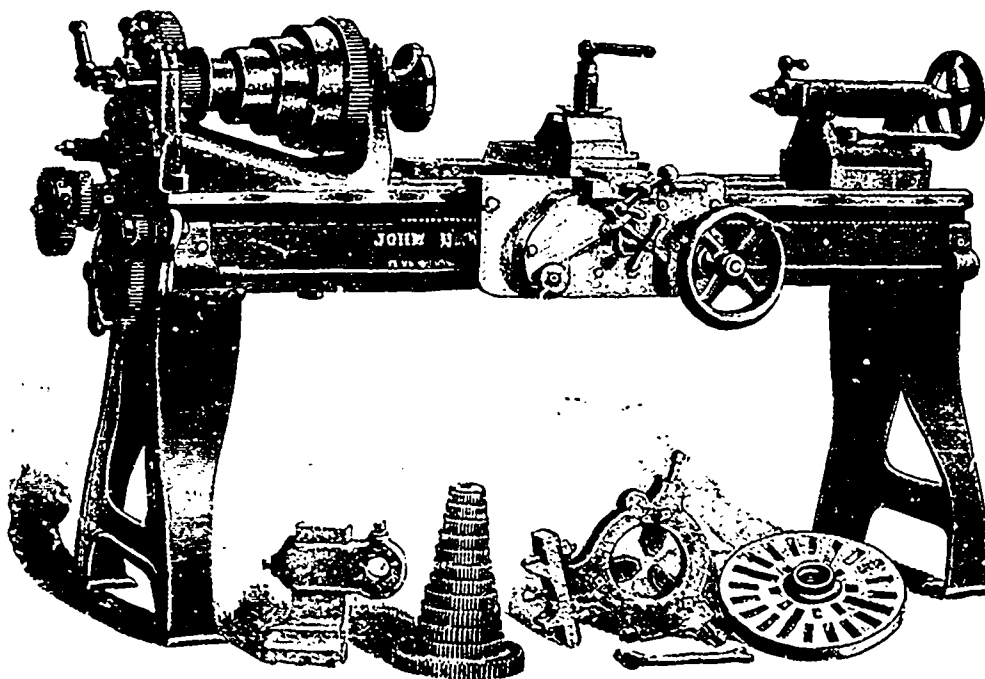
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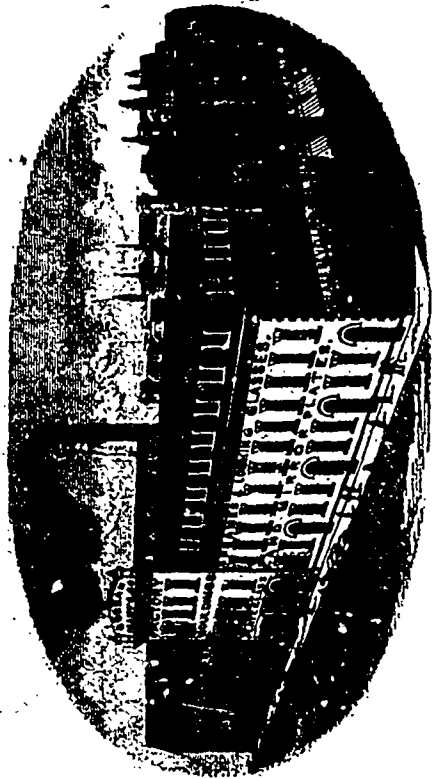
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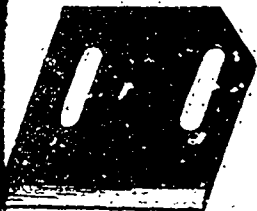


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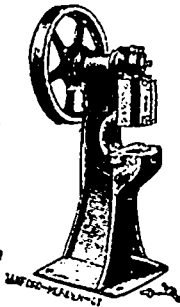
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