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CANADIAN MANUFACTURER AND INDUSTRIAL WORLD.

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION.

VOL. 27. TORONTO, MAY 18, 1894. No. 10.

CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

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LABOR IN NEW ZEALAND.

There is much interest and perhaps instruction in the report submitted to the State Department by Mr. John D. Connolly the United States consul at Auckland, upon the labor laws of the far-away colony of New Zealand. The consul shows that that country has taken the lead in the effort to solve by legislation the questions that have perplexed the present generation. Though many of the laws that have been placed upon the statute books of New Zealand during the last few years have been characterized, says the consul, as "socialistic" and "revolutionary," they are all working admirably, giving the utmost general satisfaction. The tendency of the legislation has been to reach the landless class, and to teach them their rights and how to obtain them. There has been no attempt to tear down established interests, but at the same time no effort has been spared to elevate the condition of the masses by placing within their reach all that rightfully belongs to them, or that would tend to their elevation and material prosperity. In the short space of three or four years the country has made wonderful progress. Among the Acts which have been passed to bring this about is the Employers' Liability Act, affording protection to labor, both as to wages and responsibility in case of injury. A much needed and beneficial Act was the Factories' Act of 1891. Government inspectors see that the factories are clean and healthy and well lighted.

No person under 18 years of age, and no woman is allowed to be employed for more than 4½ hours without an interval of half an hour for a meal. No boy under 16 is permitted to work more than 48 hours in any week in a factory, and child labor is prohibited entirely. Compulsory holidays are Christmas, New Year, Good Friday, Easter Monday, Her Mayesty's birthday, and every Saturday afternoon from 1 o'clock. A labor compulsory Arbitration Act is to be passed at next session of Parliament. The public works of the colony are conducted on the co-operative principle. When a railway or highway is to be constructed, the Government engineers make the survey and estimate. On the basis of this estimate of cost the work is given in small sections to gangs of men who each receive an equal proportion of the money earned. The contractor is dispensed with, and the profits are divided among the men. The Government supply necessary tools and material at first cost. The men work very hard and earn good wages. They pocket the contractors' profit, and the Government is at no greater cost. One peculiar feature of this system is that the young, robust and middle-aged men work together, while the weaker and less vigorous are formed into classes by themselves. The younger and stronger men object to their older and necessarily weaker brothers, because they are no longer able to perform their full share of the work. The old men are, however, perfectly content to have the opportunity to earn a livelihood in this way by themselves and they do so very comfortably. The co-operative system has given great satisfaction, and has to a large extent solved the problem of the unemployed in this colony. Another excellent system, described by the consul, is the Government Labor Bureau. If a man is out of employment he makes application to the agent in charge of his district labor bureau, who sends him to some suitable occupation, paying for his transportation, if necessary, and having it refunded from the first money the man obtains. Employers of labor can send orders for men, and in this way, the labor market is always open. In conclusion, the consul says among the vast majority of the public there are no complaints, generally speaking, and no fault-findings. All seem to appreciate what is being done for them, each working with a cheerful will to make all those new undertakings and innovations a success.

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Williams, A. R.	Machinery,	Toronto.	
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Woonsocket Shuttle Co.	Machinery Supplies—Shuttles,	Woonsocket,	Mass.
Wilson, J. C. & Co.	Turbine,	Glenora,	Ont.

MR COCKBURN AND THE NATIONAL POLICY

The House of Commons a few days ago, in Committee on Ways and Means, discussed the duty upon coal oil, and the following report has reference thereto :—

Mr. Foster proposed another change as follows : "Crude petroleum fuel and gas oil, other than naphtha, benzine or gasoline, when imported by manufacturers other than oil refiners, for use in their factories for fuel purposes, also the manufacture of gas, 3 cents per gallon." This is a reduction of 4 1/5 cents from the old tariff, and of 3/5 of a cent from the tariff as proposed by the Minister of Finance, though the conditions are somewhat changed.

Mr. Cockburn, who, day after day, has consistently voted taxes upon the people, now raised up his voice in protest. Mr. Cockburn is a Director of the Consumers' Gas Co. of Toronto, which uses large quantities of crude petroleum in manufacturing gas, but it was not because the duty affects his own pocket that he objected. It was the poor workmen employed directly and indirectly by the gas industry for whom he mourned. He said that he had swallowed the six cents on refined oil, though he had thought it a high figure, but he was staggered at the duty placed upon the crude article, which amounted if put on an ad valorem basis, to 200 per cent. If the Minister could not reduce the duty all at once he might do it gradually.

Col. Amyot—How much is the dividend of the gas company?

Mr. Cockburn—If you buy stock at the present value it will pay about 5 per cent. The stock, I may state, is limited in the amount of dividend that it can return. The dividend is limited to 10 per cent. It has never paid more. I may state that the company with which I am connected makes the cheapest gas in the Dominion.

This speech was considered broadly humorous by everybody but Mr. Cockburn. It did not have any serious effect upon the Finance Minister, and the item was declared carried.

It should be remembered that Mr. Cockburn is a large stockholder in and a director of the Consumers' Gas Company of Toronto. The stock of this company is worth a very large premium, some placing it at about one hundred per cent., and it is a large consumer of fuel oil. It is interesting to note that Mr. Cockburn could smile complacently when the duty upon illuminating oil was being considered. He swallowed the six cents per gallon duty upon refined oil without a protest, but it was quite a different matter when it was proposed to levy a duty upon the raw material of the industry in which he has so much money invested. Of course his objection to this duty did not arise from selfish motives—oh no, not at all, but his anxiety was excited in behalf of the poor workmen who labored in his gas works, and whose wages might be affected by the price of crude oil. Very considerate and praiseworthy indeed. No wonder the humor of Mr. Cockburn's remarks was appreciated by his hearers, it was so guileless.

We have some recollection of Mr. Cockburn having made a similar exhibition of himself rather more than a year ago. It was at a dinner at the National Club, in Toronto, when he declared his undying allegiance to the principles of the National Policy very much after the manner of his speech on the oil question above alluded to. At that dinner Mr. Cockburn was reported to have said : "You all know I am a supporter of the National Policy ; but we must be on our guard against the pressure and influences that threaten the introduction of McKinleyism into Canada. * * It is well to examine what has been the result of thirteen years of protection ; and if in the examination it is found that a protection of thirty or thirty-five per cent. has been futile in infusing life into any of the industries whose establishment has been attempted, it might be concluded that that industry was one not appropriate to the country, and should be allowed to die. * * If it were found that some industries had given undoubted signs of having taken firm root and were growing strong, I would be inclined to encourage these even more than they are now. On the other hand if it were found that other industries show no signs of healthy vitality, I would favor a diminution in the protection afforded. The National Policy was adopted with the idea that a few years of favored growth would put our manufacturers in such a position that they would in time be able to sell their wares at prices as reasonable as they could be procured for from abroad."

In February, 1887, a meeting was held in the Pavilion, in Toronto, under the auspices of the Industrial League, intended to show the interest felt by the manufacturers in the National Policy and in the party supporting it ; and among the gentlemen upon the platform was Mr. Cockburn, who was then a candidate quite anxious to be elected as the member for Centre Toronto in the Dominion House of Commons. The meeting was called to ratify a resolution which had been passed a few days before at one of the largest and most representative meetings of manufacturers ever held in Canada, called to listen to Sir John Macdonald's exposition of the state of the country in general, and of the fiscal policies of the existing political parties ; and it was at this meeting that the resolution alluded to was passed, which was as follows :—

Resolved : That this meeting of manufacturers, representing almost every branch of industry, and every section of the country, hereby place on record their unanimous opinion, that on the maintenance of the National Policy depends the continued prosperity of Canada.

Mr. Cockburn was one of the speakers at this ratification meeting, and his endorsement of the National Policy was very emphatic and not at all qualified by such remarks as he made at the National Club dinner, and later in the House of Commons on the coal oil duties. He was very anxious to obtain votes to ensure his election, and he well knew that his election depended upon the assistance he hoped to receive from the manufacturers.

Unfortunately for Mr. Cockburn he is one of those toplofty theorists who has forgot the promises he made to those who elevated him to the position he now occupies. An exceedingly unpractical man, he knows nothing of the obstacles our manufacturers have to contend against in the unfair competition allowed to be forced upon them by foreign manufacturers. He is captivated with fine theories obtained from books and from association with other theorists ; but they are not endorsed by those whose interests he is supposed to serve. He is not in sympathy with the manufacturers, and knows absolutely nothing of their requirements ; and he is not a representative man.

Unfortunately for the manufacturers there are too many like Mr. Cockburn in the House of Commons. They are deficient in backbone. When upon the rostrum, seeking votes, they make fair promises which are forgotten at a time when they should be most faithfully kept.

THE BEET SUGAR INDUSTRY.

In our last issue we referred in a general way to a few of the features of the beet sugar industry as illustrating its adaptability to Canada, and as there is a good prospect of its early establishment in Ontario and of its extension in the Province of Quebec, it seems expedient to mention a few more facts in connection with it, especially with the view of refuting some of the objections urged against it.

One of the objections most frequently advanced is the general prejudice felt as to the inferiority of beet as compared with cane sugar. In an article in this journal published some time ago, the certificate of a celebrated chemist was copied which showed that when cane and beet sugar are perfectly refined, the two are identical in their properties and undistinguishable from each other. This statement is confirmed by Sugar, a journal published in London, Eng., in which, in April last, the editor says :—"In reply to a correspondent as to how beet root may be detected in sugar ;—if we assume that the beet sugar and the cane sugar are pure, there is no means of discriminating between them. The sugar in the beet root has exactly the same composition as that obtained from the cane sugar, and, therefore, there is no chemical or physical difference." Another very common objection, briefly alluded to in our last issue, is, that the beet sugar industry in Europe requires the imposition of enormous bounties for its preservation. Under the old law in Germany, prior to May 31, 1891, raw sugar in that country received an export premium of 8.50 marks per 100 kilos, equal to about 92 cents per 100 lbs. This was reduced to about 22 cents on best quality refined to July 1895, and 19 cents to July 1897, and after that date the bounty is to be discontinued.

If the beet sugar industry in Germany had been so dependent upon the bounty for success, a large reduction in production would have followed the act of 1891. Instead of this, Sugar, of April says :—"The Consul-General of the United States at Frankfort reports as follows on the condition of sugar in Germany. The sugar manufacture has been so prosperous that there is now a general movement towards the enlargement of existing factories and the erection of new ones. The profits of the principal manufacturers during the past season have been princely. From a long official list of declared dividends, it appears that they range from 7 to 30 per cent. of the invested capital, and in some cases even the latter figures are surpassed. Thus it is stated by Kuhlow's German Trade Review that the sugar factory at Nordstemmen, with a capital of 525,000 marks, shows a net profit of 211,151 marks ; the one at Northeim, with 1, 050,000 marks capital. earns 403,588 marks ; Guhran, with 600,000 marks. earns 181,588 marks ; Rostock, with 800,000 marks, earns 294,144 marks, and so on through a long list. The factory at Gross-Ammersleben, which lost last year 2,131 marks, earns this year a net profit of 16,703 marks, which fairly illustrates the comparative prosperity of sugar-making in Germany during the two years. The reasons for this highly favorable position are various, but the principal one is probably the fact that the long, hot drought of the spring and summer rendered the beets smaller in bulk than usual, so that the juice was ripe in quality, rich in sugar and easily evaporated and refined. It is not strange that profits of 25 and 30 per cent. should be tempting to investors, and, notwithstanding all warnings, an important increase in the sugar-producing capacity of Germany may probably be made during the coming year."

In the same issue of Sugar, an extract from Sugar Beet is given :—"It is frequently maintained in American journals that beet sugar production in Continental Europe has reached its limit ; but the truth is, new factories are being projected." It gives the following results at other factories than those above : "The dividends at Vechelde were 25 per cent ; Gronan, 25 per cent. ; Anklam, 22 per cent. ; Stavenhagen, 20 per cent. ; Northeim, net profits, 250,000 dollars ; Soest, 300,000 dollars ; Schladen, 200,000 dollars. Many others had profits raging from $200,000 to $300,000 per campaign. For the entire campaign in France, Germany and Austro-Hungary, there were only a few instances where actual losses occurred, and these were largely due to bad management." No doubt, the somewhat above average prices of sugar during the greater part of 1893 contributed in some measure to these handsome profits ; but, apart from this, these results show that the beet sugar industry, both as to cultivation of the roots and process of sugar manufacture, has attained a perfection that will now enable it to compete on equal terms with cane sugar.

Another objection sometimes urged against the probability of success in Canada is the doubt as to whether farmers could be induced to cultivate this crop to the extent required for large factories. There is no ground for apprehension on this score, because, as the MANUFACTURER showed in last issue, official enquiry on this point established that in many sections of this province farmers are not only willing but anxious to undertake the raising of sugar beets to any extent required. On this point, Sugar Beet of last January, testified through its correspondent at San Francisco :—I do not hesitate to assert that there is hardly a farmer in the State who is not pleased with the money returns from his land cultivated in beets, but numerous examples, as last year, could be given where $65 to $70 net profit per acre were realized. At Chino factory where the supply of beets in 1892 was 27,000 tons, in the following year it increased to 50,000 tons.

Sugar Beet, in the same issue says :—"From an agricultural standpoint, cases may be cited, where, from 500 acres, the yield has averaged about 20 tons."

The Weekly Gazette, of Anaheim, Cal., reports a case where an individual purchased 40 acres of land for $3,600, in spring, and had a return next season of $4.000 from 35 acres in sugar beets.

The Commissioner-General of the State of Nebraska, in a report to the World's Fair at Chicago, stated :—"Such data as are available show that 15 tons per acre, with a sugar content of 13.5, is a fair average yield for the whole State." With respect to cultivation, he says :—"Beet culture is really the raising of a field crop by horticultural methods."

Sugar Beet states with respect to formation of some of the sugar companies in Germany :—"Many of the beet sugar factories in Germany are worked on a co-operative basis, in which the farmers hold stock."

Since our last issue, when we referred to the great ad-

vantage to any farming section of having large cattle-feeding sheds in connection with beet sugar factories, the MANUFACTURER has received further information as to the results of last season's experiments in this direction at the factories in Quebec. The proprietors advise :—We had experience in cattle-feeding last winter. We find the increase in weight to have been on an average, about 30 per cent. Cattle purchased at 1¾ to 2 cents per lb. resold in spring at 3½ to 4 cents per lb. This is very good.

If any measure is adopted for granting a bonus to beet sugar factories, it should be stipulated that any factory to be erected, entitled to the bonus, should be of sufficient dimensions and capacity to work not less than 300 tons roots per day of 24 hours. The average factory in Austro-Hungary works 30,000 tons in the season, and the universal tendency in Europe is towards still larger factories. The expenses of buildings, machinery, wear and tear, interest, office, scientific work, and factory superintendence are all very much less in proportion to the value of the sugar in a large factory than in a small one. The larger and better equipped the factory, the sooner will arrive the time at which the beet-sugar industry will not require to receive any bonus.

AMERICAN TIN PLATES.

The way to do a thing is—to do it. For many, many long years it was the ambition of Americans who had abiding faith in their country, and hope and belief that it would sooner or later become a producer of every commodity possible to be produced there, that at some time they would manufacture their own tin plates. Of course all the propositions looking to the development of the industry were met by copious showers of very cold water; and it really seemed that whatever other industries might be introduced into that country, all the forces that free trade ridicule and opposition at home, strengthened by the varied influences of Welsh manufacturers, could bring to bear were opposed to any and all efforts to establish a tin plate industry in the United States. Some day an authentic history of this matter may be published; and when it is it will tell as interesting a story as ever illustrated the determined efforts of patriotic men to achieve the independence of their country in a particular direction, and the equally determined efforts of hopeless pessimists at home and intensely interested allies abroad to prevent it. The result of the struggle may be summed up in the statement that when the McKinley idea of tariff protection went into effect in the United States in 1890 there were no works in that country for the manufacture of tin plates, while at this time, and as an effect of what some sneeringly call McKinleyism, there are a large number of such establishments there, producing as fine and desirable qualities of tin plates as were ever made in the old country.

This fact has recently received strong verification as the following will show. A few weeks ago the manager of a Toronto manufacturing concern, who are perhaps the largest consumers in Canada of tin plates, expressed a wish to have an opportunity of examining and testing some of the finer qualities of American tin plates. The gentleman to whom this wish was expressed happened to be a personal friend of one of the officers of the New Castle Steel and Tin Plate Co., who are proprietors of extensive tin plate works at New Castle, Penna., and in this way the wish of the Canadian consumer was made known to the American manufacturer. It was then that the New Castle Steel and Tin Plate Co. addressed a letter to the Kemp Manufacturing Company, Toronto, in which it was stated : "We have this day sent you a box of mixed plates—some ordinary coke, some sheets of a better grade of coke, and some of common charcoal. We would be pleased to have you inspect these plates and submit them to any test that you may require in your work. These are genuine American plates, made from Lake Superior ores, through our blast furnace, steel plant, and finished throughout in our works. We are furnishing these plates to some of the largest consumers in the United States, and thus far they seem to give the best satisfaction, as we have received nothing but praise in regard to the coating and the working properties of the steel. * * * We make both a pure palm oil plate and a patent plate. The charcoal plates sent you are a pure palm oil finished plate. The cokes are made on patent machines. We are anxious to have you try our plates; and if at any time you desire high grade plates we would be pleased to quote you prices."

The writer was afforded an opportunity to inspect these American plates, and was impressed with the most favorable comparison they bore to similar Welsh plates; and we have been informed by the Kemp Manufacturing Co. that they have been subjected to precisely the same processes of manufacture in their works as all other plates are, and that they are the equal in all respects of any plates ever used in that factory. This report should be very gratifying to our American friends; and we most heartily congratulate them upon it. Surely this infant American industry, not yet four years old, is a lusty and thriving youngster of which Uncle Sam, the American Eagle, William McKinley and the friends and supporters of the American National Policy should be exceedingly proud.

When Mr. Lascelles Carr, the editor of the Western Mail, of Cardiff, Wales, was in the United States in the early part of 1893, he called upon President Cleveland and a conversation ensued between them concerning the alleged tin plate industry. The conversation is thus reported by Mr. Carr in the Western Mail: "When one of the newspaper correspondents told the President chaffingly that I had come from Wales to look for some of the tin plate works which the Republican party declared to have been established under their Protective tariff he replied, 'Well, Mr. Carr, when you do find them be sure and let me know their exact location, for we have been searching for these tin plate works for some years now and have failed to find them.'"

Col. Ira Ayer, the special agent of the United States Treasury Department, reports that, notwithstanding the prevailing depression, during the quarter ended December 31, 1893, 39 firms in that country manufactured 27,351,241 pounds of tin and terne plates. Of the output in that quarter 15,907,669 pounds, or more than 58 per cent., were made from black sheets rolled in the United States. Of the 39 firms reporting 21 used wholly American black plates, 12 both American and foreign plates, and 6 used only foreign plates. This is a very good showing for an

industry that is not yet four years old, but which had attained to a flourishing condition when Mr. Carr met Mr. Cleveland.

Governor Pattison, of Pennsylvania, according to Mr. Swank's Bulletin, has seen one of the tin plate works that Mr. Cleveland said he had been searching for and had not found. The Governor has been on a visit to New Castle, Pa., and while there he visited the various manufacturing industries of that enterprising and thriving city, including the tin plate works of the New Castle Steel and Tin Plate Company, which are among the most complete works of their kind in the world. The Governor is reported in a local newspaper to have said that he was not only surprised but pleased to see that the tin plate industry of New Castle was so complete a success. The reporter goes on: "The honorable Democratic Governor of this great Keystone State was enabled to observe his handsome and genial features perfectly mirrored from an American tin plate equal to any ever made in Europe."

Canada has free trade in tin plates, and therefore has not, and will not have, a tin plate industry.

AS TO STEARINE.

A few days ago when the House went into Committee on Ways and Means, Hon. Mr. Foster asked that the item of stearine be taken up for consideration. He stated that when he first brought down the tariff resolution on March 27, he had proposed to change stearine from 3 cents per pound to 20 per cent. ad valorem, since which time he had found that there was a factory in Montreal for the manufacture of stearine, and he had given notice of an amendment placing the duty at 2 cents per pound, which amendment he then moved.

And thereby suspends a narrative. Mr. Foster intimated the facts very clearly regarding stearine. Until very recently the article has never been made in Canada, and for years Canadian tanners have imported vast quantities of it for the manufacture of leather, paying duty thereon at the rate of 3 cents per pound until a few months ago, when it was placed in the free list. The tanning industry of Canada is one of the greatest importance, supplying not only the home market, but sending much leather to foreign markets. Stearine and degras are essential in the manufacture of leather for export, the strongest competition our tanner have to face in European markets coming from Americans tanners. About all the stearine used in Canada is produced in the United States, and it may be therefore clearly seen that in selling their leather abroad in competition with the American tanners, Canadian tanners were handicapped to the extent of the duty paid upon stearine. This fact has been brought to the attention of Mr. Foster time and time again, and he is well aware that he was imposing an entirely unnecessary burden upon a large industry by maintaining the duty on stearine and degras. After repeated solicitation in the matter these requests were complied with to the extent of placing degras in the free list by an Order in Council, dated October 13, 1892. The tanners had every reason to hope that stearine would, in the new tariff, be placed in the free list, and kept there, but it seems that although, as Mr. Foster says, the duty was placed at 20 per cent. ad valorem, he has since discovered that some concern in Montreal has embarked in the manufacture of it, and up it goes again to 2 cents per pound.

It may be interesting in this connection to know the quantities and value of tanners' greases imported into Canada within the past four years, and the duty paid thereon. These facts are as follows:

	Quantity.	Value.	Duty.
1890 lbs.	239,229	$15,844	$ 7,176.21
1891 "	753,854	50,275	22,615.61
1892 "	733,873	48,776	22,016.20
1893 "	452,916	38,935	13,590.51
1893 "	30,846	2,433	Duty free.

Thus the quantity imported in the 4 years was 2,179,872 pounds valued at $153,830, or 7 cents per pound, upon which $65,398, duty was paid—3 cents per pound, equivalent to an ad valorem duty of 43 per cent.

We have stated that Canadian tanners export large quantities of leather. Without reference to boots and shoes and other manufactures of leather, these exports of harness and saddlery leather, and sole and upper leather were valued as follows:

1890	$ 735,208
1891	879,784
1892	1,018,969
1893	895,091
Total	$3,529,052

All, or nearly all of the more than 2,000,000 pounds of stearine imported by the tanners during the years named was consumed in the manufacture of the leather exported during the same years, and the industry was most assuredly handicapped to the extent of the $65,398 duty paid.

We do not know whether the Montreal stearine factory, so recently discovered by Mr. Foster, has capacity to supply the demand of the tanners for the article, but it is very noticeable that within a very few days after this discovery a very material alteration in the tariff was made in favor of it, in entire disregard of the interests of the tanners who have been striving for so many years to have this burden lifted from their shoulders. If Mr. Foster's new Montreal discovery is a bona fide concern it is entitled to fair tariff protection; but in our opinion the Canadian tanning industry, which not only supplies the home market, but also exports nearly a million dollars a year, is entitled to some consideration at the hands of the Government.

TARIFF CHANGES.

Since our last issue the following changes have been made in the tariff:—

On all iron and steel bars, rods, strips, or steel sheets of whatever shape, and on all iron or steel bars of irregular shape or section, cold rolled, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid one-sixth of one cent per pound in addition to the rates imposed on the said material.

Forgings of iron and steel of whatever shape or size or in whatever stage of manufacture, not elsewhere specified, thirty-five per cent ad valorem, but not less than $15 per ton.

Rolled iron or steel angles, channels, structural shapes and special sections, weighing less than thirty-five pounds per lineal yard, not elsewhere specified, thirty-five per cent ad valorem, but not less than $10 per ton.

Iron bridges and structural iron work, thirty per cent ad valorem, but not less than one cent per pound.

Railway fish plates and tie plates ten dollars per ton.

Axles, springs and parts thereof, axle bars, and axle blanks of iron or steel for railway or tramway vehicles, $20 per ton, but not less than thirty-five per cent.

Axles, springs and parts thereof, axle bars and axle blanks of iron or steel, not elsewhere specified, one cent per pound and twenty per cent ad valorem.

Wire nails, one cent per pound.

Cut tacks, brads or sprigs, not exceeding sixteen ounces to the thousand, one and one-half cents per thousand; exceeding sixteen ounces to the thousand, one and one-half cents per pound.

Wrought iron or steel nuts and washers, iron or steel rivets, bolts with or without threads, nut and bolt blanks, less than three-eighths of an inch in diameter, one cent per pound and twenty-five per cent ad valorem.

Brass and copper nails, rivets and burrs, and manufactures of brass or copper not elsewhere specified, thirty per cent ad valorem.

Lead pipe and lead shot, four-tenths of a cent per pound and twenty-five per cent ad valorem.

Enamelled iron or steel ware, including granite or agate ware, thirty-five per cent ad valorem.

Telephone and telegraph instruments; telegraph, telephone and electric light cables; electric and galvanic batteries, electric motors and electric apparatus not elsewhere specified, twenty-five per cent ad valorem.

Chrome steel, fifteen er cent ad valorem.

Copper wire, fifteen per cent ad valorem.

Wire cloth, n.e.s., thirty per cent ad valorem.

Cases for jewels, watches, silverware, platedware, cutlery and other like articles, five cents each and thirty per cent ad valorem.

Wood pulp, twenty-five per cent ad valorem.

Emery wheels, twenty-five per cent ad valorem.

SOCIAL CONDITIONS OF LABOR.

If there are any lessons to be learned in the disturbed and threatening conditions of social and economic problems existing in the United States, with its Coxey movements and other evidences of industrial discontent, we should endeavor to discover what they are, and what remedies should be applied. The Textile World believes that the next great move of the Republican party in the United States should be the persistent advocacy, as one of its fundamental principles, of the nationalization of all laws pertaining to labor, and the gradual approach by fixed and specified stages to 48 hours per week as the standard of labor in manufacturing and other establishments, which are now counted under the provisions of labor laws generally.

It says that with the radical improvements which have been made in all lines of manufacture, and the introduction of machines which will do the work of from two to one hundred men, and in many cases even more, it would at first thought seem that the field of labor must of necessity become more and more restricted.

Looking at this matter on the surface only, the ancient machine smashers in England were not only justified in their work, but were patriots and humanitarians. Looking at it more deeply, however, and in the light of experience, we find that while all progress marches over more or less dead men's bones, and that it is naturally unfortunate for the people who furnish the bones, still the fact has been demonstrated beyond the possibility of dispute that the nation possessing the largest amount of improved machinery gives to its people more employment and at better pay than those countries where machinery is either comparatively unknown or very slightly in use.

In the good old days when good mechanics worked from 12 to 15 hours per day, and one was considered almost a prince to have such luxuries as carpets and pianos, we all know from the experience of those who can recall the times that not only were wages very low in purchasing power but also work was very scarce, and wages were paid at the convenience of the employer, or without any particular regularity, quarterly, semi-annually, or annual settlements being considered about the proper thing.

We make mention of these facts in connection with the present wonderful development of mechanical matters, to bring out more forcibly the social conditions which now confront us, and past experience on the social problems which must shortly be solved.

We are in the height of the mechanical epoch of improvement, have just entered the electric, and also are making advances in the line of chemical developments. We believe the next great step forward in human progress will be in the line of greater improvement in the social conditions of working people.

Were we to continue the former practice of 12 and 14 hours per day of labor, with our present methods of production, it would seem that the number of unemployed would be very greatly increased, and also that with the progress which is being made, the present day of ten hours is becoming, and in fact is, at present obsolete.

From a manufacturer's standpoint the greatest point for consideration is that the state of the market shall be such as to absorb goods at a profit, and a large amount of unemployed labor so greatly restricts the market, from their inability to purchase, that purely from a business motive only, the great problem is to increase the area of employment.

From the humane standpoint, the intense suffering caused by lack of employment, which not only causes privation to the parties interested but also absorbs the incomes of those who are not too heartless to have any sympathy for their fellow mortals, is a thing which should be remedied on business principles as far as possible.

Shipping and mail facilities are now such that it is impossible for one state to adopt a more humane, civilized and enlightened policy than its rivals, unless they desire to kill their manufacturing interests, and thus produce idleness, as compared with comfortable employment.

This applies not only to minor states but to nations, unless artificial barriers are interposed, and should any state attempt to bring its hours of labor to a materially less number per week than its rivals, we should instantly perceive where the state rights of other states in failing to take similar action becomes not only state wrongs to humanity, but positive clogs to civilization.

Our contemporary has previously advocated national legislation on all labor matters that enter directly into the element of competition between manufacturers or producers in different states. It is its belief that the party which consistently favors the protective principle for national industries should also still further perfect protection to labor direct, as regards immigration, etc., and still more that uniform conditions should be brought about in all sec-

tions of the country as far as possible, by judicious legislation.

The Democratic party, favoring free trade, naturally would erect no barriers between the product of foreign labor and the product of home labor, hence home labor must compete on a foreign basis. They also favor the idea of extreme state rights, in other words, that every state should be a law unto itself, forgetting that a state is only a small portion of the nation, and that separated from the nation itself it would be comparatively insignificant.

Under the extreme state rights theory, it is perfectly consistent to expect that a state having less enlightenment and less manufacturing interests than another, would feel that it must take the easiest and most apparent method of securing industries, and while other states were legislating as far as possible to favor labor, some of the less enlightened states could very radically leave their labor question to be settled entirely by individual greed and local conditions.

Without uniformity of laws on the question of hours of labor, it sees no prospect of attaining a rapid but gradual reduction in the hours per week, or per day from the reasons stated. Even with uniform and national legislation on these questions, it sees no chance to improve the condition of labor if any reduction is made in the artificial barrier of protective tariff which stands between American producers and the producers of foreign countries.

EDITORIAL NOTES.

A few days ago a deputation from the Hardware Association, of Montreal, waited upon the Minister of Finance and the Controller of Customs with reference to the classification of hardware for duty. They contended strongly that duties on hardware should be simplified by grouping certain articles under one heading, or, if the present system is to be maintained, that the tariff should specify every article with duty against it, so that the appraisers at the various ports would have a uniform code to work upon. It is this sort of thing that emphasizes the fact that idiots are devoid of intelligence. It is one thing to prefer a request that it might be possible to comply with, but quite another thing to ask for a practical impossibility. For instance, we have before us a catalogue of the Hobbs Hardware Company, a volume about as large as a Webster's Unabridged Dictionary, which contains more than 1,100 pages, each page having reference to from a score to a hundred different articles of hardware; and yet the Montreal Hardware Association ask the Government to specify in the tariff every article of hardware made, with the duty against it. What possible influence can such men hope to have with the Ministers when they make such absurd requests?

The Toronto Railway Company, who operate the electric street railway system of Toronto, and who have taken over and operate the Toronto and Mimico electric railway, extending about seven miles beyond the western limits of Toronto, are losing no time in extending this latter road to Oakville, the probability being that Hamilton will be reached at a later date. The fare will be placed at a very low figure, and fruit, milk and other farm produce will be carried at prices greatly reduced from what is now charged on the Grand Trunk Railway.

The electric railroad between Newark and Jersey City, N.J., has been opened and regular trips with a 10 minutes' schedule begun. The cars run until 1.15 o'clock at night, the last car leaving the Jersey City ferry at that time. The company have completed arrangements by which the round trip from Newark to New York will be made for 20 cents, which is five cents cheaper than the present excursion rate on the railroads.

Ten thousand dollars was lost in the operation of the binder twine factory at the Central Prison, Toronto, last year, and yet prison twine did not sell any cheaper than the goods turned out of the regular factories. Without any wages to pay, the prison plant lost this large sum of money, and that without reducing the price of twine below the price fixed by the combined factories, which gave employment to a large number of persons at regular wages. When the prison factory lost money, with no wages to pay, it would look as though binder twine sold last season on a very small margin, and evidently this was the case. It is, therefore, not likely that the small duty on twine will have any influence in increasing the price. The government recognizes the principle that prison-made goods should not come into competition with honest labor, for the customs act prohibits the importation of goods manufactured wholly or in part by prison labor. It seems, therefore, peculiar that this principle should be violated by the establishment of such competition at home. So far as the home industry is concerned it matters not whether the competition comes from foreign or home-manufactured prison goods.—Winnipeg Commercial.

This is an episode in a reprehensible affair in which the Ontario Government and the Dominion Government are both concerned. A great hue and cry was raised against the manufacturers of binder twine in which much dust was raised because the industry was in the hands of a syndicate. It was claimed that prices were higher than they should be; and in obedience to a foolish and unreasoning clamor, the duty upon binder twine was reduced from 25 per cent. to 12½ per cent. The Ontario Government, with a desire to make favor with the farmers, introduced machinery into the Central Prison, andembarked actively in the manufacture of binder twine, with the result above shown. The Dominion Government, not to be outdone in this direction, are also introducing binder twine machinery into the Kingston Penitentiary; and thus both governments are utilizing convict labor in competition with free labor in the production of this essential article. It is certain that the binder twine private enterprise does not sell its product at a loss while the Ontario prison management does; and it is equally certain that every day's work of prison labor expended in the business is a day's work of which honest free labor is deprived. This is a burning shame for which those interested should be severely censured. At a time when an industrial and commercial panic is convulsing and distressing the whole world, and when honest labor finds it exceedingly difficult to obtain employment, we observe the Ontario and the Dominion Governments both actively engaged in a manufacturing industry with convict labor which deprives honest Canadian labor of a means of support. Shame!

The Manchester, Eng., Textile Mercury says :--

Canada, with its small population of five millions, is actually the largest foreign buyer of carpets we possess. During the March quarter our exports amounted in value to over £89,000. To illustrate the importance of the Canadian market in a more forcible manner we may state that during the March quarter we shipped to the five millions of people inhabiting the Dominion nearly £10,000 more goods than to the 160 millions of people inhabiting Germany, Holland, Belgium, France, Spain, and the United States combined.

This tells well for the trade between Canada and the Mother Country, and ought to be quite as gratifying to Canadian free trader as to the British carpet manufacturer. At the same time it indicates an anomaly in our tariff that Mr. Foster would do well to remedy without delay. Our Canadian carpet manufacturing industry is in the hands of active, energetic and experienced men who would make it an unbounded success if adequate tariff protection were thrown around it. The fact, as the Textile Mercury shows, that the 5,000,000 people of Canada consume £10,000 more British carpet than the 160,000,000 people of Germany, Holland, Belgium, France, Spain and the United States combined, reflects no credit whatever upon our tariff system as applied to carpets. Under our new tariff the duty upon carpet is reduced, making it more difficult than ever for our carpet manufacturers to battle against the adverse tide that besets them; and the Government in this respect, as in many others, seem to have forgotten all about the principles of the National Policy upon which they were elected, and which, upon the hustings, they promised so faithfully to uphold.

Why can't American carbon manufacturers compete with their French and German brethren in making a cored carbon? There is a large and growing market for an American cored carbon that is satisfactory and which must now be supplied with the imported article. Electrical Review.

The same question and the same fact applies also to Canada. Why can't Canadian manufacturers make as good cored carbon as the French and German article?

A few days ago the Montreal Star condemned the new tariff as applied to imported books, which brought forth a letter to that paper from Messrs. John Lovell & Son, the well-known publishers of that city, in which they say:

In a recent editorial in the Star you condemn the new specific duty of 6 cents a pound on books. The article states that such a duty is in favor of the rich as against the poor. On the contrary, the 6c. a lb. duty will enable the man of moderate means to occasionally indulge in an expensive book, as the new duty will so reduce the price as to bring it within his means. How much will the new duty be on, will we say, the 50 cent novel? About 3 cents a book. Who will pay this duty? Not the reader, but the retail bookseller. It will be a matter of cutting down his profit on the book about 1½ cents. No new novel is likely to be issued at less than 50 cents, as the author is now being paid for his work, since international copyright took effect, and the bookseller will not advance the price beyond the one fixed by the publisher. The change of duty, together with the fact that electrotypes of books can now come in free of duty, will help the Canadian publisher in his efforts to produce the books in this country. The publishing interest has so far had no encouragement given it. The raw material which it requires has been heavily taxed and the printed book has come in at a 15 per cent. duty. The country has been flooded with cheap and

objectionable books brought in at a valuation of from 50 per cent. to 60 per cent discount on the retail price. Give the Canadian publisher a fair measure of protection by keeping out a part of the stocks of cheap books that have been imported and he will engage that the Canadian reader will be given the latest and best of the new books in a readable form at the same price he is now paying for them. The Star should not abandon its policy of a moderate protection, and in writing against the new tariff on books is making a mountain out of a mole hill. We believe that a specific duty is the only one that meets the call as far as books are concerned.

A correspondent of the American Machinist sends that journal an account of a very disastrous and inexcusable explosion of the boiler of a portable engine which occurred in the vicinity of Pittsfield, Ill., on April 4. The engine was a 12 horse-power traction, and was being used at the time by Samuel Oliphant and his son in running a saw-mill. For some unknown reason they had screwed the safety valve down until it was inoperative and had then raised the water two gauges, put in a fire, and left the engine to itself while they were making some adjustments about the mill. They ounger Mr. Oliphant then approached the engine, and as he did so an explosion took place which utterly demolished the engine, leaving no part of it upon the ground where it had stood, and throwing heavy pieces hundreds of yards. The younger Mr. Oliphant was instantly killed, and other men about the mill were injured. The boiler and engine were said to have been in a generally bad condition, having five top stay bolts gone; these being replaced with common half-inch stay bolts with washers and gaskets on them to make them steam tight. At the inquest Samuel Oliphant stated that they had carried 150 to 160 pounds pressure all day, and how much more there was at the time of the explosion he did not know, as the safety valve was screwed down and the gauge was an old one that would register to 180 pounds. The verdict of the coroner's jury was that the explosion was the result of an unsafe boiler with inexperienced men in charge of it. And still there are those who fail to see any necessity of a law to prevent incompetent men from having charge of steam engines.

Alluding to the fact that the contract for the erection of the blast furnace at Hamilton had been let and that it would be finished and in operation by the end of the present year, the Spectator says:—

The blast furnace will be the child of protection. Without the encouragement afforded by a protective duty it would not be built; without that encouragement it will not continue to be operative. Indeed, with the duty and the bounty, there was a doubt about the matter. But the new tariff permits the free import of coke and machinery for blast furnaces, and this additional concession has finally encouraged the company to go on.

Only half right. The duty and the bounty have both been operative for several years, and of themselves would never have been a sufficient inducement for the erection of the Hamilton furnace; and the additional inducements of free coke and machinery would not have availed if a higher duty had not been imposed upon scrap iron. There are rolling mills now in operation in Hamilton which are large *consumers of scrap iron, and which would never puddle* a ton of pig iron even if the Hamilton blast furnace had thousands of tons of it for sale, as long as the duty upon scrap remained at $2 per ton; and it is safe to say that the Hamilton blast furnace "child of protection" would never have been born if the duty upon scrap had not been increased.

By a recent re-arrangement of the staff of the CANADIAN MANUFACTURER J. C. Gardner has become managing *director of that journal. Mr. Gardner has for some time* devoted himself to the outside work of the paper, and by his industry proved himself well worthy of promotion. Mr. Gardner, among other qualifications, is an experienced bicyclist and has got more than one extra contract by the use of the treadle. His friends will rejoice in his prosperity.—Canadian Engineer.

Yes, John gets there.

Sunday bicyclists in England have become a vast army.

Lord William Cecil, rector of Hatfield, proposes to bring the church into direct relations to this new class of the population. As an inducement to 'cyclists to visit his church, he has provided special seats for their use with due equipment of prayer and hymn books, and made arrangements whereby all their machines will be kept under lock and key while the riders are at devotions. Notices to this effect have been posted at all inns. Lord Cecil is the second son of Lord Salisbury.

Mr. Thomas Long, of Toronto, and about a dozen members of Parliament had an interview with Sir John Thompson a few days ago and made out a strong case for the reimposition of the export duty on logs. It was pointed out that 500,000,000 feet of timber was being annually taken from the Georgian Bay to Michigan to be sawn in the mills there, while scores of mills in Canada were standing idle. A strong case was made out for a reversion to the old policy.

The Ottawa Journal, a publication made up chiefly of boiler plate and patent medicine advertisements, had an original article the other day. It was in reply to some remarks in The Times on the question of the duty on boiler plate, and as the article is somewhat abusive, it is quoted in full with evident relish by the St. John Globe and the Moncton Transcript. The Ottawa publication to the contrary notwithstanding The Times is still of the opinion that no great injustice is done to the mass of the people in this country by the imposition of a considerable duty on stereotype plates and patent medicines, a reduction in which was asked for by a number of newspaper proprietors. The effect of the duty on patent medicines has been to force the leading makers in the United States to establish branch factories in Canada, and factories for the manufacture of plate matter have also been established in this country. This is manifestly in the public interest and not otherwise, for while the Canadian made plates may be somewhat higher in price, the selection of matter is, for obvious reasons, much better suited to Canadian readers. Much of the plate matter that is supplied to Canadian newspapers by makers in the United States is un-Canadian in tone, much of it is quite as trashy as the dime novels which come from the same country while the illustrations are as a rule simply hideous and nasty. The St. John Globe complains that it has paid $1.67 duty on one dollars' worth of the plates. Well, if the Globe's plate matter is no better than that supplied to some other newspapers the duty is none too high, and it would be better, perhaps, if it were altogether prohibitory. If the use of the plates is necessary, it is certainly not too much to expect that the matter should be Canadian in tone and that Canadian readers should not be supplied with matter especially prepared for the tastes of readers in the United States. Moncton, N.B., Times.

A press telegram from Pittsburg, Penn., says :—

Eleven tanning establishments in Allegheny City are preparing to shut down, and 600 employes will be added to the army of the local unemployed. This action is in pursuance of a plan recently developed by the members of the Tanners' Trust, the object being to enable the companies to work off surplus stock, while at the same time stimulating the demand for their product.

The Trust alluded to control almost the entire leather output of the United States, and with any material lowering of the Canadian tariff our market would be swamped with American leather and our tanners driven to the wall. With a lower duty on leather, and a high duty on stearine, Mr. Foster is playing directly into the hands of the American Tanners' Trust.

Judge Caldwell's decision in the matter of the proposed reduction of wages on the Union Pacific Railroad is hailed with delight by the employes of the road. When boiled down the decision seems to mean simply that a plain contract or agreement entered into between a railroad company and its employes must be lived up to, and that this particular one at any rate is binding upon the receivers of the road. We do not understand that the decision means that no reduction of wages can be made, but simply that no such reduction can be made arbitrarily, without notice or conference, or without regard to the agreement previously entered into between the company and its employes. The receivers of the road seem to have taken the view that all that was necessary to bring about a reduction of wages was their dictum, regardless of agreements. This did not seem to be good in ethics, and it now proves not to be good in law, a decision which will go far, we think, in in-

creasing respect for law on both sides, and will help in the settlement of future wage controversies. Some surprise has been manifested, it seems, by one of the receivers that the court did not order the restoration of the wages of unorganized employes as well as the organized ones. But if the whole matter rests upon a written contract, and the employes have no ground for contention outside of the terms of that contract, how can the court extend its decision to cover the affairs of men who were in no way parties to it? The question decided was not whether wages ought or ought not to be reduced, per se, but whether or not an agreement made between the company, and certain of its employes, should be lived up to by the receivers.—American Machinist.

There are only three industries in the United States that have a greater amount of capital invested than has been put into the business of manufacturing implements and vehicles. Iron and steel leads with $373,478,018; cotton goods comes next with $354,020,843; gas, illuminating and heating being third with $258,771,795. The implement and vehicle trades have the fourth place with $249,524,499. The implement business alone represents a capital of $145,314,997 and is the tenth greatest industry. —Reifsinder's Farm Machinery.

A few days ago the New York Iron Age contained a notice of a large special and unreserved sale of enameled ware, to occur in that city, when by order of the St. Louis Stamping Company several thousand cases of enameled granite ware seconds would be disposed of. Of course these inferior goods not being saleable to American consumers, will be disposed of at exceedingly low prices for export—to Canada, for no other market is open to them. At the sacrifice prices at which they will be sold even our 35 per cent. duty will not keep them out of the country. Housefurnishing stores are glutted already with such goods, sold at prices which interfere most seriously with the production of similar first-class goods in Canada.

Mr. Vanasse has received his commission as shipping master, and has been sworn in. The Government has had its own way, but it has encountered for the first time in many years the vigorous condemnation of the Montreal Board of Trade. And the fact that the meeting at which the censure was passed was composed largely of men who are in sympathy with the Government upon its general policy is conclusive evidence of the importance which those men attached to the rejection of their counsels.—Montreal Herald.

This "vigorous condemnation" is further explained by the following telegraphic report in the Toronto Globe:

The Board of Trade has been snubbed by Sir Hibbert Tupper for daring to interfere with the appointment of Mr. Fabien Vanasse, ex-M.PP., to the position of shipping master. In reply to the resolution urging the Government to re-consider its decision, the Minister writes that he is "at a loss to understand the ground of the objection of the board, and therefore unable to bring to the notice of his Excellency in Council the subject of the Board's complaint. Mr. Vanasse has been appointed to the position of shipping master at the port of Montreal, and cannot be removed from that office unless it be made to appear that he

is incompetent to discharge the duties of the office properly, or has been guilty of misconduct while in office."

This sort of protest and condemnation on the part of the Boards of Trade of Montreal and Toronto have become quite monotonous and undignified, and are on a level with the action of the Montreal Hardware Association who a few days ago asked the Government that the tariff on hardware should specify every article of hardware made, with the duty against it, so that the appraisers at the various ports would have a uniform code to work upon. It is also upon a level with the action of the Toronto Board of Trade who, having quite recently urged the Government to legislate in favor of the Canadian iron industry, at the suggestion of the manufacturers of agricultural implements, established a Manufacturers' Section of the Board who were authorized to send a deputation to Ottawa to ask the Government to place pig iron, bar iron and steel in the list of non-dutiable articles. Time was when the recommendations and suggestions of these Boards of Trade had weight and influence with the Government, but if they continue the childish course they are pursuing, their "vigorous condemnations" will be worthy of about as much consideration as the resolutions of a back concession debating club.

Mr. Samuel May, President of the Dodge Wood Split Pulley Co., Toronto, sailed for Europe on Wednesday of last week per S. S. Britanic. Mr. May's visit across the water was necessitated by the rapid growth of his company's export trade throughout Europe, the Dodge patent wood split pulley now being in use and carried by dealers the world over.

Messrs. Spon & Chamberlain, publishers and importers of scientific books, 12 Courtlandt street, New York, have sent us one of their series of exceedingly practical handbooks on engines and boilers entitled "How to run Engines and Boilers," being practical instructions for young engineers and steam users, by Egbert Pomeroy Watson; E. & F. N. Spon, 125 Strand, London, Eng., price 3s. 6d. This is a very nicely bound volume of 125 pp. of size convenient to be carried in the pocket, containing eighteen chapters of instructions and suggestions that cannot but be of great value to any who may be interested in the use of steam. The author, who is a practical and experienced engineer, thoroughly posted in his business, very sensibly avoids the use of words and language not perfectly comprehensible to any person of ordinary intellect; and herein consists much of the value of the book. The references in the book are to the care and management of the boiler and its fittings and connections; a comprehensive description of the different parts of the engine, their functions, etc. This valuable book may be obtained either from the publishers, or through any bookseller.

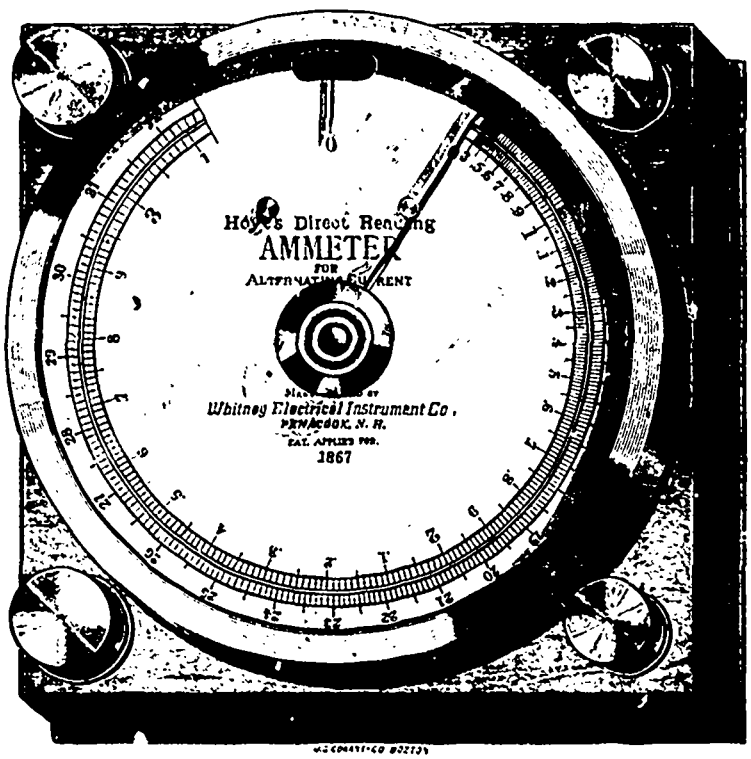
Outing for May, is, as usual, seasonable and beautifully illustrated. The contents are as follows: "Sketching among the Crow Indians;" "Sharp Time on the Mattawa," by S. C. Kendall; "The Mail Carrier's Daughter," by Jessie F. O'Donnell; "An Angler's Dilemma;" by G. C. Audsley; "Spring Snipe Shooting," by Ed. W. Sandys; "A Parisian Fishing Ground," by R. F. Hemenway; "A Plea for Association Football," by S. J. Watts; "Afoot in the Hartz," by W. H. Hotchkiss; "Lenz's World Tour Awheel;" "A May Day's Trouting," by H. P. Beach; "The Club Cup," by W. E. Baldwin; "Combination Rowing and Sailing Boats," by Capt. A. J. Kenealy; "A Memory of Mountain Trout," by R. L. Warner; "Touring in Europe on Next to Nothing," by J. P. Worden; "The Michigan National Guard," by Capt. C. B. Hall, and the usual editorials, poems, records, etc.

Godey's Magazine for May is attractive inside and out. Frederick W. Seward contributes part two of Seward's West India Cruise, profusely illustrated. There are two other illustrated articles on "Bermuda's Sunny Isles," by Mary E. Child, and Capri, by J. Howe Adams. The short stories and special articles are, "The Heavenly Twins," by Julia Magruder; a "Patron of the Arts," by Melville Upton; "Strayed from the Fold," by Lillian A North; "Entirely by Rail," by Minnette Slayback Carper, and "Physical Culture Necessary for Brain Workers," by Wilton Tournier. The poems are by Will Carleton, Mel R. Colquitt, Lee C. Harby, Ernest N. Bagg, Nancy Mann Waddle, Rosalie M. Jonas and others. The departments are more complete and better than ever.

The New Whitney Alternating Current Ammeters.

It has heretofore been impossible to measure accurately the amperes of an alternating current of electricity without using elaborate and delicate instruments, requiring skill for their manipulation and mathematical calculations to interpret their readings. Such instruments are, furthermore, not suitable for practical use, as they are more or less affected by the proximity of iron as well as by the slightest vibration.

The demand for commercial instruments of this class is filled by the new alternating current ammeters of the Whitney Electrical Instrument Co., of Sherbrooke, P. Q., which are illustrated by the accompanying cut. These instruments are the invention of Dr. A. H. Hoyt, the electrician and general manager of the Whitney Co., and possess a number of novel features. They are direct reading with practically uniform scale divisions, and are guaranteed to be absolutely accurate. As an example of their delicacy, one of the instruments, reading from zero to 30 amperes, has two scales, one of which reads down to 1/100 of an ampere and the other down to milliamperes. Notwithstanding this extreme delicacy, the instruments are portable and adapted for commercial use, as they are not affected appreciably by iron nor by slight vibration.



Another valuable feature of these instruments, as well as of the alternating current voltmeters of the Whitney Co., is that the accuracy of the readings is not affected by variations in the frequency of the alterations of the current. They may thus be used on any alternating current with the certainty that the readings are correct.

Competition is now so keen, and the prices for electric lighting so low, that it is of the greatest importance for central station managers to be able to measure for themselves the current taken by incandescent lamps in order to ascertain whether they are using the most economical lamp for their purpose. For making such measurements, as well as for checking the accuracy of electric meters, the Whitney instruments are specially adapted.

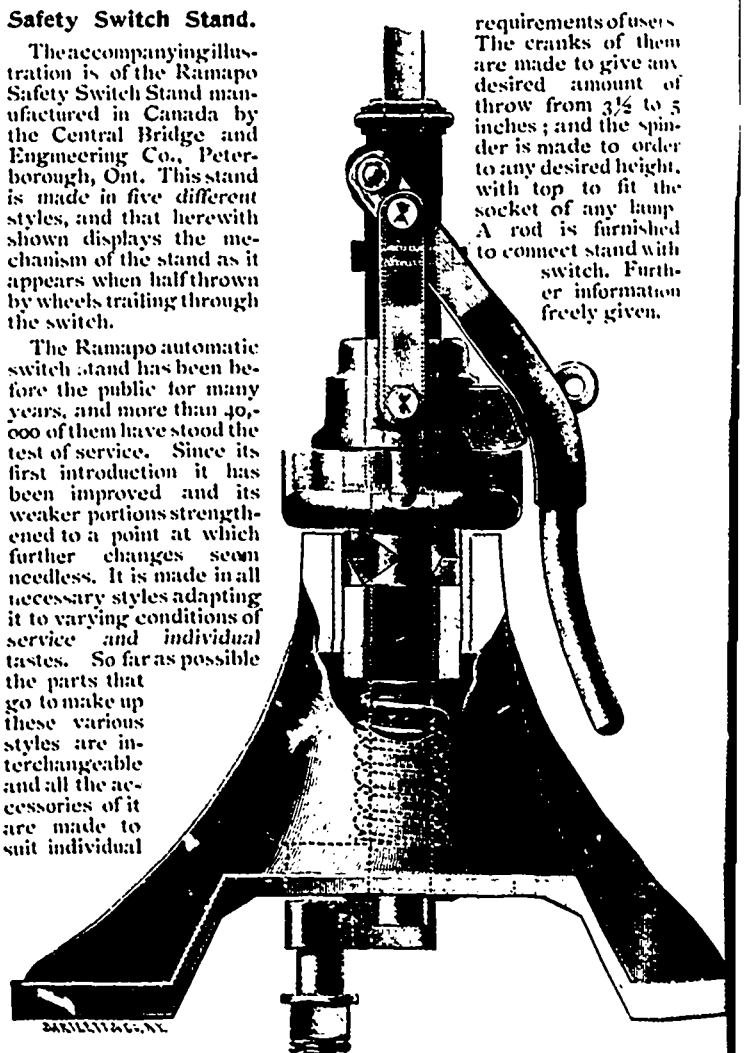
With all their good qualities and excellence of their manufacture, the Whitney instruments are sold at a reasonable price so as to be within the reach of all.

The May number of The Canadian Magazine is, in the variety and interest of its articles, among the best of the monthlies, and the illustrations are numerous and excellent. "With two Canadians in Algeria," is the title of an illustrated article by Alan Sullivan. "A Sun Dance Among the Sarcees," by A. C. Shaw, is illustrated by drawings by A. H. H. Heming. Wm. Ogilvie, F. R. G. S., continues his interesting illustrated story of travel and exploration "In Northwestern Wilds." A remarkable article is Rev. W. S. Blackstock's "Ghosts of the Living and of the Dead," the writer presenting much reasoning and many incidents to prove the probability that ghosts do appear, and ghosts not only of departed persons but of the living also. The weird is dealt within E. E. Biggar's article "Memories of Bathurst," and Thos. E. Champion's "Popular Superstitions." In excellent vein is the article on "The Comic Ballads of Homer," by Thos. Hodgins, Q. C. Other interesting articles are "Thomas McIlwraith, the Canadian Ornithologist," by J. M. Le Moine; "A Public School Triumph," by David Boyle; "The First Plantation in Newfoundland," by J. F. Morris Fawcett; and "The Canadian Royal Academy of Arts," by Harriet Ford. "Narcisse's Friend" is a charming illustrated story of Quebec, by Clifford Smith. The Canadian Magazine announces that amongst early contributors will be Her Excellency, the Countess of Aberdeen, and several of the most prominent public men of Canada. The Ontario Publishing Co., Ltd., Toronto. $2.50 per annum.

Safety Switch Stand.

The accompanying illustration is of the Ramapo Safety Switch Stand manufactured in Canada by the Central Bridge and Engineering Co., Peterborough, Ont. This stand is made in five different styles, and that herewith shown displays the mechanism of the stand as it appears when half thrown by wheels trailing through the switch.

The Ramapo automatic switch stand has been before the public for many years, and more than 40,000 of them have stood the test of service. Since its first introduction it has been improved and its weaker portions strengthened to a point at which further changes seem needless. It is made in all necessary styles adapting it to varying conditions of service and individual tastes. So far as possible the parts that go to make up these various styles are interchangeable and all the accessories of it are made to suit individual requirements of users. The cranks of them are made to give any desired amount of throw from 3½ to 5 inches; and the spindle is made to order to any desired height, with top to fit the socket of any lamp. A rod is furnished to connect stand with switch. Further information freely given.



A New Electric Switch.

We herewith illustrate one of the latest improvements in the line of electric switches by the W. S. Hill Electric Co., letters patent for which have just been issued.

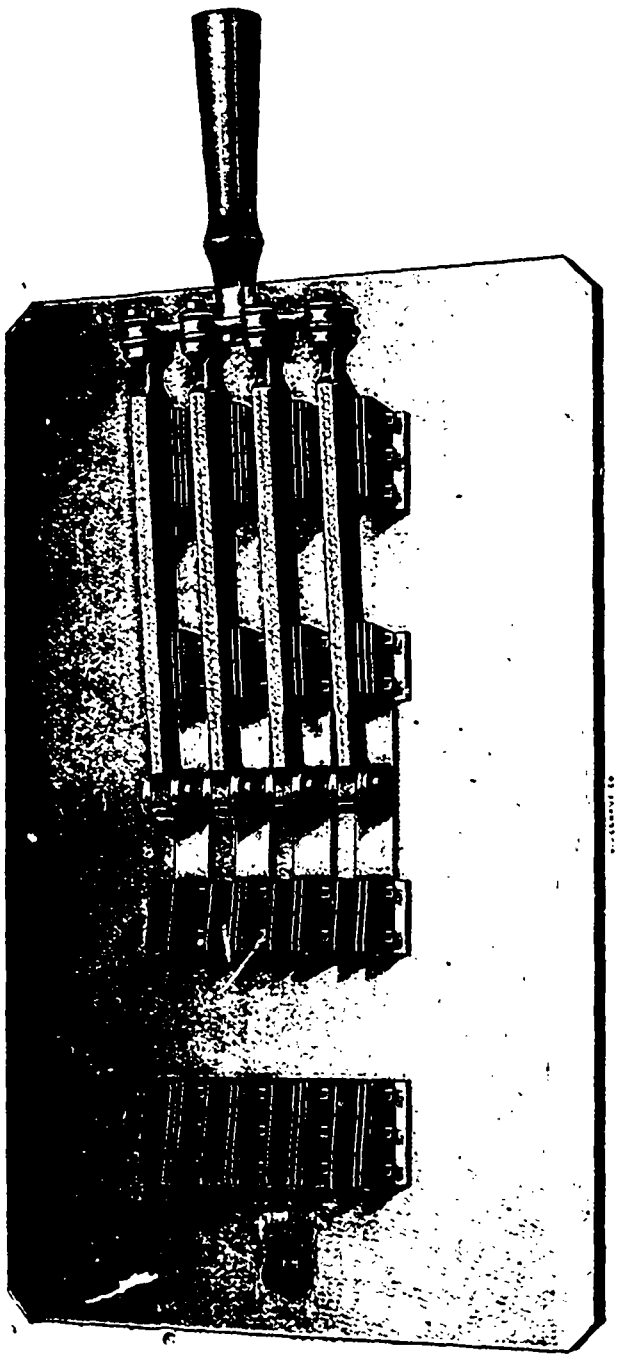
The first feature in the invention is the manner in which the two or more blades are secured to the yoke so as to obtain rigidity; and keep all of the blades in proper alignment while the switch is being operated.

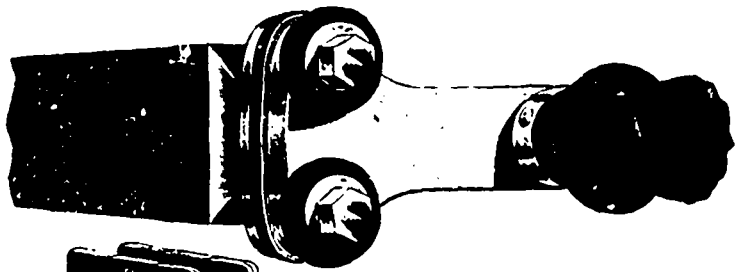
By the old method of securing the blades to the yoke, (to which the handle is attached), by a single bolt or screw in each blade, there was nothing to prevent the twisting of the blades, thus allowing one to move in advance of the other, and as the two or more poles would not break in unison, excessive flashing would result.

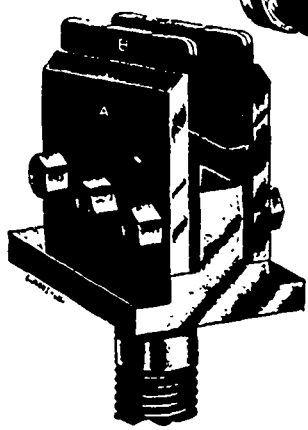
To overcome this defect and produce a more mechanical and substantial device, the outer ends of the blades and yoke have been broadened, and two screws or bolts inserted, thus securing the parts so rigidly that the blades must at all times move in unison, and all the blades leave the contacts at the same instant.

The second feature consists in backing up the regular flexible contacts B. by what they term the "reinforcing plates," A.

It has heretofore been the custom to use nothing but the copper strips B., and these of a necessity being flexible were liable to spring apart by constant usage, thus impairing the contact and causing the parts to heat.







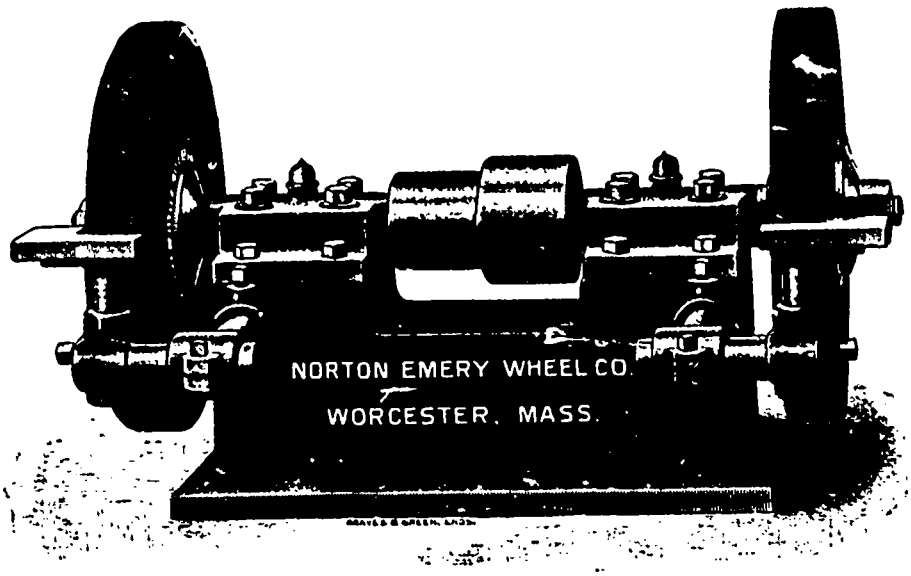
By the method shown the flexibility is maintained, and on account of the reinforcing plates the flexible contacts are always held in proper position, consequently the electrical connection between blade and contact is always kept perfect.

It will also be seen that the carrying capacity of the flexible copper plates B. are increased by the reinforcing plate A. to the maximum of any other part of the circuit, preventing loss of current in the switch, and heating and destruction of its contacts.

Hundreds of these switches are now in use, and the value of the above inventions are becoming more and more apparent as the test of time is applied.

The switches are manufactured by the W.S. Hill Electric Company, 133 Oliver street, Boston, Mass., who will take pleasure in giving all information on application.

A French electrician applies an incandescent lamp to catching fish. A net is sunk in the water, with an electric lamp attached, and the fish collect to bask in the rays of the new illuminant. Round the edge of the net is a pneumatic tire, which is silently inflated and rises to the surface while the fish are wondering whether the brilliant glass bulb is a new kind of luminous jelly fish. M. Trouve's ingenious idea seems hardly sportsmanlike, but it at least avoids frightening the fish and destroying the spawn—the chief drawbacks to net fishing.—London Lightning.



Emery Goods and Grinding Machinery.

The Norton Emery Wheel Co., Worcester, Mass., have sent us their new illustrated catalogue and price list, having reference to the emery goods and grinding machinery manufactured by them. These goods include wheels, bricks, rub and sharpening stones, cylinder and cup wheels, etc.; and cuts and descriptions of a full line of emery wheel machinery are given.

Regarding the construction of these goods we are told that only the purest emery and corundum is used, and the following advantages are claimed for them:

The wheels being put together without pressure, their texture is porous and open, ensuring the freest cutting properties.

The bond which holds the wheel together has abrasive properties, so that every particle of the wheel cuts, and there is no waste material to clog or interfere with its work.

They are waterproof, having passed through a white heat to vitrify the bond, and they are therefore not affected by water, oils or other liquids.

Their superiority for wet grinding is evident on account of their great porosity, as the water is thrown out through the pores of the revolving wheel in a spray upon the work being ground.

Each wheel is guaranteed to be satisfactory for whatever work it is selected; and if through any misunderstanding on this point a wheel does not satisfy, it will be exchanged for one that will, as the company consider it for their interest as well as for that of the user to have none but satisfactory wheels in use.

Too great a variety of work should not be expected of one grade of wheel, and where the amount of grinding will warrant it, several grades can be profitably employed, each carefully selected for its particular purpose. For instance: to grind tools without drawing the temper requires a soft grade of wheel, which would not be suitable for rough work, and much depends upon the nature of the material to be ground, as to whether a hard or soft, coarse or fine wheel should be used.

A wheel should be kept perfectly true and in balance to obtain the best results both as regards rapidity and accuracy in grinding, so that it is necessary for the sake of economy that a dresser be kept constantly at hand to dress up the wheels from time to time and not allow them to become in the least out of true.

The Norton emery and corundum wheels contain nothing but cutting properties; are free from dust or smell; are fast cutting with the greatest endurance; will not gum or glaze when proper grade is selected, and will work equally well wet or dry.

The Norton emery wheel machinery is subjected to careful tests and warranted as represented. All machines are furnished with self-oiling boxes which keep bearings supplied with oil for a long time without re-filling, and are so arranged as to prevent dust from entering the journals.

Referring to the speed at which these wheels should be run to produce the best results, it depends largely upon the nature of the work and grade of the wheel, as the same grade will work differently at different speeds. The makers of the Norton wheel consider them safe in the maximum speed indicated in the catalogue, experience showing that the same result can be obtained at a much slower rate by varying the grade of wheel to conform to the speed.

By reference to the grade list it will be seen that these wheels are made in 26 distinct grades of hardness and also intermediate grades for particular work, which plan overcomes the difficulty arising from the great variation in the speed of emery wheel machinery now in use, for by applying the harder grades to the slower, and the softer ones to the faster motions, wheels may be adapted to any speed within the rates mentioned in the list.

If these wheels glaze it is a sure indication that the grade is too hard for the speed, which, if reduced to a point where they do not glaze, entire satisfaction will result. In such cases, however, it is easier to change the wheel than the speed.

In case of consumers who are using numbers of wheels, the fact is plain that all should run at the same surface speed, otherwise it may appear that the whole are not of uniform texture, although of the same grade. It is also important that the speed should be increased as the wheels grow smaller, in order that the periphery speed may be kept up, and full benefit derived from the cutting materials.

The Norton Company have lately added a new line of elastic wheels to their list which have some valuable qualities hitherto unattained for certain special purposes, and are valuable for operations requiring very thin wheels of large diameter. They are adapted for saw gummers, grinding between the teeth of cast gears, sharpening moulding cutters, etc.

They also make emery bricks, or rub stones in large variety, of different shapes and grades, adapted for such uses as knife sharpeners, razor hones, for sharpening edge tools, etc.

The catalogue shows diagrams of wheels manufactured by the Norton Company expressly for use on the Brown & Sharpe grinding machinery, being guided in their selection of the proper grades for the different kinds of work by the recommendations in the treatise on emery wheels recently issued by the Brown & Sharpe Mfg. Co., from which liberal quotations are made in another page of this journal.

The Norton Emery Wheel Co. will be glad to send their catalogue on application.

A process devised for renovating old belting is claimed to strengthen the fibre to a remarkable degree. The belting is passed through a tank containing a solution of beeswax, borax, glue, starch and molasses in equal quantities, and the compound is then squeezed into the fibre by press rollers. The leather is immediately dried by being passed between two steam-heated copper cylinders, and the renovation is complete.

Practical Recipes for Dyeing.

The Dominion Dyewood and Chemical Co., Toronto, have kindly supplied us with the following practical receipts for dyeing:

Fast Black (on 100 lbs. Cotton Goods.)—(1st bath) 5 lbs. melantherine B. or R., 10 lbs. glauber salt. (2nd bath) (diazotising bath) 3 lbs. nitrite of soda, 10 lbs. muriatic acid. (3rd bath) 1 lb. developer M., 3 lbs. sal soda. The "B" brand produces slightly bluer shades than the "R."

Black (on Woolen Goods, piece or yarn.)—For 100 lbs goods, 4 to 4½ lbs. new acid black S. conc., 3½ to 4 lbs. sulphuric acid, 10 lbs. glauber salt. Boil for about one hour and rinse.

Direct Fast Black, in one bath with Diamond Black, Diamond Black N/G and Diamond Green.—(Simplified method.) Enter the goods in a dyebath to which 10 lbs. glauber salt and 1½ lbs. acetic acid have been added at about 100 degree F., bring to the boil and continue boiling for one hour. If the bath is not then exhausted, add further ½ to 1 lb acetic acid. As soon as the bath is exhausted, add 1 lb. bichromate potash and boil for further half hour, then rinse. With 3 lbs. color good blacks are obtained. The N/G gives the bluest black. A jet black is best obtained by using about ½ lb. Diamond in combination with about 2½ lbs. diamond black. Blacks produced by this process are as fast to light, air, milling and acids as those dyed on a chrome mordant and are of greater intensity.

Fast Bright Blue (on woolen goods) with New Victoria Blue B.—This color is best dyed neutral, that is, without any Mordant. Begin dyeing about cold, raise to boil and boil for ½ to¾ of an hour. In this manner the bath is thorougly exhausted. For a light shade use about 2 ozs. For medium shade 8 ozs. and for a full shade 1 to 1½ lbs. to 100 lbs. goods.

Fast Grey (on Cotton Goods, 100 lbs. cotton).—1 lb. Benzo-fast-grey, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour; rinse. (For very dark shades use 20 lbs. common salt and 2 lbs. sal soda. Beautiful light blue greys can be obtained by using 4 to 8 ozs of benzo-fast-grey. This color is fast to alkali and acids and does not change when subjected to heat. It is also fast to perspiration and fairly fast to light. For shading benzo-fast-grey we would recommend our Chloramine yellow, geranine G.; benzoazurine and benzo-cyanines.

Light Slate (on 100 lbs. Raw Cotton, fast)—12 oz. Benzo-fast-grey, 6 oz. geranine G. 4 ozs. chloramine yellow, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour and rinse.

Dark Slates (on 100 lbs. Raw Cotton.)—2 lbs Benzo-fast-grey, 9 ozs. chloramine yellow, 6 ozs. geranine G., 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour and rinse.

Drab (on 100 lbs. Raw Cotton).—12 ozs. Benzo-fast-grey, 8 ozs. geranine G., 5 ozs. chloramine yellow, 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour and rinse.

Fast Yellow (on 100 lbs. Cotton Goods.)—2 lbs. chloramine yellow, 10 lbs. common or glauber salts. Dye boiling for 1 hour, and rinse. Chloramine yellow is a very fast dye and also shows a remarkable resistance to chlorine. (Bleaching powder.)

Light Drab (on 100 lbs. Raw Cotton.)—3¼ ozs. benzo-fast-grey, 1¾ ozs. congo-orange G., 1 oz. chloramine yellow, 10 lbs. glauber salt. Dye boiling for 1 hour, lift and rinse.

Yellowish Drab (on 100 lbs. Raw Cotton.)—6¼ ozs. chloramine yellow, 2½ ozs. benzo-fast-grey, 2¼ ozs. geranine G., 10 lbs. common salt, 2 lbs. sal soda. Dye boiling for 1 hour, lift and rinse.

For any of the above dyes or for further information, address Dominion Dyewood and Chemical Co., Toronto.

The Galt and Preston Street Railway.

At the recent meeting of the shareholders of this company, held at Galt, Ont., Mr. Thomas Todd the president, in behalf of the directors, made a report from which we extract as follows:

As you are all doubtless aware when this road was first projected the intention was to use steam as a motive power, but as the plant required to produce electric power has of late very much decreased in price, it was thought advisable to change the motive power to electricity, having one noiseless steam motor as an auxiliary to carry freight.

The Board then gave instructions to Mr. W. T. Jennings, their engineer, to get up plans and specifications for the road, after which tenders were asked for the different departments of the work.

Four tenders were received for the electrical department, which includes dynamos, motor cars, overhead work, bolting rails, etc., and after a careful consideration of the tenders the contract was awarded to Westinghouse Company, represented by Ahearn & Soper, of Ottawa for the sum of $15,925.

Two tenders were received for engines and boilers, and the contract was given to the Goldie & McCulloch Co., they being the lowest tenderers. The amount of their tender is $6,000

Your directors also found that the work could be done to better advantage if they provided the rails, ties, poles and spikes for the contractors; these articles were accordingly bought and supplied by your directors.

Your directors also purchased three trailer cars from the Atlantic Avenue R. R. Co., of Brooklyn.

The total cost of the road completed and fully equipped will not exceed $75,000.

The work is now well under way—about two miles of the track have been about completed. The electricians report their work as progressing satisfactorily, and the engines and boilers will very shortly be completed.

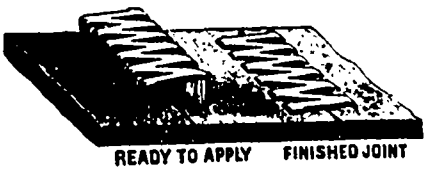
The only remaining contracts to be let are the erection of the power house and the bridge over the Speed, tenders for which are already in and in shape for the new directors to deal with.

It is expected that the tracks will all be laid by May 24, and the entire road be in running order by July 1.

The purity of gold is estimated by an Abyssinian weight called a carat, Arabian, quirat, a bean—a fruit of the carib tree—which is subdivided into four parts called grain. The term carat, when applied to gold and silver, is not a weight unit, but the mode of expressing the purity or fineness of the metal in twenty-fourths. Thus, 18-carat gold is metal in which eighteen parts out of twenty-four (or three-fourths) are pure gold. This method of estimating fineness is traceable from the mare of Europe having been divided into twenty-four real carats or actual weight units. The present method is estimate fineness in thousands; i.e., gold fine has 250 parts alloy, corresponds to 18 carat gold, three-quarters of the metal being pure gold in each case. Our gold coins are 21.19 carats.

Bristol's Patent Steel Belt Lacing.

Five years ago The Bristol Company, of Waterbury, Conn., began the manufacture of their patent steel belt lacing illustrated in Fig. 1. At that time only one size, for ordinary single leather belts, was produced, but encouraged by the success attained, which is principally attributed to the genuine merit of the steel lacing itself, the company

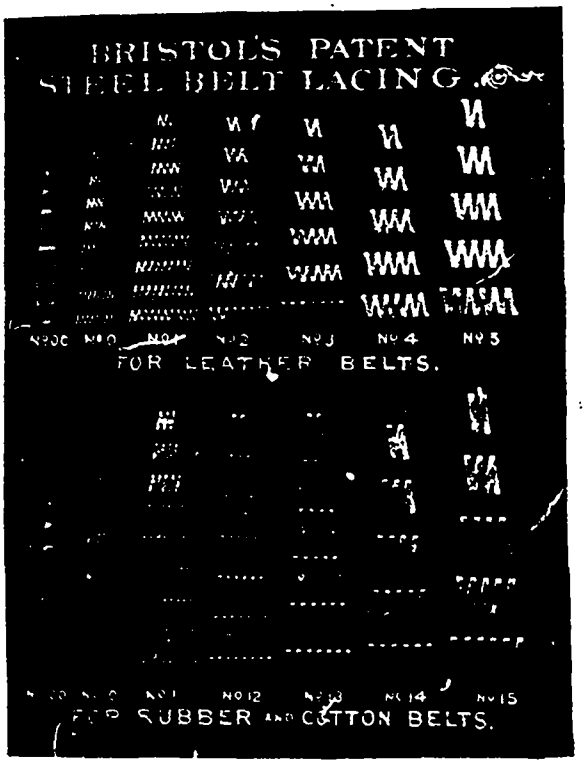


have developed their machinery and improved their methods of manufacture so that now they are able to announce a complete line of one hundred different sizes (Fig. 2) suited to all kinds, widths and thicknesses of belting. As a result of improved processes of manufacture prices have also been reduced.

In Fig. 1 the lacing is shown ready for application and also a finished joint. The lacing is made of the toughest cold rolled steel cut into a continuous zig-zag form, and so proportioned as to give maximum strength with a minimum amount of material. The wedge shaped points, when driven through the belt, force the fibers aside without cutting them, hence the ends of the belt are not weakened, as when holes are punched. The lacing makes a smooth and elastic joint and is easily and quickly applied, without any special tools, the spurs being driven through upon a piece of soft wood after the ends of the belt to be joined have been brought evenly together. The belt is then turned over upon the pulley or any convenient piece of iron and the spurs clinched, bending them toward the joint.

The lacings are furnished in lengths varying from one to three inches (No. 1 by quarter inches), it being always possible, from a box of assorted lengths, to find two or more pieces of lacing which, together, may be used for a belt wider than three inches.

For rubber, cotton and woven belts the space between the spurs is



a trifle greater than in the corresponding sizes designed for leather belts, affording a better grip on the fibrous ends of such belts.

▶ This lacing was exhibited at the World's Columbian Exhibition, at Chicago, by The Bristol Co., and was awarded medal and diploma.

If a story from Ashland, Wis., is to be taken as literally or even approximately true, a bicycle rider on a newly invented winter machine can make faster time than any which has ever been recorded for man or horse. It is said that a mile was covered in one minute and 44 3/5 seconds, and three miles in 3 minutes and 42 1/5 seconds to the mile. At that speed a bicycle rider would simply run away from a champion running horse, and the best time made by skaters and ordinary bicycle riders becomes slow by contrast. The machine on which this wonderful feat is reported to have been performed has an ordinary bicycle frame, a driven wheel and two runners. It is said it can be attached to any bicycle frame in a few minutes. If these statements are all trustworthy we may yet see the winter bicycle a rival of the ice boat for speed and of skates for popularity.

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 Thomas McDonald Mfg. Co. has been incorporated at Montreal, with a capital stock of $100,000, to carry on business as manufacturers, etc.

The Cumberland Mfg. Co. is being incorporated at Oxford, N. S., with a capital stock of $9,900 to manufacture furniture, agricultural implements, etc.

The power house of the Nanaimo Electric Light Co., Nanaimo, B. C., was destroyed by fire May 6, loss $50,000. McKenzie's furniture factory was also destroyed.

E. Davison & Sons, Lim., Bridgewater, N.S., are applying for incorporation with a capital stock of $250,000 to build and operate saw mills, pulp mills, etc., and to manufacture lumber, pulp, paper and wooden goods.

Lightning was the cause of much damage by fire at Northport, Ont. on May 5. The destruction and losses were as follows: The electric light station, $50,000; R. Craig's carriage works, $30,000; and R. Wenborn's machine shop, loss not stated.

Messrs. Cassidy, Bonner & Co., Montreal, manufacturers of leather belting, loom peckers and strapping, etc., who started in business last November, have moved their factory from 767 Craig St. to 128 Queen St., where they have more commodious premises. Mr. Cassidy, the practical member of the firm, was with Messrs. Robin & Saddler for 12 years as mechanical superintendent, and four years as salesman on the road.

A new roller flour mill is to be erected at Ruther Glen, N.B.

A new flour mill is being built at St. Henri Mission, N.W.T.

Messrs. Dow & Curry have completed their new oatmeal mill at Pilot Mound, Man.

Oakland, Man., will give a free site and bonus of $5,000 for the erection of a flour mill there.

The Burns Saw Works, Toronto, have opened a branch factory in Montreal, in the building formerly occupied by the Montreal Saw Works.

The Crescent Watch Case Company, Montreal, are applying for incorporation, with a capital stock of $100,000, to manufacture watch cases, jewelry, etc.

The Halifax Gas Light Co., Halifax, N. S., have placed an order with Messrs. Darling Bros., of Montreal, for a 200 h. p. Webster heater and purifier.

The Canada Collar, Cuff and Tie Co., a new Canadian industry, have recently started a large factory at Berlin, Ont., to manufacture celluloid goods of every description.

Messrs. Laurie Bros., Montreal, are applying for incorporation under the name of The Laurie Engine Co., with a capital stock of $250,000 and will enlarge their works.

Mr. T. Wistow, manufacturer of earthenware, flower pots, etc., London, Ont., whose works were recently destroyed by fire have rebuilt and occupied a much larger and better equipped works.

Edward Darling, B. Sc., gold medallist of McGill University, has become associated with the firm of Darling Brothers, Montreal, and will take charge of the drafting and designing department of their works.

Messrs. Darling Brothers, Montreal, report having sold their Morse Valve Reseating machines to the following firms since May 1:—J. P. Mott & Co., Robert Taylor & Co., Moir & Co., Nova Scotia Sugar Refinery, Henderson & Potts, Price Brothers, Halifax Graving Dock Co., and R. and J. O. Mullen, all of Halifax, N.S.; also to Yarmouth Woolen Co. and Yarmouth Duck and Yarn Co., of Yarmouth, N.S.

Messrs. Munderloh & Co., Montreal, have secured the agency for Canada for The Allgemein Elektructats-Gesellschaft (General Electric Co.) of Berlin. Mr. John Burns is to be manager and engineer of this department and will remove his office from 365 St. James St., to Munderloh & Co.'s building, 61 St. Sulpice St. Mr. Burns will still represent the Kay Electric Works, of Hamilton, in the province of Quebec.

C. W. Clark will build a new flour mill at Arthur, Ont.

The Dodge Wood Split Pulley Co., of Toronto, have received the following letter through their Winnipeg agency, and which speaks for itself:

Office of Superintendent of Manitoba Electric and Gas Light Co.

WINNIPEG, Man., April 20th, 1894.

Dodge Wood Split Pulley, Co., Toronto, Ont.

GENTLEMEN,—In reply to your inquiry re Brown friction clutch which we bought from you about two years ago, I beg to state that it has been running a 50 arc light dynamo of the Thomson-Houston type, made by the Royal Electric Co., Montreal; and the clutch and pulley have given us perfect satisfaction. We are running clutch pulleys of different makes, but for ease of handling, and perfect running without slip or trouble of any kind, none of them can equal the Brown we got from you.

In adding to our plant in future we intend to use no other.

I am yours sincerely,

(Signed) JAMES STUART.

The White-Colwell Co., St. John, N. B., are applying for incorporation, with a capital stock of $40,000, to take over the business of Messrs. White, Colwell & Co., that city, and manufacture "Daisy" chocolates, confectionary, etc.

Messrs. A. J. Somerville and associates, Toronto, are applying for incorporation as the Ontario Engine and Machine Company, headquarters Toronto, capital stock $12,000, to manufacture steam engines, boilers, pumps, hydrants, machinery, etc.

Hon. Joseph R. Thibaudeau, of Montreal, and associates, are applying for incorporation in New Brunswick under the name of the Campbellton Water Supply Co., with a capital stock of $60,000, with headquarters at Campbellton, N. B., to furnish a water supply to that town.

The Waterous Engine Works Co., Brantford, Ont., inform us that they have made recent shipments of machinery as follows:—No. 3 Allis band mill, to the Huntsville Lumber Co., with band saw tools; and a wood grinder with which to convert their refuse into chips, to be fed with sawdust to their boiler with automatic fuel feeder. A similar plant has been shipped to Graham, Horne & Co., Fort William, and two other band mills to Warren Curtis, Three Rivers. With these latter mills was sent one of the Waterous steel saw carriages of new design, one of the heaviest, strongest and best saw carriages built in Canada; also a Prescott direct acting steam feed, 42 inches long. One double Kelly log kicker, or double deck log unloader, and two Hill's patent stationary steam niggers; and by the first of the coming month they will ship the same firm 2 150 h.p. engines. A fifth band mill will be shipped at the end of this month to G. & G. Flewelling, Hampton, N. B., together with saw carriage, double edger, live rolls and other machinery. Shipment has just been made of a saw carriage, edger, lath machinery, conveyors, etc., to Humphreys & Trites, Moncton, N. B. A saw frame and carriage to Mr. McKiernon, Eganville, Ont., and another to Jesse Cooke, Zephyr, Ont. A few days ago the last carload (being the 7th, making a total of over 200,000 lbs. of machinery) was shipped to the La Prairie Pressed Brick Co., La Prairie, Que. It consisted of 4 over driven 9ft. dry pans, one Simpson four mould dry press brick machine, castings for a Sharer dry kiln and continuous dry kiln. This shipment completes this extensive brick plant. They now have 5 dry pans, each with their elevator and screen, and 3 4-mould dry press brick machines (Simpson's) making one of the most complete brick making plants in Canada. They have also shipped a "Centennial" wire cutting brick machine with table and die, to F. C. Dinnick, Carlton, Ont., and another to the Burlington Pressed Brick Co., Freeman, Ont.

The Cairo Polish Co. is being incorporated, with headquarters a Pictou, N. S., with a capital stock of $10,000, to carry on the business of manufacturing and preparing for sale all kinds of polishes pastes and other preparations for domestic, culinary, toilet or mechanical purposes, and also of manufacturing and preparing for sale bricks, tiles, tiling, pipes, sands, paints, putties and other wares.

The Toronto Railway Co. have contracted with the city of Toronto to sprinkle the track allowances, viz., 40 miles or thereabouts of streets, four times per day for 65 cents per mile of street per day, water to be supplied by the city free of charge, and the company not to pay any percentage to the city on this amount. In doing the work for this price, it is understood that the whole of the tracks will be done.

Speaking of the proposed binder twine factory at Winnipeg, the Commercial of that city says:—We noted a couple of weeks ago that the Northwestern Cordage Co., of St. Paul, Minnesota, were making inquiries as to inducements which might be offered them to start a binder twine factory in Winnipeg. They talk of a factory to employ seventy-five hands, which will turn out 12,000 pounds of binder twine per day, and enough sisal and manilla rope to supply the demand. The city council is now looking up information as to the probable success of such a factory in Winnipeg. Binder twine is a commodity which is used very largely in this country, and so far as the demand is concerned that part of the business would be all right. The only question is as to the cost of manufacturing here. That is a matter which only an expert in the particular branch of industry under discussion could be expected to know much about. Even an expert might be deceived, for it usually requires practical experience to determine the cost of manufacture sufficiently close to be of real value. To be successful, the cost of manufacturing here would require to be not materially greater than the cost of making the goods elsewhere. All the materials would have to be imported, so that there would be no advantage in freights for the proposed local factory, as the cost of freight on the raw material would equal at least the cost of freight on the manufactured goods. If the twine could be manufactured successfully from some product which could be produced here, thus saving freight on the raw material, there would be a great advantage in manufacturing here. No suitable material, however, is obtainable here. Hemp has not proved a success for the manufacture of binder twine. This is the third time that a binder twine factory has been proposed for Winnipeg, and we hope that it can be shown that the undertaking is likely to prove profitable here. We do not, however, recommend a bonus from the city for this or any other proposed industry.

Amherstburg, Ont., is to have an electric light plant.

Petrolea, Ont., is to have a new system of waterworks.

Messrs. Shaw Bros., Gartmore, Man., have just placed a new steam boiler and engine in their flour mill.

The binder twine plant in the Kingston penitentiary is now running and turning out two tons per day. About forty convicts are employed under several experts.

Messrs. Robin & Sadler, Montreal, are building a new leather belting factory in that city, the iron work for which is being supplied by the Dominion Bridge Company.

Messrs. Scott Bros., Seaforth, Ont., are making arrangements to build a new brick electric power house. They will put in two boilers a new engine and a complete system of incandescent machinery.

The employees of the Rosamond Woolen Co. have been given a few weeks' holidays while the tower of No. 1 Mill is being raised and other improvements made. There seems to be a general dulness in the woolen industry, and our mills are of course not exempt from its effects, but in this case many of the hands are glad of the rest, as they have been at work for two-years-and-a-half without much of a holiday.—Almonte, Ont., Gazette.

The steamer Dauntless in the service of the Upper Ottawa Improvement Company, met with a tragic fate a few days ago. The steamer took fire when a couple of miles above the Calumet Rapids and the flames spread so rapidly that the crew had to escape for their lives in a small boat. The vessel, left to itself, went on down the river, turning over as it went over the rapids, and was soon lost to sight. The Dauntless cost between $25,000 and $30,000.

W. W. Altemus & Son, 2816 North Fourth street, Philadelphia, Pa., manufacturers of the patent bobbin winder, which it is claimed will produce the largest production of any worsted skein winding machine built, are busy at this time, orders coming in right along for their patent winder. This firm keep abreast of the times and are constantly improving their line of textile machinery. At this time they are doing twice as much business as they were one month ago. They also make a cop and bobbin winder for ramie yarn. Their machines are used in the leading mills of America and Canada with general satisfaction.

The planing and saw mills of Messrs. Burns, Rankin & Mills, Toronto, were destroyed by fire May 11, loss about $20,000.

Messrs. A. J. Webster & Co., Shediac, N. B., are running their shoe factory full time, giving employment to 25 hands. They will introduce some new machinery.

Mr. C.C. Harris, Toronto, manufacturer of babbitt metal, solder, etc., has added considerable new and expensive machinery for the manufacture of bottle capsules, his capacity to produce being about 25,000 capsules per day.

Last fall the Vulcan Iron Works, Winnipeg, practically closed down their mechanical shops, and during the winter only a few men were employed. Lately the staff has been materially increased and the works are now in general operation again. This is the most important industrial concern in Winnipeg, and it will give satisfaction to know that work has been resumed in all departments.—Winnipeg Commercial.

The Hamilton Natural Gas Company is not completely discouraged by its two failures, and proposes to sink another well on Locke street in rear of M. Richardson's property if the necessary arrangements with the owner are completed. Last evening the late well in rear of Copp's block developed another spurt. It was closed up yesterday, and in a few hours developed a pressure of 106 pounds. This morning it was light and flared up fifty feet, the best showing yet made.—Spectator.

Manufacturers of British Columbia red cedar shingles are making a big push this year for eastern business. H.H. Spicer, of Vancouver, recently shipped a train load of shingles to Toronto, and a largely increased trade is expected this season from that province. These shingles have been pretty well introduced in Ontario, and dealers who tried a sample car or so, are this year reporting that they will want from ten to twenty cars. One dealer of Toronto, who made a specialty of British Columbia shingles, reported that he sold 23,000,000 of these shingles last year in Ontario. The great durability of these shingles, makes them cheaper in the end than pine, and they will lay more per square than other shingles.

Price Bro's & Co.'s, steam saw mill at St. Thomas station, near Montmagny, Que., was destroyed by fire May 6, loss about $20,000.

Mr. William Cook, who owns a large factory at Pontiac, Mich., for making wheel vehicles, will establish a branch works at Windsor, Ont.

The Wood Vulcanizing Co., Montreal, are applying for incorporation, with a capital stock of $75,000, to treat wood by vulcanizing processes, etc.

Mr. M. D. Barr, dealer in electrical supplies in Toronto, was in the city yesterday. He told Ald. Morris the city would get its lighting pone cheap if it only paid $65 per lamp. -Ottawa Citizen.

The Woodstock and Canterbury Telephone Co., has been incorporated in New Brunswick with a capital stock of $3,000 to build and operate a telephone in and between those towns in that province.

Moore & Macdowall's saw mills, located upon their timber lands some 70 miles above Edmonton, Alberta, were destroyed by fire April 24, loss about $9,000 This firm have large mills at Prince Albert.

The St. Lawrence Steel & Wire Co., Gananoque, are offering a safety door and transom lock which cannot but be of great value in warm weather when it is desired to have plenty of ventilation as well as security and safety. It can be applied to any door in a few moments by the use of a screw driver only, and the arrangement of it is such that it is impossible for any one to affect an entrance from the outside while the device is in proper position. It is finished in both japan and nickel, and is quite inexpensive.

The Niagara River Tramway Company, with headquarters at Niagara Falls, Ont., are applying for incorporation, with a capital stock of $40,000, to establish and operate a cable tramway line over and across the Niagara river from the west or Canadian side to the east or American side of said river, for the purpose of conveying passengers across said river, which tramway shall consist of cables stretched across said river from towers erected on each side of said river from which cars for the conveyance of passengers shall be suspended.

The Canadian Canoe Co., Peterborough, Ont., aware that the season is now at hand when a young man's fancy lightly turns to thoughts of boating, announce their readiness to supply anything that may be needed in their line. They are builders of all kinds of sailing and paddling canoes and skiffs; and make a specialty of small steam launches, capable of carrying six persons, which they sell ready for service for $175 up. They also manufacture sails, tents, oars, paddles and all other similar supplies for boating and camping purposes.

Messrs. Moody & Son, late of Orangeville, Ont., are starting a grist mill at Dundas, Ont.

The paper mills of the Dominion Paper Co., at Kingsey Falls, Que., were destroyed by fire May 9, loss about $75,000.

The Burrard Inlet Red Cedar Co. are erecting a new mill at Port Moody, B. C. The mill is to have all the latest improved machinery. Its capacity will be 75,000 feet daily.

La Compagnie de Tramways Electriques de Quebec are applying for incorporation, with a capital stock of $200,000, to build and operate an electric tramway in the city of Quebec and the suburbs thereof.

Messrs. Heslop Bros. have leased the Smithville flouring mills and will control them in addition to their roller mill at Port Robinson, Ont., and at Wellandport, Ont. Mr. R. T. Heslop will manage this venture.

Messrs. Geo. H. Harper & Co., who some months ago were granted permission by the town of Dundas, Ont., to introduce electricity there for commercial purposes, are about erecting poles and stringing wire for the transmission of electricity for light and power.

The E. B. Eddy Manufacturing Company, Hull, Que., have decided to convert two of their present wood mills into another paper mill and a paper bag factory; they also propose to erect a one storey stone store house and one storey pail factory. The store house and pail factory will be about 60 feet wide and 450 feet long.

The Robb Engineering Co. are building an engine for the Canadian General Electric Co., arranged so that one of their latest type of multipolar dynamos will be combined on the same frame with the engine. The entire machine, comprising an engine and dynamo of 100 h.p., will occupy a space of only about 8 × 7 feet and dispenses with belting or other gearing.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from March 1 to March 15, 1894, inclusive.

Information regarding any of these patents may be had on application as follows:—

Fetherstonhaugh & Co.,	Bank of Commerce Building,	Toronto.
Ridout & Maybee,	103 Bay street,	Toronto.
A. Harvey,	Central Chambers,	Ottawa.
J. A. Grenier,	Imperial Building,	Montreal.

Copies of American patents corresponding to Canadian patents

can be procured from these attorneys for the sum of twenty-five cents each.

45,450 Bicycle, Henry La Casse, Rochester, N.Y., March 1.

45,451 Mayonnaise mixer, Jennie DeWitt Harvey, Wilkesbarre, Pa., March 1.

45,452 Long distance telephone, Charles Marshall Haynes, Omaha, Neb. March 3.

45,453 Telautograph, Elisha Gray, Highland Park, Ill,, March 3.

45,454 Fog signal apparatus, John George Dixon, 98 Norman Road, Birkly, County of York, England, March 3.

45,455 Bench vise, Algernon Sidney Hubbell, Norwich, Conn., March 3.

45,456 Dental clamp, Joseph M. Stout, Portland, Me. March 3.

45,457 Engraving machine, Charles C. Bruckner, Chicago, Ill., March 3.

45,458 Surgical instrument, Alonzo Cooper Kellogg, Portage, Wis., March 3.

45,459 Tiles, bricks, etc., William Duxbury, London, England, March 3.

45,460 Turner for music leaves, Thomas Douglas, New York, N.Y., March 3.

45,461 Printing telegraph, Albert David Neal, Boston, and Howard French Eaton, Quincey, Mass., March 3.

45,462 Shade for incandescent lamps, Edward Dean Cooke, Chicago Ill., March 3.

45,463 Earth auger, Charles G. Schellenberger, Streater, Ill., March 3.

45,464 Printing machinery, Samuel Lyndhurst Parker, St. Kilda, Victoria, Australia, March 3.

45,465 System for operating glow lamps by means of multiphase currents, Johannes Heinrich Friedrich Gorges, Berlin, Germany, March 3.

45,466 Process and mechanism for smelting ores and refining metals, Charles Maurice Allen, Butte City, Mont. March 3.

45,467 Welding apparatus, Charles E. Lipe and John A. Pross, Syracuse, N.Y., March 5.

45,468 Car brake, Marcus E. Ellsworth, Hudson, O. March 5.

45,469 Liquid dispensing apparatus, William J. Fowler, New York, N. Y., March 5.

45,470 Woven cartridge belt, Thomas Corwin Orndorff, Worcester, Mass., March 5.

45,471 Strainer, Darwin Bryant Gotham, Brownville, N.Y., March 5.

45,472 Cash register Joseph Augustus Treat, Stuart, Ia. March 5.

45,473 Faucet tag, Esdras Rousseau, Montreal, Que., March 6.

45,474 Centrifugal amalgamator, Orrin Burton Peck, Chicago, Ill., March 6.

45,475 Paper weight and calendar combined, Austin D. Palmer, Coshocton, O. March 6.

45,476 Bit and saw combined, Eric Olof Lofdahl, Rockford, Ill., March 6.

45,477 Electric cigar lighter, Lawrence T. Smith, Barrington Centre, R. I., March 6.

45,478 Cane and umbrella combined, William B. Black, Bedford, O. March 6.

45,479 Combination tool, Charles A. Ketchum, William Wrigley and William Scatchard, Chicago, Ill., March 6.

45,480 Card box, Richards & Co., New York, N. Y., March 6.

45,481 Air brake coupler, William Boibridge, Thomas Fraser, and William Printer, Ottawa, Ont., March 6.

45,482 Finger-guide for type-writer, Schuyler Grant, Ithaca, N. Y., March 6.

45,483 Knife, The Christy Knife Co., Fremont, O. March 6.

45,484 Cash register and indicator, John B. Aufuldish, John P. Breen, Geo. Russell Wells, and Aaron O. Scheuck, Dayton, O. March 6.

45,485 Cash drawer, The Eureka Cash and Credit Register Co., Elmira, N. Y., March 6.

45,486 Method of and apparatus for electrically producing continuous metallic line structures, Ries and Henderson, Philadelphia, Pa., March 6.

45,487 Hydraulic air compressing apparatus, William A. Rohr, Montreal, Que., Arthur W. Coe, Alpheus F. Wood, and Robert R. Casement, Madoc, Ont., March 7.

45,488 Lamp chimney holder, Richard S. Woodliff, Jackson, Mich., March 7.

45,489 Electric accumulator, Dagobert Scheinberger, Vienna, Austria, March 7.

45,490 Combination tool, Christopher Columbus Reynolds and Elizabeth Brown, Eldorado, Utah, March 7.

45,491 Animal trap, John Lilleston and Lanta Lilleston, West Franklin, Ind., March 7.

45,492 Car coupler, William Van Schoonhoven Thorne, St. Paul, Minn. March 7.

45,493 Polishing machine, The Moore Carving Machine Co., Minneapolis, Minn. March 7.

45,494 Telephone circuit, Jorgen J. Moller, Flentburg, Prussia, March 9.

45,495 *Electrolytic apparatus, Emile Andreoli, Somerleyton Road,* London, England, March 9.

45,496 Combined water closet and wash basin, Andrew A. Leyare, Alexandria Bay, N. Y., March 9.

45,497 Washing Machine, Joseph Giguere, St. Remi, Que., March 9.

45,498 Refrigerator, Mary M. Harris, Chicago, Ill., March 9.

45,499 Holder for sewing machine needles, Joseph E. Chenette, Napa, Cal. March 9.

45,500 Fountain pen, Woodruff Post, Olean, N.Y., March 10.

45,501 Process of evaporating liquids, Samuel Morris Lillie, Philadelphia Pa., March 10.

45,502 Gear-wheel, Jean Marie Moret, Besancon, France, March 10.

45,503 Axle-box frame, John A. Brill, Philadelphia, Pa., March 10.

45,504 Garment stretcher, Albert Clarke, Wellesley, Mass., March 10.

45,505 Ore pulverizer, Henry Hugh Eames, Detroit, Mich., March 10.

45,506 Ore separator, Henry Hugh Eames, Detroit, Mich., March 10.

45,507 Fire extinguisher, Charles James Lockinvar MacLeod, Detroit, Mich., March 10.

45,508 Method of making bread, Lauritz Alexander Schiottz-Christensen, Copenhagen, Denmark, March 10.

45,509 Ventilator for stoves, George Brousseau, Quebec, Que., March 10.

45,510 Hot water heater, The Gurney Foundry Co., Toronto, Ont., March 12.

45,511 Sash balance, The Rhoades Sash Balance Co., San Francisco, Cal., March 12.

45,512 Body for vessels, etc., Francis Eugene Mills and Horace Atwater Deming, San Francisco, Cal., March 12.

45,513 Watchmaker's tool, Henry W. Wildt, Alexandria, Va. March 12.

45,514 Brick kiln, William A. Wilford, Todmorden, Ont., March 12.

45,515 Cinder sifter, George R. Gray, Toronto, Ont., March 12.

45,516 Smokeless powder, The United States Smokeless Powder Co., San Francisco, Cal., March 12.

45,517 Method of and means for raising and floating sunken vessels, Henry Huston, Tacoma, Wash., March 12.

45,518 *Paper bag machine, William B. Pirvis, Philadelphia,* Pa. and James E. Hays, Camden, N. J. March 12.

45,519 Self-locking lock, S. E. St. Onge Chapleau, Ottawa, Ont., March 12.

45,520 Till, Emanuel H. Muller, Rebnitz, Germany, March 13.

45,521 Egg-cup and cooker, William R. Hill, Syracuse, N.Y., March 13.
45,522 Churn, George G. Davis, Combination, Mont. March 13.
45,523 Steam generator, George E. Belmor, San Francisco, Cal., March 13.
45,524 Lucidagraph, Thomas Alexander McFarland, Chicago, Ill, March 13.
45,525 Bed, Benjamin Ottinger, Georgetown, Texas, March 14.
45,526 Car, Henry William Richner and George Nathan Chase, St. Louis, Mo. March 14.
45,527 Combination tool, Robert Harris, Buffalo, N. Y., March 14.
45,528 Coin freed gas meter, George Carter, London, England, March 14.
45,529 Button-hole Sewing machine, John Reece, Boston Mass., March 14.
45,530 Window heating apparatus, Alexander Francis Dunlop, Montreal Que., March 14.
45,531 Certificate representing value, Warren W.C. Spencer, Boston, Mass., March 14.
45,532 Self-locking roller gate, Mitchell T. Buchanan, Ingersoll, Ont., March 14.
45,533 Cycle tire, W.H. Heeson, Toronto Ont., March 14.
45,534 Paint for iron, etc., Hjolmar Johanson and Bertrand Harris Short, Vancouver, B.C., March 14.
45,535 Plough, Conrad Hartezell, St. Joseph, Mo., March 14.
45,536 Side dump wagon, Daniel F. Donegan Los Angeles, Cal., March 14.
45,537 Plough attachment, William J. Dwyer, Napoleon, North Dakota, March 14.
45,538 Sewing machine, John Reece, Boston, Mass., March 14.
45,539 Speed rotary motion for centrifugal or other machines, Albert Krank, Taipale, Finland, March 14.
45,540 Crate. Ann E. Moss, Lawson, Mo., and Beryman Hillyard, Allerton, Ia. March 14.
45,541 Envelope fastening, George A. Harris, Bridgeton, N.J., March 14.
45,542 Cut outs for electric lights, John Hite Lee Holcombe, Washington, D. C., March 14.
45,543 Continuous rail, Allen Bagley, Ypsilante, Mich., March 14.
45,544 Compressor, David Neale, Fort Calhoun, Neb. March 14.
45,545 Apparatus for preserving alimentary and other substances Carl Adolph Sahlstrom, London, England, March 14.
45,546 Tension for metallic fencing, Mitchell T. Buchanan, Ingersoll, Ont., March 14.
45,547 Process of producing metallic alloys, William Houston Greene and William Henry Wahl, Philadelphia, Pa., March 14.
45,548 Weighing scales, John P. Firth, Titusville, Pa., March 14.
45,549 Process of making caramel malt, Reinhardt Rahr, Manitowoc, Wis., March 14.
45,550 Oven door for stoves, etc., Jacob Elwood Yeager, Philadelphia, Pa., March 14.
45,551 Account book, James Henry Rand, North Tonawanda, N.Y., March 15.
45,552 Cart, Andre Pagnin, Montreal, Que., March 15.
45,553 Mechanical setting insertion for diamond, etc., Felix Jules Gregoire Frondholt, Paris, France, March 15.
45,554 Leather strap, Michael C. Mullarky, Francis H. McKenna and Richard McShane, Montreal, Que., March 15.
45,555 Box, Oswald Heinrich, Mittelwalde, Silesia, Michael Goldschmidt, Philipp Goldschmidt, and Siegfried Goldschmidt, Breslau, Germany, March 15.

UNITED STATES PATENTS.

GRANTED TO CANADIAN INVENTORS.

The following patents were issued from the United States Patent Office, on April 17 and April 24, 1894, and reported especially for the CANADIAN MANUFACTURER by Gla cock & Co., patent attorneys, Washington, D. C. Printed copies of these patents can be obtained from them for 25 cents each.

Napoleon Dufresne, assignor of one-half to R. White, Montreal, leather skiving machine.
Arthur S. Reeves, jr., Hamilton, Ont., paper box.
Joseph Spencer, Cornwall, Ont., paper cutting machine.
George D. Hamilton, Innisfail, Ont., metal fence.
Thomas Walsh, Montreal, attachment for shovels, spades, etc.