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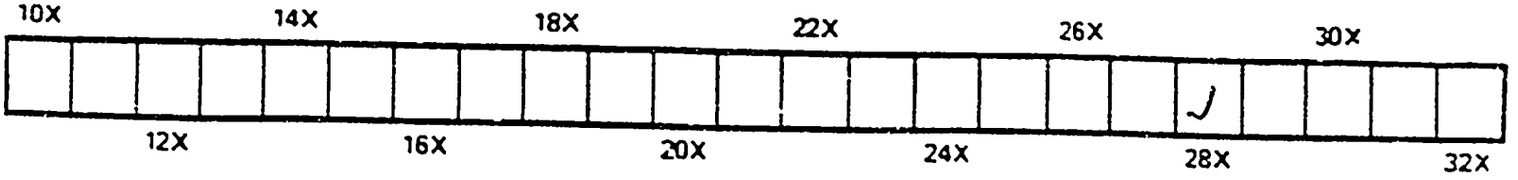


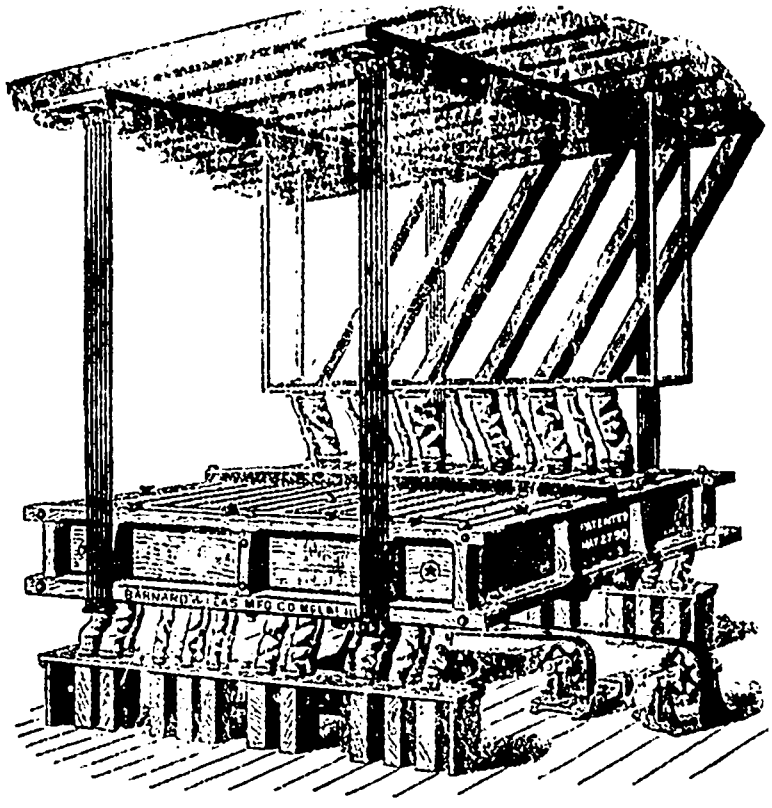
CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

VOL. 33. TORONTO, OCTOBER 2, 1896 No. 7.

THE PLANSIFTER

This wonderful machine will Scalp, Grade-off Coarse Middlings, Grade-off Fine Middlings, and Bolt the Flour from each Reduction, whether on Wheat or Middlings.



It Saves Space	Makes Better Clean-up	No Dust
It Saves Power	Makes Closer Finish	Easily Controlled
It Saves Cloth	Makes Larger Yield	Insures Uniform High Grade
Makes Better Separations	Makes Milling Easier	Increases Capacity
Makes Purer Stock	No Vibration	Must Come Into General Use
Makes Better Flour	No Noise	

ONE PLANSIFTER AND TWO LITTLE WONDER REELS

Will do all the Scalping and Bolting in any mill from 25 to 100 Barrels capacity.

TWO PLANSIFTERS AND TWO LITTLE WONDER REELS

Will do all the Scalping and Bolting in any Mill from 125 to 200 barrels' capacity. The size of these machines varying according to capacity required.

Big Mills Cannot Afford to do Without them, and they do Charming Work in the Smallest Mills.

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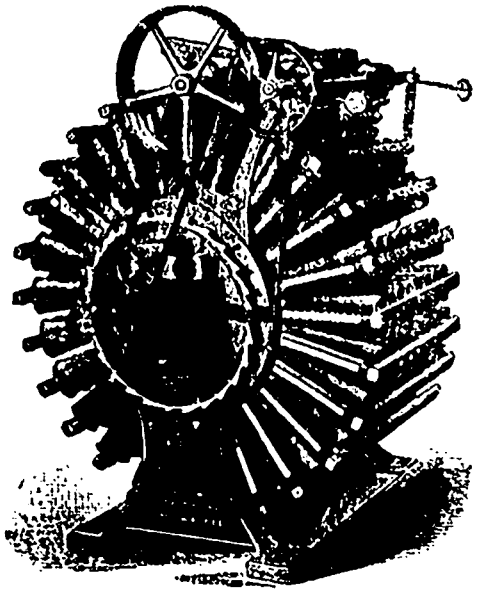

The Only Machine with a Perfectly Automatic Cloth-Cleaning Device

WE GUARANTEE it to be the only dust collector to work on all material and under all conditions, if connected right

WE GUARANTEE it to collect absolutely all the dust, and discharge the air free and clean.

WE GUARANTEE that the PERFECTION DUST COLLECTOR will do better work than any other machine made for such a purpose.

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CANADIAN MANUFACTURER AND INDUSTRIAL WORLD
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J. J. CASSIDEY, - - - - - - - - - - - - Editor

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THE TARIFF AND THE WORKING MAN.

A few days ago a press telegram from Johnstown, Penn., stated as follows:

Practically every department of the great Cambria Iron Works shut down last night for an indefinite period, throwing at least 2,000 men out of employment. About 3,000 men will be given a few hours' work a week. Lack of orders is given as the cause of the suspension.

Preceding the suspension of work at this great establishment, Mr Cyrus Elder, connected therewith, wrote a communication to a local newspaper in which he commented upon the situation, particular reference being had to the free trade attitude of Mr. Bryan, the Democratic candidate for president of the United States. Many of the remarks of Mr Elder are as applicable to Canada as to his own country, and should command the attention of all Canadians. Alluding to a remark made by Mr. Bryan in one of his electioneering speeches to the effect that "the only way to stop the increasing flow of gold" from that country "is to stop falling prices," Mr. Elder says:

Falling prices of what? Falling prices of the agricultural products, which we export in payment of our foreign debts. That means, of course, that beef, pork, and grain, and flour are to be increased in price, which will add to the cost of living of the workingmen. What does he propose to do for them? Nothing. He spoke and voted in favor of the Wilson bill. He is a rabid free trader. He has a smattering of political economy, and probably believes that protection is a fraud, and that the Democratic tariff, which he helped to enact, is a blessing to the country.

Mr. Elder might also have said that a change in the fiscal policy of the country could not possibly have any more effect upon the export prices of its agricultural products than it would have upon the rising and falling of the tides. He was certainly right in his remark that the workingman who voted for a free trade fiscal policy, or a policy looking to free trade, voted to perpetuate and intensify the blight and depression that now rests upon all the industries of that country, and upon Canada also. A change of policy in the United States as in Canada, could not possibly give more employment to the workingmen, but less, without the possibility of an increase in wages.

Mr. Bryan's party, under Mr. Cleveland, started out four years ago to cheapen everything. Cheapness was the great desideratum. The tariff robbers were to be effectually squelched. Ports were to be opened to cheap goods from foreign countries, and all the land was to be covered with blessings and benefits. They were active in 1892, as they are now, in arraying the masses against the classes—the workingmen against the employers of labor—and they were successful. Their lies were credited and their promises were trusted, and what has been the result? The injury done to the farmers and workingmen under the wool and woollen schedule in the Wilson-Gorman tariff was the greatest mischief done, but all the other industries suffered, because one cannot be prosperous while the others are prostrated. It is true that after the elections of 1894 when the House of Representatives became pro-protection, there was some improvement in business and advance in wages, but the combination of Democrats and Populists succeeded in defeating the efforts of the Republicans to restore tariff protection, and the boom of last year, weak though it was, was short-lived, and the situation is now perhaps as bad, and quite likely to become worse than at any time since the election of Mr. Cleveland.

Mr. Bryan and the free trade Democratic speakers during the present campaign have made most bewildering assertions to show the loss caused by protection to the different branches of industry in the United States, but the vagueness of them is more than suspicious, for they cannot be sustained by any common-sense reasoning. Mr. Elder, however, substitutes palpable facts, as far as his establishment is concerned, for the vagueness offered as arguments by Mr. Bryan and his friends by comparing the wages paid by the Cambria Iron Company and the values of its products in 1893 and 1894 with 1892, which was certainly a banner year as regards the prosperity

of the company and of its employees. The pay to the workmen employed at the iron mines of the company being included, Mr. Elder shows that $888,401 less wages were paid in 1893, and $1,506,410 in 1894 than in 1892, the loss in workmen's wages in the two years amounting to $2,394,814. On the other hand the value of the products of the company in 1893 was $2,064,000 less than in 1892, and in 1894 was $4,916,200 less, the shrinkage in the two years amounting to $6,980,200.

As Mr. Elder shows, these are hard, cold facts, and not glittering generalities. Apply them to the whole country and see what they mean, for Johnstown was no worse off than other places, and the iron trade was better off than some other industries. It discloses a strain under which many employers of labor went to the wall, and there was the sacrifice of the life savings of a nation of workingmen. Plenty was replaced by the pinch of penury. The consuming power of the wage earners was lost, and every business interest has suffered with them, for the farmer did not escape. His export business is a trifle compared with the home market, and a large part of the two and one-half millions of wages which would have been paid out if the Cleveland years had been equal to the McKinley year would have found its way into the farmer's pocket. It would have gone not only to the local farmers, but all over the country, for fruit and vegetables, for beef, pork, lard, flour and corn, and as much barley as finds its way into beer. It is the workingman's dollar that moves the whole industrial world. In the Cleveland years there was plenty of money in the country, but there was no way of getting it into circulation. In the proper sense, money was not plenty, because work was not plenty, and work was not plenty because Mr. Cleveland and his party had closed the American mills and opened the mills of foreign countries. Values shrunk faster and farther than wages, and the classes and the masses are in the same boat. Free trade ruin has smitten with impartial hand both employers and workingmen, yet Mr. Bryan, when asked "How about the tariff?" smiles and says: "The tariff is not an issue this year."

It is true that a month hence the people of the United States will know definitely under what regime they are to live, for it will be ascertained whether there is to be, under Mr. Bryan, a continuation of the policy that has signalized the Cleveland administration, so sadly to the disadvantage of both the American workingman and the American farmer, or whether protection as represented by Republicanism and McKinley, will cause the revival and spread of prosperity. Unfortunately for Canada, the definite knowledge cannot come to this country. We are told by our new rulers that protection is to give way to the tariff for revenue idea, and we can reasonably infer that a deadly blow is to be dealt to our manufacturing industries, which give employment to so many thousands of Canadian workmen, who are consumers of so many millions of dollars worth of the products of Canadian farmers. Our government declines to say along what lines reductions in the tariff are to be made. Of course sufficient time should be allowed for investigation and consideration, but business cannot flow in its full volumne and usual direction under the harrowing uncertainty that now signalizes the situation.

The Edwards lumber company will substitute electric cars for wagons in hauling their lumber to Ottawa.

THE TORONTO FAIR AND AMERICAN EXHIBITORS.

Our esteemed American contemporary, Farm Machinery, of St. Louis, of which C. K. Reifsnider, otherwise known throughout the trade in the United States as "Eli," has an interesting article anent the recent Toronto Industrial Exhibition and the American exhibitors thereat, and illustrates the interest that American manufacturers take in showing their products and selling them to Canadian consumers. Our contemporary says

Thinking it might be of interest to the many thousand readers who read "Eli" each week, to know what American manufacturers were seeking Canadian trade, and were showing their implements at the great Toronto exhibition, which is the fair of the Province, and which is far ahead of any of our American State fairs, we spent two days at the fair grounds and found many representatives from the States in attendance.

From an official source we learn that a prominent harvester firm in New York, had six of their officers and salesmen at the fair, trying to learn what their Canadian competitors were doing.

The exhibition grounds, proper, are more complete and extensive than any of our large fairs possess, and the management is as nearly perfect as can be.

One thing noticeable is that the fakirs are conspicuous by their absence, while entertainment is furnished far beyond any attempt made by our home managers.

Season passes are furnished to all exhibitors and their helpers. Every courtesy possible is extended to both workers and visitors, and an attempt is made, with very decided success, to bring the people to the exhibition and interest them while there. An admission fee of twenty-five cents is charged. Ten cents is charged to the Dog and Cat Show building, and twenty-five cents to the grand stand. Good and substantial meals are furnished on the grounds for twenty five cents.

One large building, devoted entirely to bicycles and sporting goods, contained about fifty exhibits. No wheels made in Toronto were shown, an agreement having been made by the makers here to keep away from this show and have an exclusive wheel show later in the season. First in the building we come to the American, from Chicago, but "Baby Bliss" is present only by photograph. Morgan & Wright tires, from Chicago, had a very pretty booth, while The Relay Manufacturing Company, from Reading, Pa., had about fifteen samples of their different wheels, including their new baggage delivery tricycle.

The White Sewing Machine Company, Cleveland, had their 1897 model, as well as samples of their other wheels in one of the best arranged spaces in the building. Next to them, and as nicely displayed, was Bean, Chamberlain & Company, Hudson, Mich., with "The Hudson."

The Punnett, of Rochester, under the name of the New Barnes, had a corner of the regular Barnes "White Fellow" space.

The Overman Wheel Company, with Victor wheels, and the Winchester Arms Co., with a line of rifles, pistols and knives, filled out the American portion of this building.

In the Implement Hall, the first noticeable space was "Dering, Chicago," with corn harvesters, Pony harvesters, hay rakes, mowers and single reapers.

Next came McCormick's table harvester, here called the Bindlochine, in care of Cossit Bros. Company, Brockville, the Buckeye frameless, from Akron, in charge of their Canadian agent, and the W. A. Wood single apron, in charge of Frost & Wood, Smith's Falls, Ont., were the representative harvesters from over the line.

Buckeye pattern mowers were shown by Frost & Wood.

S. L. Allen & Co., Philadelphia, had a large space full of Planet Jr. goods, in charge of Steel, Briggs, Seed Co, To

ronto, and R. Dillon, Oshawa, Ont., all operated by experienced men

The Novelty Mfg. Co., Rock Island, Ill., patent disk sharpener for disk harrows, and the Kerry Drill Co., Detroit, Mich., portable drills, were new people here.

A new device for handling peas, beans, etc., as an attachment to a mower, was shown by Tolton Bros., Guelph, Ont.

Richardson & Webster, St. Marys had the St. Albans shredder, while the Watson Mfg. Co., Ayr, Ont., the Thom Implement Works, Watford, Ont., and B. Bell & Son, St. George, Ont., showed fodder and ensilage cutters with pneumatic or power attachments for elevating the fodder, in place of the regular elevators as used by our home people.

The only separator on the grounds with a Farmer's Friend stacker, was from the Sawyer-Massey Co., while an even dozen were shown still clinging to the out-of-date stackers.

Pratt & Letchworth, Buffalo, had a large show of malleables, steel and drop forgings. The malleables were samples of styles used by Buffalo Pitts Co. and Lehigh Valley Railroad and the steel shapes by the Canadian General Electric Co.

The American Harrow Co., Detroit and Windsor, a full line of harrows, seeders, and Little Giant cider mills.

G. H. Grimm Mfg. Co., Hudson, O., fruit evaporators and sugar pans.

P. K. Dederick, hay presses, by John Abell Co., Toronto, had no opposition.

Among the fence people the Cyclone Wire Fence Co., Holly, Mich., and the Page Wire Fence Co., with the Bond Steel Fence Post Co., also of Adrain, Mich., held their own against all comers.

On seventeen different wind mills, every one of which looked familiar, there were no American firms named.

To the Massey-Harris Co., of Toronto, must be awarded the ribbon of excellence for the most complete show on the grounds, in charge of Mr. W. McKee, Jr., who also had charge of this firm's effort at the World's Fair. They had over one hundred different tools, comprising harvesters and binders, mowers, hay rakes, tedders, hoe and shoe grain drills, corn cultivators, bean harvesters and combined cultivators and harvesters, field cultivators or clod crushers, disk harrows, spring tooth harrows, Scotch tooth harrows, root pulpers, ensilage and fodder cutters, light reapers, plows, farm wagons, and steel shapes. Several of their samples were finished with fine woods, nickel and gold plating, and the entire space was ornamented by samples of grain of all kinds, brought from the different provinces and shown mostly on the stalk.

The Carriage Building was filled to overflowing with as fine a collection of carriages, traps and sleighs as could well be found anywhere, and the several builders that expressed themselves, were very well pleased with the sales made here. One of the most prominent exhibitions was that of the J. B. Armstrong Mfg. Co., Guelph, Can., and Flint, Mich., springs, gears, etc., and an original Chinese wagon, built by a party that are now using Armstrong springs.

It certainly would pay a goodly number of our American builders and expert workmen to visit the Toronto Fair at their next annual show and gain pointers from their Canadian cousins, and it would be money well invested for some of the managers of several of our so called State fairs, to come over here and see how to run a successful fair without fakirs, and one that benefits the exhibitor.

CANADIAN FURNITURE IN IRELAND.

Mr. James B. Taney, United States Consul at Belfast, Ireland, communicates the following information to the Department of State regarding an important Canadian manufacturing industry:—

"For the benefit of those who may be interested, the attention of the Department is called to the fact that a representative of a large furniture manufacturing firm at Woodstock, Ontario, has been recently in Belfast soliciting orders from the trade for all classes of furniture. It is estimated that during the week he was here his orders aggregated $5,000, and while in Dublin they aggregated $10,000. Chairs and desks appeared to be the lines which he pushed most vigorously. I was shown a catalogue issued by this concern called a "chair book," which contained one hundred and sixty-five pages, exclusively devoted to chairs of every description; also, a price list, a key to the former, of twenty-five pages. The catalogue was a most elaborate and attractive book, full of illustrations and executed in the best style of the printer's art. The same firm has in preparation an elaborate catalogue of bedroom suites, extension tables, chiffoniers, hall racks, sideboards, roller or shutter desks, etc. Its representative was prepared to furnish everything in the furniture line of which the frame is made, either in whole or in part, by machinery.

"I understand that there are several other large firms in the same locality whose representatives are "on the road" in all parts of the Kingdom, soliciting orders for all classes of furniture. In fact, they are applying the German idea of sending agents abroad to solicit trade who have absolutely a thorough knowledge, technical and otherwise, of all the details of the business which they represent. They ascertain the style and class of furniture most in use, that which is most popular and sells best; they agree to duplicate English designs and makes at much lower figures than the home manufacturer; they take orders for any quantity and in any pattern from three suites up, agreeing to deliver the goods carriage paid. As may be supposed, this vigorous personal application is meeting with much success.

"These enterprising firms are having great success in another line of orders, viz, supplying duplicate designs "in the white," or unfinished condition. That is, the goods are made ready for putting together, and when they arrive on this side they are fitted up, upholstered, and completed ready for the market. This method means packing in smaller bulk, thus saving considerable in handling, transportation, etc.

"I learn also that these firms have a very large export trade in certain lines of wood "in the white," which stain well and make excellent imitations of chippendale mahogany and other expensive woods so popular in this country. They are finished up for customers in various styles, as required.

"Up to the years 1892 and 1893, many large American manufacturers had almost a monopoly of the export trade in machine-made furniture. Their agents would periodically visit the trade on this side and sell from designs, with stocks or samples of same at London, Liverpool, or Glasgow. This new departure, however, of competitors, unless followed up by American manufacturers with their wonted intelligence and vigor, is likely to divert a very large share, if not all, of the trade to Canada, which was formerly monopolized by American firms.

"In this connection, it is not too much to say that the Canadians are not only making vigorous efforts to divert export trade from other countries to their own, but are quite successful; not only in many branches of manufactured goods, but also in the products of the farm. In fact, evidence is not wanting that the vast resources of Canada are being utilized more generally and successfully in the industrial arts, trade, and commerce with the United Kingdom than at any

period of her history. Each succeeding year finds her people elbowing their way more extensively into the foreign trade and successfully competing with the exporters of other countries, and in lines, too, which formerly were entire strangers to them.

"If the American manufacturer desires either to retain or increase his present export trade with Ireland, he should understand that it will be necessary to give it the most careful attention in directions that are comparatively new to him, and I mean by that that his representatives must be prepared to meet the representatives of manufacturers of other countries whose efforts to enlarge their trade are buttressed by the most careful, painstaking, and intelligent methods, which are the outcome of long experience and careful study of their customer's needs and idiosyncrasies.

"In the absence of import duties upon many lines of manufactured merchandise and many products of the soil, and in view of the large population and high standard of living as compared with many other countries, this Kingdom is favored ground for manufacturers of every clime who have merchandise to export and a foreign trade to cultivate. Hence it is that Germany and Belgium, by years of intelligent study of the wants of their prospective customers, have made such inroads upon the home trade of this Kingdom, and, in consequence, have caused so much astonishment and envy among competing manufacturers elsewhere at their success."

THE AMERICAN IRON TRADE UNDER PROTECTION.

Mr. James M. Swank, general manager of the American Iron and Steel Association, has recently published an article in which is contained some very interesting statistics, having reference to the progress of the iron and steel manufacturing industry in the United States under protection, from which we extract the following:

	Total shipments of Lake Superior iron ore.	Production of pig iron in the United States.	Production of all kinds of steel in the United States.	Production of iron and steel rails in the United States.	Production of pig iron in Great Britain.
	Gross tons				
1860.....	114,401	821,223	11,838	185,079	3,826,752
1865.....	236,208	831,770	13,627	318,118	4,825,254
1870 ..	330,940	1,665,179	68,750	532,571	5,963,515
1875	891,267	2,023,733	389,799	707,600	6,365,462
1880.....	1,903,745	3,835,191	1,247,335	1,305,212	7,749,233
1885.. ..	2,466,372	4,044,526	1,711,920	976,978	7,415,469
1890	9,012,379	9,202,703	4,277,071	1,885,307	7,904,214
1895.....10,428,268		9,446,308	6,114,834	1,306,135	7,895,675

ELECTRICAL FARMING.

It is a fact, openly commented upon by the Patent Office officials in Washington, that much of the attention of inventors of late has been turned to the adaptation of electricity to farming. The field is a broad one, and judging the probable advance on this line by what has been done on other lines, it enables us to catch a fleeting glimpse of that much heralded institution—the complete electrical farm. The number of electrical farming patents applied for during the last year shows that an electrical farm, pure and simple, may be possessed by anyone in a position to gather the scattered devices together and put them in operation on one plantation.

Discussing this phase of electricity where the subtle fluid may be put to practical use on farms, a writer in the Buffalo Express says that several electrical farms exist at the present time, but they are merely instances of special application the broader application remains to be accomplished. There is, however, no reason why we should not possess a comprehensive electric farm at once. Not only have we a host of mechanical devices such as electric plows, harrows and other soil disturbers, but the fact that the current can be used in lieu of the regulation forcing frame is a possibility in itself of vast importance. Nearly every department of the farm has suggested an idea to the electrical inventor. The fact that the transportation of garden produce to market by trolley cars has been the means of disposing of otherwise unsalable stuff, is an argument of long range, but a forcible one for all that. The possibilities ahead of long distance transmission, the procuring of power from artesian wells, the electrical utilization of wind-mills and the now possible method of using the currents or tides of rivers, are all arguments for the despairing ones who can see no way of procuring electric power at first hand.

The procuring of power is, after all, the principal obstacle in the way of electric farming. Remove it and all the other applications are easy enough. There are several methods of obtaining this power within easy reach of every husbandman. The physical aspect of the country will, generally speaking, decide the method to be used in each locality. Long distance transmission of power as pursued now in several mining and lighting plants in the United States is the most feasible method of obtaining an electric current at present. It is, also, where large communities are supplied, the cheapest. The process of obtaining the power is simple enough. A central power plant is located in some spot where coal is easily procurable and the current is sent across country by wire in all directions, or a waterfall is used to operate turbines or water wheels which in their turn operate dynamos from which a current is sent through transformers to any distant point. As currents have already been sent 100 miles we can anticipate the spectacle of the future by supposing an immense power plant to exist in the centre of a farming community, supplying current for every possible farm use and transmuting it to every plantation within a radius of this length. Under such a system a whole State could be supplied with current from a half-dozen plants. Another element of compensation to be found herein is the electric lighting of country highways which would surely follow on a large scale. At Enguibaud, France, less than 30 horse-power is transmitted from a waterfall to a neighboring farm for the purpose of operating an electric plow. The latter is drawn back and forth across the field by cables. The whole installation cost $5,000 and it is understood that some of the power will be rented out to nearby farmers. At Rostock, Germany, an alternating current of 2,000 volts is transmitted 3.5 kilometres across country where it is transformed to 200 volts and used to work two electric plows. The plows require from 25 to 28 horse-power for the operation and are very successful.

In fact it has been stated that the time is not far distant when farmers of a neighborhood will club together and harness the nearest available waterfall and use it at a minimum cost to supply them with electric light for their houses and power for their farms. The beauty of the system consists in

that the first cost is almost the whole cost, for with the modern flume system of installation the plant can be operated as easily in winter as in summer No coal is required, very little attendance is needed and in many cases small municipalities nearby are glad to grant a franchise for electric village and town lighting, the profit from which will more than amount to the current running expenses. The electric power in that case practically becomes free as far as farming purposes are concerned.

An artesian well may be made to produce enough electric power to operate every piece of machinery on a farm.

There is an artesian well near Chamberlain, S.D., for instance, operating the electric plant from which a current is obtained to light up the city at night. This current could be used for power purposes on the farm instead of for lighting purposes. This well is situated in what is known as the artesian well basin of South Dakota. Other wells are plentiful in all directions and several more private electric plants have been projected Some of these will be partly used for farming purposes so that we may soon have an electric farm in operation in the United States. The well at Chamberlain is 675 feet deep and eight inches in diameter. When left to itself, without a nozzle, the water will shoot up in widening column, 12½ feet If it is caused to flow through a 2¼ nozzle it will shoot up 162 feet Tests have shown that it flows at the rate of 4,430 gallons a minute and with a pressure of 110 pounds to the square inch. It is computed that the effective energy of the moving water equals 100 horse-power constantly exerted The water is led through a pipe and caused to infringe on the cups of a water wheel. The result is that a 500-light dynamo is successfully operated. About 1,100 volts are generated, but the well power is capable of operating a larger dynamo. In fact the installation of a larger machine is intended.

The newest project in Chamberlain is to utilize the excess or lost power of the well for operating a creamery, a project right in the line of electric farming. There is no reason why this current should not be transmitted across country to any distant farm and so be made to operate at long range. It is indeed a wonderful well that can supply a city with water, electric light, heat, power and swell a nearby creek until it has become a very respectable river, with a current sufficient to carry away all the sewage of the place' Why could not wells of this kind more limited in power perhaps, but as effective up to a certain point, be sunk in many parts of the United States and electrical farming be practiced on a large scale.

There are 1,000,000 windmills in operation in this country at the present time. Every one of these mills can be adapted to the generation of electric power for farm purposes. According to computation, windmills are sold at the rate of 100,000 a year. Many of these are exported, to be sure, but the number of effective mills is constantly increasing. Here is another local means of obtaining current. It is already being obtained in various parts of the country. Professor Brush, of arc-lighting fame, lights his residence near Cleveland, Ohio, with current obtained primarily from a windmill. The plant has been in operation nine years and there has been no breakage or stoppage during all that time. The power could be generated on any farm and there are already many installations of the kind in France. The practice is to operate a dynamo the armature of which is turned by the mill. Storage batteries collect the current and hold it in reserve during the days when there is little or no wind. It takes but little wind to generate a practicable electric current. A six mile an hour wind will easily drive a mill, and when a velocity of sixteen miles an hour is projected against a sixteen foot mill it will produce 1.5 horse-power constantly exerted. A few years ago a private lighting plant was installed in which steam was used to drive the dynamo. The steam plant cost $1,000 to install and the lowest estimate on the running expenses of each lamp was $4.23 for a year. Seventy-five lamps were used. The steam plant was afterwards replaced by a windmill plant. The cost for operating each of the 127 lamps now is $2.00 a year. This will serve to illustrate how cheaply electric power may be produced in the country, not to mention the cleanliness and lack of trouble of the one method as opposed to the inconvenience, dirt and grime of the other. With a windmill electric plant farmers could rent out power to their neighbors. The transmission could be easily accomplished Poles, trees and fences could carry the wires.

It has been often suggested that the currents of rivers might be utilized for power purposes. This is already being done near Chicago. It is accomplished by anchoring a pontoon in a river, the pontoon carrying a number of large paddle wheels which are revolved by the action of the current. Attached to the paddle-wheel shaft is an endless chain, which is also attached to and in fact operates a series of water buckets The buckets are part of an elevator system and travel up and down a high staging. They pick up the river water and lift it to the top of the staging, from which they pump it into a flume. Thus a great head of water may be obtained, depending of course on the velocity of the river. So far the water thus raised has been used in irrigation, but efforts are being made to adapt the raised water to the operation of a water wheel, in which case electric current could be generated and transmitted any distance. This is another case wherein the farmer may be benefited by the adaptable quality of the modern system.

But having procured his electric current by one method or another, the farmer will want to know what to do with it. In the West electricity is operating a fifteen blade gang plow which will cut a furrow six feet wide. The blade revolve and the plow is pulled across the field by means of a cable which passes around the drum of an electric motor on the plow In New York State there is a trolley plow in operation. Wires are stretched along the edge of the field and carry current to a cross wire, which, as in the case of the plow mentioned above, passes around the drum of a motor. But in this case the motor is attached to the axle of the plow wheels and turns the latter with its own power. Current in this case is transmitted overland for some distance from the power-house.

An electric plow has recently been tested near Chicago which will run in any direction and at any speed, irrespective of its surrounding. It consists of a two-wheel platform, a motor and a plow. The wheels are iron frames having sharp ridges at intervals so as to obtain a good purchase on the ground. There is a resistance box to regulate the amount of current and a reel carrying a coil or flexible wire much the same as is used for incandescent lighting, only larger. The

current was obtained from a near-by trolley line at the pressure of 500 volts. As the plow travels in any direction the reels unwinds the flexible cord which is long enough to reach to any part of the field, or rewinds automatically when the machine approaches the point of current distribution. It plows more evenly than a hand-worked machine and costs less to operate. In can also be used in place of a traction engine for hauling machinery around the farm and with a driving pulley attached to the axle it will drive a threshing machine. This same principle has also been applied to harrows, to seeders and to harvesting machines. There is an electric reaper in operation in our Western wheat fields. Corn shellers have also been operated and propelled by the electric current.

So we may run down the list of electric churns, electric spading machines, electric hay lifts, electric tree fellers, electric fence makers, electric forcing frames, electric irrigators, electric stock feed boilers, electric sheep shearers, etc. There is a plan under way in one large abattoir to electrocute steers instead of killing them in the old-fashioned way. There is a process for treating manure by electricity so as to increase its fertilizing properties. Special trolley manure-cars are in use. Trolley cars are now built for the special purpose of transporting New Jersey truck to New York City. Cattle are kept from breaking out of a field on a Western ranch by an electric current which traverses the barb wire fence and shocks the animals every time they come against it. There is an electric device intended to prevent horses from running away. There is an electric horse shoer. There are a thousand and one electric devices for farm use and they may all be operated if sufficient current can be obtained.

The remaining phase of electric farming is that which covers the theory of the stimulation of plant growth by the direct application of the current. The theory on the one hand is that the use of arc lamps in the market garden simply prolongs the day and keeps plants growing all the time, whereas if left to themselves they would rest so to speak each night. The theory of the second part of the proposition is that general plant growth is and always has been powerfully affected by the natural currents of the earth; that we can trace great failures or periods of great productiveness in crops to the absence or presence of underground electric manifestations. However this may be it has certainly been found that plant growth is much stimulated by the use of electric light. At Ithaca, N.Y., Prof Bailey has produced some wonderful results through the artificial stimulation of the arc lamp. Prof. F. W. Rane of the West Virginia Experiment Station has accomplished almost as much with the incandescent lamp which he claims to be more available. Prof. Bailey hung a 2,000 candle power arc lamp in his greenhouse and kept a current on all night. He found that germination proceeded much quicker, some of the plants running to seed in fact before the edible leaves were formed. The plants even bent or were attraoted toward the lamp to an angle of forty-five degrees, but straightened up again during the day. In three weeks, lettuce which had received the benefit of the arc light was double the size of that which had not, although both had been planted at the same time. Different plants are variously affected and all plants are affected more highly when the arc is covered by a globe than when it is bare.

Prof. C. D. Warren of the Amherst Experimental Station has experimented with electric currents sent through the earth. Several inches below the earth he caused a large number of wires to be strung. They extended from side to side of the garden, and in fact before burial looked like the string of an immense piano. Seeds were planted in the earth above the wire and a current was constantly exerted from a near-by power house. Strange results were obtained. Many seeds sprouted before their time. Roots of vegetables were found to be greatly enlarged. In another garden side by side with the electric garden the same kind of seeds were planted, of course nothing extraordinary was observed. All of these investigations are part of our natural progression and the scattered elements of electric farming are sure to be rounded up and reduced to a well-moulded and practical basis before very long.

EDITORIAL NOTES.

Recently the Department of Trade and Commerce sent out a circular letter to the Boards of Trade throughout Canada, and to many importers and manufacturers also, making enquiries regarding the conditions of Canadian trade, both domestic and foreign, and requesting suggestions thereanent. By some remarkable concatenation of events the Department failed to remember the Canadian Manufacturers' Association when sending out their circular—or, at least, it has never been received by the Association. The Association will, no doubt, fully and dispassionately discuss and consider the matter, and at the proper time submit their views to the Government. Business is business. The Government desire, we believe, to act fairly towards all Canadian interests, and all who are interested should freely and willingly render it all possible assistance to the accomplishment of that end

A couple of days ago in the Dominion House of Commons, Mr. Davin, of Assinaboia, offered a resolution to the effect that the Government were in honor bound to place agricultural implements, binder twine and coal oil on the list of non-dutiable articles. The resolution was promptly voted down by a vote of 128 to 26.

It is probable that on some day during the ensuing week the Dominion Parliament will adjourn, to assemble again at a date not yet announced, but probably in the early part of the coming year. No proposition has been introduced into the Commons looking to tariff changes, and the country must remain in suspense for some months yet on this most vital and important question.

A method of nickeling wood has been devised by the German chemist, Langbein, the wood being covered by a thin coating of metal by either a dry or wet process. As Canada is the only country in which nickel is now found in large quantities, this new discovery should add to the ever-increasing demand for this metal.

If the wood pulp and paper manufacturers were certain of McKinley's election in November, there would be a hustling to

secure some of the areas of spruce forest available by railroad to their immense establishments. McKinley's election would mean the restoration of the duty on lumber, followed by an export duty on Canadian pulp wood and pine logs, with an increased demand for American forest products.—Northeastern Lumberman.

There seems to be no limit to the ingenuity bestowed upon the devising of means for accomplishing the transport of the perishable produce of distant climes to the English market. A new method is that of packing butter in a box made of six sheets of ordinary glass, all the edges being covered with gummed paper. The glass box is enveloped in a layer of plaster of Paris, quarter-inch thick, and this is covered with specially prepared paper. The plaster being a bad conductor of heat, the temperature inside the hermetically-sealed receptacle remains constant, being unaffected by external changes.

The commission appointed by the United States Secretary of the Navy to test a teredo-proof paint invented by Thomas J. Cholderson, a painter at the Pensacola, Fla., navy yard, has concluded the test of it. On March 16th they sank at the navy yard four pieces of heart pine wood. One piece was unpainted, while the others had coats of the teredo-proof paint. The commission had the pieces of wood raised on September 15th. The piece that was not painted was totally honeycombed by the teredo and fell to pieces. The other three pieces were not touched by the insect and were perfectly dry on the interior. The commission considers the invention a perfect success, and so reported to Washington.

Alluding to an editorial in the last issue of this journal regarding the Ottawa Ship Canal, reviewing the article, says:

Ottawa people cannot but read with pleasure this glowing and enthusiastic testimony to the enormous commercial and industrial development promised through the proposed ship canal. Ottawa is at present a prosperous and growing city, but it is clear that she would be at once raised to the rank of a great commercial metropolis were the Ottawa Valley and neighboring country to feel the stimulus that the canal undertaking would afford.

The importance that this great work would be to Canada, were it completed, cannot be overestimated, and it should be kept prominently before the attention of the Canadian people. It is to be hoped that the Government may view it in this light and not suffer the project to come under the control of any private corporation. The canal should be built by the Government, and be an integral part of our present system.

A man may bet,
And a man may sweat,
And a man may puff and blow;
But he can't get trade
By sitting in the shade,
Waiting for business to grow.

The first deficit of the Laurier Government promises to be something immense. With a probable revenue for the current fiscal year of thirty-six and a half million, the estimates submitted to Parliament provide for an expenditure of forty-four and a half million, and it is intimated that power to spend still more is to be asked in further supplementary estimates. Mr. Laurier's is a business administration in the same sense as Mr. Mercier's was in Quebec. It will give business to the money-lenders.—Montreal Gazette.

Will reducing the tariff increase the revenue? If it were distinctly understood that no material changes were to be made in the tariff, and that there was to be no abandonment of the protective policy, business would boom under the reviving confidence, and the Government would soon be in good condition to meet all fiscal demands that might be made upon it.

Our British exchanges tell of a number of blast furnace men in the Cleveland district who would lay off on a certain day. They were working on an old furnace awaiting the completion of a new one, but as they stopped the old one on the day referred to it could not be put in operation again. The result is that those men will be idle for several months, and all for one holiday. It is astonishing how men will sometimes persist in injuring their own interests.—American Manufacturer.

For eighteen years the Grits have been denouncing the duty on coal oil. It mattered not that, for the greater part of the time the duty was that fixed by Mackenzie. It was an outrage. The poor farmer was suffering. The Hamilton Times has devoted many columns to the coal oil duty and has demanded a thousand times that it be thrown off. In his celebrated Montreal speech—which he cannot now remember—Mr. Laurier promised to put coal oil on the free list. But now comes the London Advertiser, Grit, with evidence to prove that "it is not true that the oil industry is a tax upon Canada," and that it is "a great industry built up by the common consent of all parties." The Advertiser finds that "a gigantic monopoly" exists in coal oil in the United States, and to remove the duty would be to place Canada at the mercy of that monopoly; it now finds that "it is desirable to keep Canada out of the clutches" of that monopoly; it finds all the arguments which have been put forth by the Tory press during the last eighteen years for the maintenance of a heavy duty on coal oil. What is up?—Hamilton Spectator.

The London Times says: "A special meeting of the Associated Chambers of Commerce will be held in Southampton on the 15th and 16th of next month (September), Sir H. Stafford Northcote, C.B., M.P., in the chair. The London Chamber has given notice of moving that the time has now arrived when the government 'may properly consider the desirability of appointing competent officers to the more important colonies and possessions for the purpose of reporting on their agricultural, commercial, mineral and industrial development, such officers to be paid out of imperial funds.' Among the other subjects to be considered are the establishment of a commercial union between the colonies and the mother country; the urgency of an adequate royal naval reserve and the formation of public trusts for the acquisition and working of canals.

We are frequently told that Protection does not protect the farmer. The following comparison between the Mackenzie tariff and the present tariff on articles of farm produce is a conclusive reply on this point:

	Tariff of 1874-78.	Tariff 1896.
Animals	10 per cent.	10 per cent.
Eggs	free.	5c. per doz.
Apples	10 per cent.	40c. per bbl.
Beans	free.	15c. per bush.
Buckwheat	free.	10c. per bush.
Peas	free.	10c. per bush.
Vegetables	10 per cent.	25 per. cent.
Barley	free.	30 per cent.
Wheat	free.	15c. per bush.
Wheat flour	free.	75c. per bbl.

This table shows at a glance the difference between a revenue tariff and a Protective tariff on the products of the farm. Then Protection, by building up home industries, creates a home market, in which the farmer can sell his goods, thus benefiting him with both hands at once. It makes a market for him, and then keeps the Americans out of it.—Montreal Star.

Our advice to the bicycle is this: You have succeeded in hurting the livery stable and horse business, but don't tackle the trolly car. It was first in the field as the emancipator of the horse.—Electrical Review.

It is said that the new postmaster-general is obtaining information regarding the privilege extended to newspaper publishers of free transmission of their goods through the mail. It is claimed that extensive reports are being obtained from all cities and large towns, and upon the information thus obtained will be based the decision whether or not the privilege will be abolished. The new postmaster-general is on the right track. The free carrying of newspapers in the mails is something that never should be allowed. The privilege, originally intended for bona fide newspapers only, has been gradually extended to all manner of publications, until the mails are burdened with thousands of tons of matter of so little importance that it would never have been printed had it been subject to postage. But even bona fide newspapers should not be carried for nothing. The newspaper is the product of a factory, and the government has no more right to carry it free and deliver it free than it has to carry and deliver, free, stoves, tobacco, cotton goods, carriages, pig iron, or any other product of a factory. It will be a hard matter to get the small publishers throughout the country to agree to the restoration of postage upon newspapers. They will talk all manner of rot about "a tax on knowledge," and will plead for their "privilege" and their "right." But the carrying of hundreds of tons of paper daily, by the government, without cost to the owners of the paper, cannot be defended. Aside from the fact that it is right and just that newspaper publishers should pay for the delivery of their goods to their customers, it may be mentioned that the imposition of postage upon newspapers would add a not inconsiderable sum to the revenue of the country, and it might be that the additional revenue thus obtained might be sufficient to induce the government to drop the letter rate to two cents, a change which would please the public very much. We hope the postmaster-general will make us pay postage.—Hamilton Spectator.

THE CANADIAN MANUFACTURER most heartily endorses the proposition of the Spectator that all newspapers distributed through the mail should pay postage. It is but simple justice to all concerned that they should do so.

Success in advertising results from a close observation of a few well-established principles. The first is to know what parties are to be reached. A steam engine is used by comparatively few people; patent medicines by nearly everybody, and each dealer must know who will probably be his patron, and where they are to be found. The second is that the medium employed be adapted to his wants. A family paper is excellent for the patent medicine man, but worthless for the machine. The paper that is often referred to by its readers is to be preferred to the one that is simply read and thrown aside. This accounts for the wonderful success of the trade journals, and their development within the last ten years has been astonishing. Of course, different men and different enterprises will advertise by different means. They will paint rocks and barns, but those who advertise the most extensively claim that their returns come from periodicals and trade papers. It is remarkable how closely these pages are scanned by all classes. But whatever means one adopts, the fact remains undisputed that advertising is the one factor of business life to-day.—The Manufacturer.

The city of Eddy in New Mexico is to be the scene of the second experiment in beet sugar manufacture from beets grown on irrigated lands. The sugar factory now constructing there is progressing quite rapidly; for the building is about roofed in and the machinery is being rapidly placed in position. It is expected that the new factory will be open for operations in November, beginning with a capacity of 225 tons daily, and as a large number of the farmers in the vicinity have already undertaken the cultivation of sugar beets, it is thought that in its second season the factory will have more beets offered to it than it can possibly consume without further enlargement. The Roswell Register reports that one farmer in that locality has 700 acres of beets under cultivation for this factory.

In a recent speech at Dallas, Texas, Judge Adridge said:—Last May a little bug settled down on the wheat fields of the Northwest, and in one or two weeks ate up one-half of the sixteen to one argument on prices and sent the prices back into the neighborhood of those of 1873. The old hayseeds, who knew the habits of the chinch bug and the kind of a multiplication table he used in regulating the increase in his family, took the train for Chicago, commenced buying wheat, and broke all the 'smart Alecks' in the city. They may have talked gold standard depression at home, but they put their money on the chinch bug in the city and won. The caterpillar and boll worm can do the same thing for cotton. I only know the chinch bug by reputation, but I am personally acquainted with these worms. They are composed of appetite and skin. They do not care a tinker's blessing for anybody's standard, and when they invade the cotton fields of the South they send the price of cotton up in every mart of the world, gold standard or no gold standard. They have been doing business with us this summer, and have moved the price of cotton up sixty per cent. This bug and these worms haven't many friends, but as sluggers in an argument with a sixteen to one crank they are entitled to the belt.

Now that Canada is to have its tariff reformed on a revenue basis we may look out for fearful suffering from political chinch bugs, caterpillars and boll worms.

The London Labor Gazette, in an article on the industrial census in Prussia shows that in 1882 the proportion of the population living by agriculture and fisheries was 43.6 per cent.: in 1895 it had decreased to 36.1 per cent. This is an illustration of the vast increase in the proportion of the population now living by manufactures.

Bradstreet's has the following memo. on wheat:—An exchange says that "a great amount of talk is being indulged about the low price of wheat, and a certain class of so-called economists attribute the decline to the lack of money, especially of the cheap kind But the facts show that the decline in the value of wheat since the seventies has resulted from excess of production in comparison to the consumptive demand From 1869-72, inclusive, the United States annually produced an average of 244,187,750 bushels. In the four years 1892-95 the average crop was 510,000,000, according to the Cincinnati Price Current, which is generally considered a better authority than the Department of Agriculture. The population of the United States increased perhaps a little more than sixty per cent. during the period covered by these figures, while the wheat product more than doubled. Besides, Russia and the Argentine Republic have greatly increased their exports of wheat to the world's markets."

The Rio de Janeiro Flour Mills and Granaries Co., an English concern operating in Brazil, has declared a dividend. During reciprocity between the United States and Brazil, that company's outlook was not very bright; but now evidently, with the Brazilian tariff excluding American flour, it is pulling along all right.

The Chicago Industrial World, says that Colorado is going to have the largest tunnel in the world. A company has undertaken to do forty-eight miles of tunnelling under Pike's Peak mountain and the territory near by. It is to be built eighteen feet high, for a double track railway. The amount needed for the tunnel is $20,000,000. The intention is to have forty-eight miles tunnelled and the main line in operation before March 1906.

A correspondent of the New England Farmer makes a suggestion that commends itself to the attention of Canadian farmers. He says:

Labor saving implements have become a necessity. The farmer of small means cannot afford to purchase all the modern appliances, and the consequence is that he works at a disadvantage. The farmer, however, with a fairly good farm, well stocked, equipped, and of ample size stands in another class. I could name several farms of one hundred to one hundred and fifty acres within ten miles which are returning the owners a handsome profit. The gulf between a farmer of small means with a poor farm to start with and the farm just described is very great indeed. It seems to me, however, that the small farmers might combine their energies and humbler resources by forming groups of four to six and become the owners of more of the improved and labor-saving machines, and use them alternately. Wouldn't it be a good thing to put in practice the old adage "owe no man anything." Haven't we been boasting of our independence when in fact we are quite dependent? Isn't the debtor, whether state, town, or individual, a dependent, in other words, a slave? The great trouble at present is that we are a debtor nation. We are a debtor state. Our municipalities are debtors also. Capitalists across the water own our securities to-day. England, Germany and France do our carrying trade. Foreign companies do most of our insurance. We need a cessation from the propensity to extend our indebtedness. Until we gain our freedom from foreign debt we shall not be people free in fact. "No class of people feels more sensitively the effect of our large indebtedness than the farmer. It touches him first; it clings to him to the end"

Alluding to the recent elections in the State of Maine the American Wool and Cotton Reporter says:

Among the causes which have led to signs of greater activity in wool circles, is the belief that the political outlook is improving. Even before the result of the Maine election was known, these signs were indubitable. Not for many weeks have we beheld so much activity in the offices of the various Boston houses. Customers, or possible customers, have been so much in evidence as to considerably reduce the amount of leisure at the command of the trade. One dealer reports that he has not seen it more lively for two years. The unparalleled defeat of the free silver party in Maine has given rise to a much more cheerful feeling in trade circles than was before noticeable. It is believed to herald a more crushing defeat for Mr. Bryan in November, in which event, in the opinion of very good judges, the country will be freed from the nightmare of unsound money, under which it has been laboring for so many years, and will enter (gradually, perhaps) upon the most prosperous era in its history. Until, however, the votes are actually counted, the banks are likely to be extremely conservative in the matter of loans It is not generally felt that prices for wool will enhance materially between now and then, though sellers are quite confident of holding the manufacturers more firmly up to the quoted rates. The manufacturers are themselves feeling better, and while some of them are buying considerable wool on a speculative basis, there is quite a movement in the staple, on account of a legitimate consumptive demand

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A correspondent of the Manitoba Free Press, writing from Edmonton, says:—

My business as a "drummer" having taken me several times during the past six years to the towns of Prince Albert, Battleford and Edmonton, the thought has often struck me why the immense deposits of coal on the River Saskatchewan are not utilized for the benefit of us long-suffering householders in Winnipeg. In conversation with a party who has taken coal from Edmonton to Battleford, I gleaned the following particulars. Scows can be built at or near Edmonton, large enough to carry forty tons of coal down the river, at a cost for labor of $10; plank to build them will cost $10 per 1,000; coal can be loaded into them at a cost of seventy-five cents per ton. I am told that two men could navigate twenty of such scows or more, coupled together like a train, from Edmonton to Lake Winnipeg at high water without the slightest risk. The journey via Lake Winnipeg would have to be done by tug, and there is, as far as I know, no impediment on the balance of the journey to Winnipeg by river. Now, of course, the greater the quantity the cheaper the transportation, and I do not think there would be any difficulty in landing the coal at Winnipeg at $4 per ton. The lumber in the scows could be sold, as the scows could be built so that they could be taken apart without spoiling the lumber. Any number of such scows could be taken down the river with a small tug, and the capacity of each scow could be increased to 100 tons, if necessary. I would like some of our large consumers of coal in Winnipeg to make a trial trip. A good many of the volunteers who made the trip in 1885 can testify as to the practicability of the route.

The Edmonton Herald reports a striking instance of the difference in the methods employed in handling Indians on the Canadian and United States sides of the line. A band of Crees from Montana were being turned over to the Canadian authorities. The recalcitrant neches were escorted to the boundary by two companies of the United States infantry

with fixed bayonets. On arriving there they were met by a sergeant and a constable of Canadian North-West mounted police. The United States officer in charge sternly demanded where was the escort to receive the Indians, and who was in charge of it. The sergeant, indicating his comrade, replied that there was the escort, and that he was in charge of it. The first thing that happened when the Indians were handed over to the two Canadians by the astonished United States soldiers was the arrest of two desperadoes in the party on a charge of murder in 1885, after which the two mounted policemen, with their prisoners in tow, quietly herded the balance of the outfit to their destination.

Combating the assertion that the tariff is a tax, the Montreal Star says: In the fiscal year of 1895, it amounted to exactly $3.47 per head in Canada. In 1874, under Mackenzie, it reached $3.74 per head; and in 1875 it stood at $3.95 per head. After that it fell off for a time, not because of any reduction in the tariff, but because the people became so poor that they could not buy imported goods. The imports fell from fifteen millions odd in 1875 to twelve millions odd in 1876, and never got above that figure until 1880, when the benefits of the N. P. had begun to tell. In any case $3.47 is not a crushing tax for Federal purposes. It, with the excise and other minor taxes, buys for us the government of the country, the law-making of the country, the payment of our judges, the building and management of our post-offices, a share of our postal services, the militia, the canals, the keeping of the channel open from Montreal to the sea, dredging, the administration of the prisons, the experimental farms, mounted police, immigration and quarantine services, inspection of foods, and of weights and measures, and a host of other services; and, besides this, pays for the lion's share of our provincial government, the Federal subsidy being the chief part of the provincial revenues. Who would take his $3.47 and give up what it buys for him?

LITERARY NOTES.

A particularly interesting bill of fare is provided in the October number of the Methodist Magazine and Review. It leads off with a patriotic article on Australia, "The Greater Britain of the Southern Seas." Bishop Vincent has a striking paper on the true site of Calvary and the tomb of Christ, entitled "In Search of His Grave." Another paper describes with pen and pencil the romantic associations of the beautiful island of Capri and the Bay of Naples. Professor Chant, of Toronto University, contributes a clever study of "James Russell Lowell and the Biglow Papers," with portrait; Professor Wallace, of Victoria University, one on that very remarkable character, St. Catherine of Siena; and the Editor one on "John Nelson, the Yorkshire Mason and Preacher." Other interesting papers make up a number of special interest. Toronto, published by William Briggs, $2 per year.

Outing for October is full of the healthy vigor of brave old Autumn. The frontispiece is a gem, while the many other illustrations are admirably chosen. The fiction department contains two complete stories. "The Master of Brookfield," by Sara Beaumont Kennedy; and "A Honeymoon on Wheels," by Helen Follet. The other contents are: "Trotting Road Teams and Their Drivers," by E. B. Abercrombie; "Bear Hunting in British Columbia, by W. E. Coffin; "A Day on the Uplands," by Ed. W. Sandys; "Schnapper Fishing off Sydney Heads," by F. G. Aflalo; "Why the Court Adjourned," by F. Gerald; "American and English Boats and Oars." by Chase Mellen; "Racing Schooners," by R. B. Burchard; "Lenz's World Tour Awheel;" "Football," by Walter Camp; "The National Guard of Maine," by Capt. C. B. Hall, and the usual editorials, poems and records.

Among many attractive features the October Ladies' Home Journal presents the opening chapters of Ian Maclaren's new story, and one of the best that he has written, "The Minister of St. Bede's;" Ignace Paderewski's long-promised composition for the piano, a minuet—"Menuet Moderne;" and Albert Lynch's "American Girl"—a distinctive characterization of young American womanhood, by the famous French artist—which is shown on the cover. Of interest also is Hamlin Garland's article on the cliff-dwellers of the southwest, who under the apt caption of "The Most Mysterious People in America" he describes, and tells of their home-life, customs, religious rites, etc. In "The Most Luxurious City in the World" John Gilmer Speed presents a surprising array of statistics showing the vast sums spent on luxuries and necessities, amusements, churches and charities in a single American city. The October Journal answers every requirement of a family magazine. By the Curtis Publishing Company, Philadelphia; one dollar per year.

Those popular young people's papers, Pleasant Hours and Onward (Wm. Briggs, Publisher, Toronto), having a circulation of 100,000 copies a week, are both considerably enlarged and otherwise improved, and are issued at the very low price of twenty-five and fifty cents respectively. They abound in good cuts, sketches, stories and interesting reading, and are thoroughly loyal to Canada and its institutions.

The October number of Scribner's Magazine is strong in subjects of interest, including in its contents an essay by E. L. Godkin on "The Expenditure of Rich Men"; a discussion of the problems that unerdlie "The Government of Greater New York," by Col. F. V. Greene; a paper on the way in which "The New York Working-Girl" has organized to take care of herself; and a description of the picturesque and romantic features of the Light-House system along the North Atlantic coast.

A ROLLER STEAMBOAT.

A new invention, recently made by the French ship engineer Bazin, has been of late much commented upon by the public press in Europe, as well as by prominent experts in the ship-building line. The new invention, called the "Express Rouleur Bazin" (Bazin's Roller Express), promises, it seems, a successful innovation in ship-building. By this system, it is claimed, the movement of boats will be increased to about 100 kilometers (sixty-two miles) per hour, that is, nearly the time made by the fastest express trains on the continent.

The name "rolling boat" indicates that the new boat will not slide, as is the case with ships now in existence, but roll on the water by means of enormous hollow wheels or rollers. The boat consists of a large platform (holding the boilers, machinery, saloons, cabins, etc.). This platform is supported on each side by movable hollow wheels (rollers) of an enormous size, presenting quite an unusual appearance. The propelling power of the machinery is used partly to propel the whole by means of screws or paddle wheels, but principally to propel the mighty hollow side rollers.

The inventor, in using his new system, is considerably reducing the resistent friction of the water, and thus attains, with a minimum of expense and consumption of power, a maximum rapidity up to fifty knots and over. The results obtained by Mr. Bazin with a 5½ meters long model boat on the Lake of Vincennes have encouraged him, so that it is now his intention to make further trials with one of greater dimensions.

The first rolling boat, the Ernest Bazin, is in course of construction in the dockyard of St. Denis. It will be of 280 tons capacity, and measure twelve meters in width, by forty meters in length, and be of 750 horse-power. The power produced by the machinery will be transferred to a screw and three pairs of side rollers, each of them to be ten meters in diameter.

Mr. Bazin intends his boat to make her first trial trip within a few weeks by way of the Seine across the English Channel and up the Thames to London.

To judge from the comments made by the press, it really seems that Mr. Bazin has solved a problem thought to be insolvable heretofore; and, if successful and maintainable on the high seas, the invention may produce the fastest boat in existence.

TELEGRAPHING WITHOUT A WIRE.

A young boatswain of the Danish navy has constructed a telegraphic apparatus by which it is possible, without any direct line from land, to communicate with a ship at a certain anchor ground. The Danish Export Review thus describes it:

An electric battery is placed on the shore; one pole is in contact with the water or moist earth, while the current from the other pole, through a telegraph key and a revolving interrupter is conducted to a cable, which is laid out to the anchor ground and

placed round the latter in a coil with a diameter of 1,000 to 1,200 feet.

On board the ship, which is situated at the anchor ground or a little outside the coil, there is a small solenoid with which a telephone is connected.

When you give some communication from land through the telegraph key, a bell sounds on board the ship. They go to the telephon and get the intelligence you give, by means of longer or shorter signals, based, for instance, on Morse's alphabet. The apparatus may also be constructed in such a way that they will be able to answer you from the ship. Nay, the inventor thinks he will succeed in getting so far that you can simply speak to one another as in a common telephone.

Mr Sorensen carried on his experiments for two years before he reached a satisfactory result. Now, the Home Department has permitted him to establish such a telegraph between the lifeboat station at Tyboron and the anchor ground of the steamship Vestkysten so that people on land may always be in communication with the ship The expense in connection with this undertaking will be about 3,000 kroner.

The Home Department, however, wanting to be fully satisfied that the ship may always know when you commence telegraphing from land, has given orders to construct the apparatus in such a way that an electric arc lamp is automatically lighted on the shore opposite the anchor ground at the same time as you commence telegraphing. It is to be raised, automatically, too, to the top of a pole, and throw its light over the ship.

Two vessels at sea will also be able to telegraph to one another when they both have a solenoid on board. The distance in which they will be able to do so depends on the length of the wire and the power of the electric current. Flags signals between men-of-war in time of war may easily be discovered by an enemy it is now not necessary to use them.

A NEW DIVING MACHINE.

The poet tells us of things that lie in the deep bosom of the ocean buried; and it is generally accepted that objects that are a hundred feet or more beneath the surface of the water are practically irreclaimable. It therefore remained for Mr. C. D. Myers, of Cleveland, Ohio, to show the incorrectness of the supposition, and to prove that men may descend to a much greater depth under water than a hundred feet, and remain there in comparative comfort for a length of time sufficient to effect the rescue and salvage of much wealth that would otherwise be lost. The Marine Record tells of a visit of Mr. Myers to that journal where he announced that he had made a test trip in a machine that he had recently invented. He declared that he had descended 225 feet to the bottom of Thunder Bay. He remained below some two hours, wearing his ordinary summer clothing except for an all-wool suit of underwear, having taken this additional precaution because of an attack of malarial fever, from which he has not fully recovered. His stay was cut short by the extinguishment of his searchlight, which is in a separate chamber the top of the machine. The tremendous pressure of the water at that depth forced out a part of the rubber gasket on which the search light chamber was screwed down, and filled this little chamber with water, shortening the electric circuit and allowing the light to go out. Everything worked beautifully in the chamber proper, and the deficient gasket is to be replaced by one of soft rubber, with lips upon which the water pressure will act only to make the seam more secure.

The true value of the achievement, says our contemporary, is only realized when it is stated that the lowest depth ever reached by a man who returned alive to the surface was 200 feet. One of the few who have ever reached this depth is Andrew Cameron, of Glasgow, who has contracted to go down to the wreck of the Cape Liner Drummond Castle, which sank off Ushant, on the Coast of France, a few months ago, with great loss of life. She lies in 180 feet of water. Mr. Cameron has remained half an hour at 200 feet depth, but this is the extreme limit of time, while in Mr. Myers' machine, the length of stay is only limited by conditions which would apply to confinement in a small room on the earth's surface. The machine and its appurtenances are tested to successfully resist water pressure at 1,000 feet depth, and Mr. Myers will make a second descent in water of 500 feet depth at the first favorable opportunity afforded by the weather.

Mr. Myers' exploit has been compared with the maximum feats of men in diving suits, but it must be pointed out that these deep descents have been made in only very exceptional cases, and for such brief periods as to leave the trips really without practical result. The British Admiralty limit their seamen divers to 120 feet, and the leading wrecking firm of Siebe Gorman & Co., London, limit good divers, with the best suits and appar tus, to 140 feet as a rule, although in the memorable case of the Alphonso XII., one of their divers, the late Alexander Lambert, did brilliant service at a depth of 160 feet. Lake divers have been dragged out dead after descending only sixty or eighty feet, and the lowest depth to which an average diver will descend is about fifty feet. The members of the profession have always been short-lived, because of the frequent accidents, and the deleterious effect upon the system of working under such great external pressure on all sides. In Mr Myers' machine there is only about five or ten pounds extra pressure of air, which, being both internal and external, is not perceptible. Anybody with the requisite amount of nerve can, therefore, make the descent, and there is no ill effect upon the physical system. The liability to accidents is reduced to the lowest possible factor in the careful construction of the machine.

Mr. Myers' descents with his present apparatus must be limited to 500 feet, as this is the length of his air-supply pipe, which is made after a very peculiar design at great expense. This is within 200 feet of maximum lake depths, however, so that the machine is suitable for all lake work Mr. Myers worked for one-and half hours in his machine, at a depth of eighteen feet, without his air pumps going, being supplied, without discomfort by the air inside the chamber, and by what circulated of its own force through the tubes. His description of what he saw at a depth of thirty-four fathoms is most interesting By the aid of his search-light he could see objects distinctly for a surprising distance. He saw the steep side of a reef rising out of the rocks at what appeared only a short distance away, but when the men were sent out from the ship above to take soundings the reef proved to be more than one-and-half miles distant. After the search-light was extinguished, he could see a distance of 500 feet or more, as through a fog.

Mr. Myers has made his outfit more complete than had been at first intended for experimental purposes, but is now fully equipped for actual work on his sub-marine excursions. He is now making an effort to locate the sunken Menominee liner Norman, which he expects to find this fall, but wrecking operations on her will not begin before spring. The Norman is supposed to be in about 125 feet of water.

As heretofore stated, Mr Myers' machine contains no elementary principles which are at all new, but his machine, in its combinations, is fully covered by patents.

PAYING FOR AMERICAN SECURITIES.

The excesses of exports over imports in the six years, 1890 to 1895, inclusive, amounted to 605 million dollars, and if to this is added the exports of gold, 195 millions, and of silver, 113 millions, the total, 913 millions, represent our credit balance during the term.

It is assumed in some financial circles that this represents the amount of American securities which Europe has returned to us since the Baring panic.

That we have absorbed an enormous amount of these securities is unquestioned, but we regard any attempt to figure their value on this basis as impotent. For one thing, against this net balance should be set the freight paid to foreign ship owners on our imports less the amount they expended in our ports for vessel account. Then must come out the sums expended in Europe by Americans or sent over by foreigners resident here, over and above the amounts brought in by emigrants Also the amount shipped in settlement of interest on foreign money invested here.

As the European travel account is reckoned at eighty millions annually, and the gross freight account at some millions more for the same period, it is evident that the margin which could be employed in settlement of securities returned is very small if we depended upon the balance of the merchandise and specie movement. Particularly is this the case where we have not taken any account of the undervaluation of dutiable imports, which aggregates a great many millions.

There must be other causes operating which do not appear. The principal of these is doubtless the steady investment of foreign money in American enterprises, in real estate, mines, manufactories, etc. These items do not figure prominently in Stock Exchange gossip, but they are very real, nevertheless. Then doubtless there has been, on the whole, a large absorption of high-class municipal bonds and other securities in which the room trader has no dealings.

The only fact which is clear is that the floating supply of American stocks in the London market is very much reduced. That in some manner we have found means to take and pay for a great deal of stuff is undoubted, but any approximation to the actual amount must remain an unsolved problem. Boston Commercial Bulletin.

NEW DEPARTURE IN ROOFS.

In architectural and building circles a great deal of interest is manifested in a new roofing that promises to be widely used and become the roof of the future on all sorts of buildings for both public and private use. The roofing is the result of the work and study of a German inventor, and, like many other inventions of German origin, it is at once simple, cheap and durable.

A good roof is a necessary part, if not the most necessary part, of every building, be it a house, barn, factory or public building. The roof needs to be as firm and well-built as the foundation, and is the very last part of the building that should be slighted in any way. This new roofing is of patent self-locking tile and is fire-proof against any and every change in temperature. It keeps out the heat of summer and the cold of winter, the materials of which the roof is made, sand and cement, making a poor conductor. It is better in all climates than iron, tin, copper, gravel and tar, and being fire-proof is much preferable at all times to the use of wood shingles.

The practical values of the new roofing are, first of all, its protection against fire, its filling of every requirement of a good roof, its durability, being proof against all kinds of weather. It is so light that money can be saved in the wood frame-work of the roof. It is better than slate, which needs nails, which sooner or later rust and take a great deal of time to put on and repair, and not only being cheaper than slate, can be given all the colors of natural slate, and over fifty more shades beside. The color is not on the tiling, but in it. In a country where wooden shingles are almost universally used, heightening very much the danger of fire, this new roofing will soon win its way to favor.

Cement, to-day, alone and mixed with sand, is used at the foundation for bridges, buildings and all heavy and other machinery needing a rigid and lasting support. Such mixtures have come down to use from the Romans, as hard, solid, and enduring as the rocks they hold together. In this new tiling sand and cement are the component parts, one part of it being cement mixed with three parts of sand. To this is added enough water to give it the consistency of thick mortar. The mass is pressed into a mould, and the tile after standing for three days, is ready for use. The machine used is so light and simple that a boy can operate it. An important consideration is the fact that the tile can be made at the building on which it is to be used, thus doing away with the expense of transportation and the danger of breakage.

Attention was called to the roof in America by a report to the State Department at Washington by Consul Monaghan, of Chemnitz, Germany. Since that time the tiling has been patented in England, Germany, Austria, Hungary, France, Italy, Belgium, Switzerland, Spain, Russia and Sweden, and letter patents have further been asked for in the United States, Canada, Denmark and Norway.

Hargreaves invented a spinning-jenny in 1763 in England. His fellow-workmen seized it, broke it to pieces, and drove him from his native town. Jacquard invented his loom, and it was so wonderful that the French Minister of War, the great Arnot, sent for the inventor and said to him, "Are you the man who can do what the Almighty cannot,—tie a knot in a stretched string?" A mob of silk-weavers took the loom from Jacquard's house, broke it up, and burned the pieces. When it was proposed to build a railroad in the United States, Chancellor Livingston, who was one of the greatest men in the State of New York, published a letter to demonstrate that the undertaking was impossible. One of his reasons was that no one would want to risk his life flying through space at the rate of twelve or fifteen miles an hour. Daniel Webster had grave doubts about railroads being possible. He said the frost on the rails would prevent the train from moving or stopping after it had begun to move. Murdoch invented or discovered a means for producing illuminating gas, and Sir Humphry Davy ridiculed it. He said if it was to be used for lighting the streets the dome of St. Paul's would have to be their gasometer. Sir Walter Scott joked cleverly about "sending light through street pipes" "and lighting London by smoke." Subsequently Sir Walter's house was lighted by it. Wollaston, a scientific man, also ridiculed the idea. It is only a few years since Europeans demonstrated mathematically that the electric current could be divided for incandescent lighting. When the sewing machine was invented, prayers were offered in many churches for the promotors of it. The pious prayed that the makers would be stricken with the knowledge of their own wrong-doings in robbing sewing women of their means of support.

NEW LIGHT ON CONVICT LABOR.

The latest statistics relative to convict labor and its effect on trade tend to materially change the aspect of a question which has caused a great deal of discussion in the industrial world. The great harm which the convict worker has done to free labor was for years a leading complaint of labor organizations. Not only the workers but employers also opposed the competition which convict labor offered to legitimate production. But the latest official figures on the question indicate that convict labor will soon cease to be such a great evil as it has been considered for years. According to a series of tables issued by the National Labor Bureau, in 1885 the number of convicts in prisons was 41,677, while in 1895 the number rose to 54,244. In 1885 those engaged in productive labor were 30,853, or 73.7 per cent., while in 1895 the number thus engaged aggregated 38,415, or 70.7 per cent. of the total number of convicts. There was a decrease also in the proportion of those engaged in prison duties over 1885, when 8,391, or 20 per cent. were so engaged, while in 1895 there were 8,804, or 16.2 per cent. of the whole number.

The improvement of machinery and the adoption of new methods in those lines of production where convict labor competition had to be met, has made it much more difficult to economically employ prison labor. Illustrations of this are seen in numerous prisons throughout the country. In one of the Indiana state prisons contractors refused to renew their contracts, the knitting factory was closed, and the chair factory and cooper shop ran on half time. At another institution the contractors also refused to renew their contracts. At the state reformatory for women in Indiana the principal industry has been almost discontinued because it was found impossible to compete with those doing the same work outside of the prison by machinery. The report states that there seems to be no influence arising from the geographical location to effect this increase or decrease. In the state penitentiary of Illinois a stone contractor threw up his contract in 1893, resulting in a loss of product. There is a small force in the shoe factory, while a cooper shop has been removed from the prison; and no barbed goods are now made.

These facts go to show the wonderful development of labor-saving devices within the last few years. So great has been the improvement, and so effective has labor been made by machinery, that a convict working for a mere living of the plainest kind is not able to compete with free labor assisted by machinery. This fact will in a few years compel the state to secure new lines of industry for prison workers. Of course machinery could be put in the prisons, but this will hardly be done, as the object is to get employment for prisoners rather than the production of goods. Various states have passed laws against convict labor, but improved machinery has proved to be the most effective means of abolishing the evil.—American Manufacturer.

AN OCEAN GIANT.

While lake vessel builders have been making giant strides forward in the size and power and carrying capacity of their steamships, the ocean shipyards have not been at a standstill.

The Hamburg-American Steamship Company's new freight and passenger ship "Pennsylvania" was launched at Belfast, Ireland, last week, and although two longer steamships are in service on the Atlantic, this vessel is the greatest carrier ever built. The Pennsylvania is 585 feet long, sixty-two feet wide, and forty-two feet deep. The carrying capacity of the immense ship is placed at 20,000 tons, which is about three times as great as the cargo capacity which the largest of the new steamships on the great lakes would have if the waterways in which they are used had unlimited depth.

The Pennsylvania will be able to carry at one load the freight of 750 large cars, or about twenty good-sized trains. It would take a good crop on 40,000 acres of land to fill the huge craft with wheat, and one cargo of that grain would furnish flour for the entire population of Cleveland for a period of about four months, at the average rate of consumption.

Such facts convey some idea of the results which have been reached in modern shipbuilding. But the most wonderful fact of all is that in the furnaces of such a ship as the Pennsylvania a piece of coal the size of a walnut will move ten barrels of flour one mile. That is a modern miracle.—Cleveland Leader.

WOOD PULP MILLS AT MEGANTIC, CANADA.

The Montague Paper Company of Turner's Falls, Mass., was one of the pioneers in the development of wood pulp. Its first manager, George E. Marshall, was the boldest leader of his time in experimenting with the use of wood fibres and means for creating a product at small cost. The local woods were culled of all their fibrous wood, poplar, basswood and spruce, and then it became a question how remote the mill could be to the source of supplies without the cost of transportation entering into the calculation as a bar. Logs were driven down the Connecticut River hundreds of miles, but in this plan there was always an uncertainty of delivery or possible failure of supply at the source.

E. M. Perry, of this prosperous company, a lumber man by instinct and early training, a lover of the woods and all their contents, an ardent sportsman as well as a keen business man, soon found himself wandering over the great wildernesses of lower Canada, studying the contents of wooded tracts, their water courses, and all means of outlet. The hungry stomachs of the ravenous pulp grinders must not only be fed with great quantities of spruce, but the future supply must be taken into consideration by all who would maintain supremacy in the paper-making world. Mr Perry emerged from the wilderness with knowledge such as only the skilled scout (in business as in anything else) can ever know. President B. N. Farren, Treasurer W. D. Russell and Superintendent Porter Farwell soon saw the value that lay beyond the veil, and matters were soon shaped up to obtain possession of valuable sources of supply that mean everything to the great paper manufacturing industry of Turner's Falls.

The village of Megantic, in the Province of Quebec, as described by a correspondent of the Turner's Falls Reporter, lies at the outlet of Lake Megantic, the beginning of the Chaudiere River that empties into the St. Lawrence, near Quebec city, a hundred miles away. The lake is twelve miles long and is three miles wide in places, indented with numerous deep bays. Where the spruce has been cut off near the shores small farmhouses have been built, and hardy and contented Frenchmen endeavor to coax a livelihood for themselves and numerous children from among the stumps. The village of Megantic is very new and somewhat crude, but it is a busy place and the people all appear to be happy. The population ranges from 2,000 to 4,000, according to the judgment of your informant. It is on two through lines of railroads, the Canadian Pacific and the Quebec Central, but it is a good many miles, or a good many hours from anywhere. Employment is given to the people by a pulp mill, a saw mill, a shingle mill and a wood-preparing mill, and the whole industry of the place is controlled by Turner's Falls brains and capital.

The pulp mill is a handsome structure, built on solid granite foundations. Power is supplied from a dam on the Chaudiere River, and a good thousand-horse power is forever at their service. The mill is supplied with the very latest machinery, and a generous product is obtained from the amount of capital invested. One mill prepares wood for the mills at home, and a stock sufficient for several months' use is always on hand awaiting shipment.

The wood supply is abundant, easy of access and under perpetual control of the operators of the mills. Lake Megantic furnishes easy means for the transportation of lumber to the mills, the logs being rolled in from the banks from almost any point of its fifty-mile circumference, rafted and towed by the company's own steamer to the booms. Being in the wilderness, the inhabitants are mostly trained lumberers, and the shifting of the logs from the stumps to the lake is a source of ready money highly appreciated by all in that region, and especially by the farmers who are building homes with more energy than coin of the realm. The farmer thus has always good spruce for sale, and when this supply ceases the company will go into whole townships, which they own, containing 10,000 acres each of the finest spruce, into which the axe of civilization has not only never been lifted, but through which the foot of other than the hunter or the government surveyor has never passed.—American Paper Trade.

The town of McDonald, Pa., comes to the front with a proposed new industry in the shape of a paper shirt factory. J. S. Johnson is the projector, and the garment he proposes to make is to be worn between the under and outer shirts as a protection against the frosty winds of winter. He is now having paper manufactured especially for this purpose, and expects to be able to give employment to about twenty women.

From the Japanese market not much is expected for Englishmen by Industries and Iron, a British trade journal. English manufacturers are warned not to confound the Japanese with the Chinese from the viewpoint of commercial integrity. Honesty is said to be a tradition among the great Chinese mercantile houses, whereas, according to Industries and Iron, the Japanese, considered as a manufacturing nation, are the most expert and unscrupulous pirates in the world. This grave accusation is founded, first, upon the fact that Japan has no patent law, and, secondly, upon the allegation that when British manufacturers are invited to forward to Japanese merchants the fullest plans, photographs and details of their wares, these things are not asked for with a view of the purchase of British commodities, but for the purpose of copying the manufacturers' specialties in Japan with the help of cheap native labor. According to Industries and Iron, you can now buy skillfully counterfeited machinery in Japan for two-thirds of the price for which it could be made in England.

The London Electrician states that at a recent special meeting of the South African Philosophical Society, a lecture was delivered by Mr. A. P. Trotter, government electrician and inspector. Towards the end of the lecture the lecturer rang up the Capetown Telephone Exchange, and asked if any of the longer post office telegraph lines were clear. The Port Elizabeth line was then connected up, and by means of a Wheatstone bridge on the lecture table, the resistance of the line was measured. The lecturer then observed that, with the extremely sensitive instrument used in the government electrical laboratory, it was not necessary to use ordinary electric batteries for signalling to such a distance as to Port Elizabeth. He disconnected the battery, and, plunging a steel knife and silver fork into an orange, sent signals by means of the feeble current thus generated. He then asked the front row of the audience to join hands, and, putting them in the circuit, sent signals through their bodies to Port Elizabeth and back by means of the orange cell.

The development of Japanese enterprise in ocean carriage has been so quick, and has been pursued with such courage and persistency, that it begins to claim world-wide attention. The large company, the "Nippon Yusen Kaisha," or Japan Mail Steamship Company, which has made a contract with Mr. Hill's Great Northern Railroad in this country, and proposes to begin soon to run its boats between Japan and the port of Seattle in Washington, is one of the most prosperous corporations of Japan. "It owns," a descriptive article says, "fifty steamers plying between ports of Japan and the Asiatic mainland. On a capital of $8,000,000 it declared recently an annual dividend of ten per cent., and distributed an eight per cent. bonus, carrying also a considerable sum to the reserve account, now amounting to $2,250,000. At the same meeting it was decided to increase the capital stock to $22,000,000, now fully subscribed, and to buy twelve more steamers, six of which are to go on the American-Australia service." Intending now a vigorous competition with the American and English lines of steamers, the Pacific Mail, and the Oriental and Occidental, which have been doing the business of the Pacific between our American coast and Japan and China, the new comer, it is announced, has opened offices in San Francisco, and is bidding for business, having started a "rate war" promptly by cutting rates ten per cent. The Pacific Mail people are evidently seriously alarmed. A dispatch from San Francisco says that "facts have just come to light" there to show that Japan, in authorizing the Nippon Yusen Kaisha to run this line, is violating a contract made with the Pacific Mail Steamship Company, and that "international complications are likely to result."

The operation of finishing fabric railroad bars includes polishing, smoothing, cutting of bolt and spike holes, evening the ends, etc., says an exchange. The roughness of the rail is first removed by use of a fine emery wheel, after which the rail is treated to a bath liquid composed principally of white lead and turpentine. Then follows polishing with felt rolls, the rail being run between. A special tool evens the ends, regular drilling instruments cut the bolt and spike holes, and the rail is done. The fibre rails are strong, durable, can be bent for curves like other rails, and possesses the advantages of lightness, increased length, easier for the wheels and other points of superiority.

Our contemporary, Timber, of London, Eng., in a lengthy editorial complains of the quantity of poorly manufactured, and improperly graded stock which finds its way to the British market from the United States. In the article a compliment is paid to Canadian manufacturers in the following words: "We speak without the slightest prejudice when we say that in the manufacture of lumber our American friends could learn a good deal from the Canadian millmen, whose sawing of third and even fourth quality stuff is beautifully done."

It seems probable that tin will be added to the list of the mineral products of South Africa, though very little so far has been said about it. Tin ore was discovered in Swaziland three years ago, and the production is gradually increasing. According to the report of the Minister of Mines of the South African Republic, there were thirty tons taken out in 1893. The quantity increased to 141 tons in 1894, and 246 tons in 1895.

The tornado is a sudden outburst of wind in an otherwise quiet, sultry atmosphere—it is ushered in by a loud indescribable roar, similar to a continuous roll of thunder; its path is very narrow—seldom more than 500 feet wide at greatest destruction; it moves, generally from southwest to northeast, and rarely extends more than twenty miles; it very often rises in the air to descend again at a point a few miles ahead; it is often accompanied by thunder storms, with often a bright glow in the clouds; the cloud has usually a funnel shape, which appears to be whirling, though some observers have described its appearance like that of a huge ball rolling forward. A tornado may be considered as the result of an extreme development of the conditions which otherwise produce thunder storms. A cyclone on the other hand, is a very broad storm, oftentimes 1,000 miles in diameter, and sometimes can be followed half around the world. The winds circulate about it from right to left, or the way one turns clock hands backwards (in the southern hemisphere this is reversed.) The barometer always falls as one approaches the centre where, at sea there is a portentous calm, with clear sky visible at times. The cyclone winds often rise to hurricane force.

CAPTAINS OF INDUSTRY.

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

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephone, or a telegraph line is being constructed: or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, belting, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, meters, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

During the week ending Sept. 19th, the Hamilton Iron and Steel Company shipped 1,000 tons of pig iron.

The following additional mining companies were incorporated in British Columbia:—The Kootenay and Slocan Prospecting and Promoting Company, Vancouver, capital stock $100,000; Fanny Fay Gold Mining Company, Vancouver, capital stock $600,000; London Hill Development and Mining Company, Kaslo, capital stock $150,000; Kootenay Salmon Gold Mining Company, Rossland, capital stock $600,000; The Reco Mining and Milling Company, capital stock $1,000,000; Athabasca Gold Mining Company, New Westminster, capital stock $1,000,000; The Cumberland and Union Waterworks Company, Cumberland, capital stock $75,000, to supply water to the town of Cumberland, B.C.; English and French Gold Mining Company, Grand Forks, capital stock $2,000,000.

The Sicily Paving Company's factory in Montreal was destroyed by fire Sept. 26th.

The McGregor Gourlay Company, Galt, Ont., are building an addition to their factory to accommodate the machinery from the Stevens, Hamilton & Co. works, which they have bought.

The following additional foreign mining companies were registered in British Columbia:—The Hill Top Gold Mining Company, Spokane, Washington, capital stock $1,000,000; The Grand Prize Mining and Milling Company, Spokane, Washington, capital stock, $1,000,000; The Silver King Gold Mining Company, Spokane, Washington, capital stock $750,000.

Mr. Louis Bouchard, Bay St. Paul, Que., has commenced the construction of a steam saw mill in that locality.

The Norwegian barque Almedia is taking in a cargo of white birch spoolwood at Murray Bay, Que., for Ardrossan, Scotland. This wood is shipped by Cimon & Co., and was manufactured at Murray Bay.

The St. John's, Que. News gives an account of the recent installation of a hydraulic air compressor plant in the Cotton Company's mill at Magog, Que., and says it is the first of that invention to be operated in this country.

The Seine Manitou Gold Mining Company, Toronto, has been incorporated with a capital stock of $100,000.

It is reported that a London, England syndicate has offered $2,500,000 for the Cariboo Hydraulic Mine from which came the $80,000 gold brick two weeks ago.

Petroleum has been discovered on the farm of Wm. Keith near Comber, Ont.

Building material is being placed on the ground for the new Lee & Brenner machine shop Wallaceburg, Ont.

The Moncton, N.B. sugar refinery owned by the Acadia Sugar Combine, was destroyed by fire September 20th. Loss $200,000.

The St. John Rolling Mills and Bolt Works Company, St. John, N.B., has been incorporated with a capital stock of $50,000.

The town council of North Toronto have concurred in the report of the Water, Fire and Light committee with respect to enlarging the present water works basin, and tenders will be asked for the proposed work.

Messrs. Cimon & Co., are building a steam saw mill, at Murray Bay Village, Que., to saw spoolwood.

Mr. R. S. Smiley will start a canning factory at Kingston Station, N.S.

The St. John, N.B. Rolling mill Co., have purchased the Coldbrook Rolling Mills and St. John Nut and Bolt Works.

The Hanover Chair Company, Hanover, Ont., is being incorporated with a capital stock of $48,000 to manufacture chairs, woodenware and furniture.

The Lake Erie Oil and Gas Company of Elgin, Ont., has been incorporated with a capital stock of $45,000.

The Mackenzie Lake of the Woods Gold Mining Company, Toronto, is being incorporated with a capital stock of $500,000.

The Lake Superior and Leon Lake Mining Company, Toronto, is being incorporated with a capital stock of $99,900.

The Canniff Fireguard Company, Winnipeg, Man., is being incorporated with a capital stock of $16,000, to manufacture fireguard burners, stubble burners and similar appliances.

The William Hamilton Manufacturing Company, Peterborough, Ont., have received the contract to erect a ten-stamp quartz mill for the Golden Eagle Mines Company on Cayoosh Creek, B.C.

The Northeastern Lumberman says it is now estimated that fully 70,000,000 feet of Canadian logs will be held over in Michigan until next season to save the cost of labor of sawing them.

T. B. Tait's shingle mill at Burk's Falls, Ont., was destroyed by fire September 23rd Loss about $4,000.

Chaney & Co's. bed factory, Toronto, was damaged by fire September 23rd, to the extent of about $1,000.

Malcomson's canning factory at Chatham, Ont., is more than usually busy this fall, eighty to ninety hands being employed.

The town of Goderich has awarded the Rogers' Electric Company, of London, Ont., the contract for the installation of five hundred incandescent lights.

Work has been begun on the waterworks system of Deseronto, Ont.

The mining of ore and the erection of the stamp mills has commenced at the Delora gold mines in North Hastings, Ont.

The Rand Drill Company have been given an order by the Michigan Central Railroad Company for an air compressor for their shops at St. Thomas, Ont.

The St. Hyacinthe City and Granby Railway Company, St. Hyacinthe, Que., is seeking incorporation with a capital stock of $100,000, to build a steam or electric railway between Bingham, Brome county and St. Hyacinthe, Que.

The old marble works building at Delhi, Ont., owned by Jacob Sovereen was destroyed by fire September 23rd. The lower floor was occupied by Geo. Schmidt as a shoe and moccasin factory, and Griffin Bros. steam laundry; the upper floor by Sovereen as a robe and mitt factory. Sovereen's loss $11,000, Schmidt's loss $400, and Griffin Bros.' loss $900.

E. Blais' butter factory near Quebec city was burned recently. Loss $1,800.

The Williams Mfg. Co., Montreal, have commenced the manufacture of typewriters.

The name of the Essex Brass and Iron Company of London, Ont., has been changed to "The London Brass Works Company."

The Canadian Pacific Mining and Milling Company is building a concentrator at Kaslo, B.C.

The Ontario Government is considering the advisability of installing an electric light plant at the Central Prison.

The Talbot Brussels Carpet Company, Montreal, has been incorporated with a capital stock of $200,000.

The Crown Point Gold Mining Company, Toronto, is being incorporated with a capital stock of $1,000,000.

In our last issue reference was made to the latest industry in Gananoque, Ont., as the Canada Corner Wire Co. It should have read Canada Corner Iron Co. This concern are manufacturers of wrought corner iron, felloe plates, washers, etc.

The People's Light and Heat Company of Halifax, N.S., it is reported, has bought out the Halifax Gaslight Company.

Through their solicitors, the British Columbia Southern Railway Co., which has provincial incorporation, is applying to the Federal Parliament for authority to extend its line east into Alberta. It already has authority to construct westward from the Crow's Nest pass.

Plans are being prepared for a station and power plant for a new electric power company at Peterboro, Ont. J. M. Campbell of Kingston, is the engineer.

A site has has been purchased in Vancouver, B.C., for the projected marine railway and the work of construction will probably begin at one.

D. W. Alexander & Co., tanners, of Toronto, will, we are informed, engage in the manufacture of leather belting.

The Hamilton Bridge Company will supply the iron work in connection with the construction of the new G.T.R. car shops at London, Ont.

The Hopewell Gold Mining Company, Hopewell, N.S., is being incorporated with a capital stock of $15,000.

The Block House Gold Mining Company, Block House, N.S., is being incorporated with a capital stock of $8,000.

The Massey-Harris Company, Toronto, have recently shipped per C.P.R. over 300 bicycles to Sydney, Australia, via Vancouver, B.C.

Mr. James Noxon, Inspector Ontario Asylums and Prisons, is experimenting with an appliance for burning tan bark for fuel for boilers, which, if successful, will be introduced in the prisons and asylums of Ontario.

A large staff of men are at work on the new building for the Brantford Electric Light Company at the locks there. The company expects to spend some $30,000 in improvements.

The new Presbyterian church at Palmerston, Ont., is to be lighted with acetylene gas.

A British Columbia exchange says that it is estimated that 100,000,000 feet of logs were put into the Columbia river and its tributaries during the past season.

The contract for the concrete dam, power house and rock excavation, in connection with the Chambly, Que., Water Power Company's works, has been let. The price is said to be between $300,000 and $400,000. The work will be begun immediately and carried on all winter.

The Empress Mining Company, Fort William, Ont., is being incorporated with a capital stock of $1,000,000.

The Lucknow Central Furniture Company, Lucknow, Ont., is being incorporated with a capital stock of $20,000.

The Ontario Electric and Engineering Company, Toronto, is being incorporated with a capital stock of $10,000.

C. T. White, Point Wolfe, N.B., has recently put a new water wheel into his saw mill and made extensive improvements to his dam.

Extensive alterations and improvements have been made at the Sherbrooke, Que., electric light station. Sixteen dynamos are now in use furnishing power for the Sherbrooke yarn and other large mills, and for lighting the streets and schoolhouses. In connection with the alterations the Jenckes Machine Company is putting in a new waterwheel and tube in connection with the new dam.

Mr. E. H. Todd, Coaticook, Que., has patented an invention that he proposes to put on the Canadian market soon. It is a so-called milk safe, a small cast iron box with an opening sufficiently large to admit of a two quart can being placed inside. This will be fastened on to the outside of the house in such a way that when closed by the milk man on delivering his milk it cannot be opened except by some one from the inside of the house, thus insuring the milk or any parcel left against being stolen or tampered with.

Mr. Knapp, a gentleman formerly resident of Montreal but now residing at Prescott, is in the city arranging for the building of a model of a new invention, which, if successful, will revolutionize all previous navigation theories. The idea of building ships that will be carried on wheels and minimizing water resistance is not altogether new. At this moment in France there is a project to build ships with eight large wheels by which it is hoped to reduce the unpleasantness of steam navigation while immensely increasing the speed. Mr. Knapp is even more daring. His invention contemplates easily thirty or forty knots an hour, with such accommodation as will equal the finest hotel in existence; and he has been fortunate enough to secure for his idea, bold though it may appear, the sanction of a number of well-known engineering men. His visit to Montreal just now is in connection with the model which he expects to have built this winter, and be ready for trial in the spring. It will not be a toy model but an actual vessel large enough to put beyond question the probabilities of the success or non-success of his invention.—Montreal Gazette.

The Cobourg Sentinel-Star says the Indians are now busy in their rice harvest or "rice making" as they call it at Rice Lake. Almost every house in the reserve is nearly deserted, some of them quite so, and the bulk of the population of the reserve is camped on Sugar Island in Rice Lake not far from Keene. The rich fields are chiefly near the north and extend over hundreds of acres. Two persons go in each canoe, one to propel and manage it, while the other adroitly gathers the heads with one short stick and threshes the rice into the canoe with the other. It is dark in color, but some prefer it to the imported article. It finds ready sale and is quite an item in the Indian's income.

The yield of flax in this section this year is unprecedented. There will be fully 1,200 tons brought to the Thamesford mill, and no doubt the husbandman feels amply rewarded for his outlay. For good fibre the price of ten dollars a ton is considered good remuneration, and we have heard several farmers express themselves that they wished their whole farm was in flax.—Thamesford, Ont., Record.

Probably owing to the recent light demand for pig iron, the management of the Londonderry Iron Co., of Londonderry, N.S., has turned its attention to the development of other departments of the business. They have recently completed the first contract for turned and bored pipe for water-works ever undertaken in America. These pipes were for the town of Moncton, N.B., and another similar job is in progress for St. John, N.B. They have also inaugurated a new department for the manufacture of valves, sluice gates, hydrants, and general waterwork fittings. Their machine shop and foundry have been working overtime of late to complete a large coke oven and condenser plant for the People's Heat and Light Co., of Halifax, N.S., and on general orders.

Mr. A. H. Moore, M.P. for Stanstead, when he demonstrates to the country what the National Policy had done for his own particular constituency, finds many patriotic imitators all over the Dominion. Mr. D. T. Chapman, a leading dry goods dealer in Amherst, N.S., spoke of what that same policy had done for Nova Scotia. The ship-building industry was no longer productive of the wealth and prosperity of other days, and had not the National Policy taken its place and found work for the people, the results would have been most disastrous to the people down by the sea. Mr. Chapman confined himself to Amherst alone which is the chef lieu of Sir Charles Tupper's old county of Cumberland. Messrs. Rhodes, Curry & Co., car builders and founders, employ 250 men, and turn out work every year to the value of $500,000. The Amherst Boot & Shoe Company is an old concern, but the N.P gave it such an impetus that they employ 200 hands and sell $500,000 worth of goods to Nova Scotia, New Brunswick and Prince Edward Island. Their output is, in fact, yearly on the increase. In the same town is the Robb Engineering Company, which has developed from a small concern to the position of supplying engines to Montreal and elsewhere, their output being estimated at $250,000, with a staff of 125 hands. Amherst likewise derives a great trade from the increased development of the coal and lumber industries, and, like scores of other towns in Nova Scotia, has found new life in that wealth-producing factor known as the National Policy. Amherst used to vote Grit, but the town now supports the Conservative party.

Lumbering operations in Canada this winter will be unusually quiet, and all on account of the presidential elections across the line. Up in the woods where thousands of men generally find employment, business is at a standstill because a certain uncertainty exists over the monetary standard to be adopted in the States. Up to the present time there has been only about one-half of the usual number of men hired for the lumber camps that have been employed in former years, so that the outlook for many poor families who depend on this industry for the winter months is not encouraging. The reason of this great change in the Canadian lumber trade is mainly due to the lack of demand from the American market. The silver question on the other side has made lumbermen shy of buying in any large quantities until the money question is settled. The English market has been the salvation of the Canadian dealers and had it not been for this trade this season there would probably have been very little done in the woods this year at all. Although the general trade has been very dull there has been a great demand for square timber. This year's output will greatly exceed that of last year.—Ottawa Free Press.

About 1,000 men are employed on the several portions of the works of the Lachine Rapids Hydraulic and Power Company, Montreal. One contract has been let for the construction of 507,000 lineal feet of concrete-lined iron duct, the contract price being about $750,000. Other contracts involving the expenditure of $1,500,000 have been let and the erection of a pressed brick receiving station has been begun.

W. C. Ribble, Morpeth, Ont., has discovered natural gas on his property.

Boyd, Caldwell & Co.'s woollen mill at Lanark, Ont., is working over-time.

The engineers of the Hamilton, Ont., Radial railway are laying out the line between Burlington and Oakville.

The work of removing the Cant Bros Co.'s plant from Galt, Ont., to Lancaster, N.Y., has been completed.

Goldie & McCulloch, Galt, have recently put in a new boiler for the Lang Tanning Co., Berlin, Ont.

Dunn Bros., Stanbridge East, Que., are making improvements to and are also greatly enlarging their tannery.

John Morgan, Coaticook, Que., has bought the flour mill there formerly owned by the L'Heureux estate.

Alvin Mitson will put a new engine and boiler in his saw mill at Cherry River, Que.

M. K. Everetts, Easton's Corners, Ont., is establishing a butter factory at that place.

The Berwick Foundry Co.'s foundry at Berwick, N.S., was burned a few days ago. Loss about $6,000.

The Cumberland and Union Waterworks Company, Cumberland, B.C., is being incorporated.

The Automatic Can Company of British Columbia, Vancouver, B.C., is being incorporated.

No tenders having been received by the Peterboro, Ont., City Council for electric street lighting, steps will be taken at once by the corporation to install an electric light plant.

Sixty loads of flax were recently delivered at the Embro, Ont., flax mill. The crop at Embro will run up to about eight hundred tons. The yield in some cases has been three tons to the acre.

Mr. Richard Smith's new shop, Sherbrooke, Que., is now ready to receive the machinery which will be moved in without unnecessary delay. He will have a very convenient shop and sundry which will enable him to turn out the pulp and paper mill machinery that he manufactures to good advantage.

Mr. E. J. Lennox, architect, waited on the Property Committee at Toronto with regard to the steam-fitting, ventilation, plumbing and electric lighting of the new court house and city hall. The committee decided to recommend to the Board of Control that tenders be called for the work. It is estimated that it will cost in the neighborhood of $150,000.

The Park & Island Railway Co. is making rapid progress in the construction of the extension to Lachine, and it is expected to have the line through before snow flies. The track between the city limits and Rockfield is about laid, and the grading is completed as far as the Dominion Bridge Works. The line to St. Laurent is now open and running. The work on the new power houses located at Lachine and St. Laurent is progressing, it is expected that both will be ready to turn the power on this autumn.—Montreal Star.

The MacGregor, Gourlay Company, Galt, Ont., are enlarging their works.

W. Senkbirl, retiring boot and shoe dealer, of Brandon, Man., and E. Merner, of the same place, have in contemplation the establishing of a felt factory. They want a loan of $8,000 and a special rate of taxation from the Brandon corporation.

Beardmore & Co's. sole leather tannery at Acton has been undergoing improvements during the summer months. A new 120 h.p. engine and two eighty h.p. boilers, the product of Goldie & McCulloch, Galt, have been put in and are doing satisfactory work. A new thirty-inch driving belt, manufactured in the firm's belt factory, has been put in place. A drying kiln and a fourth rolling machine are also among the additions, and one hundred and forty new vats in the tan yard give much greater capacity.

The Winnipeg city council are considering a request from the Union Shoe and Leather Company to exempt them from taxes for twenty years. The company purposes erecting a new factory to cost $10,000, the machinery for which will cost $20,000, and it is expected from fifty to sixty men will receive steady employment.

The Hamilton, Checoke & Ancaster Electric Railway Company, Hamilton, Ont., is being incorporated with a capital stock of $100,000, to build an electric road from Hamilton to Lancaster.

The Lake of the Woods Milling Company have this year established a machine shop on a large scale in connection with their Keewatin mill. A new building was erected for this purpose and fitted up with a first class and very complete plant, including machinery for grinding and corrugating rolls. One machine alone in the plant cost over $3,000. The machine shop is the most complete of the kind in connection with any mill in Canada, and any work ordinarily required about a flour mill can be quickly performed on the premises.—Winnipeg Commercial.

H. P. Gould's new cold storage warehouse, Toronto, was damaged by fire September 18th, to the extent of $4,000.

The following foreign mining companies have been registered in British Columbia :—The Deleware Mining and Milling Company, Spokane, Wash., capital stock, $1,000,000 ; Elkhorn Silver Mining Company, Spokane, Wash., capital stock, $1,000,000 ; The Portland Gold Mining Company, Spokane, Wash., capital stock, $600,000 ; The Vancouver and British Columbia General Exploration Company, London, England, capital stock, £25,000.

The capitalists who have developed the water power and built the large pulp mill at the Canadian "Soo" are looking for fresh fields of enterprise. A dispatch from Port Arthur, Ont., dated September 6th, says :—"F. H. Clergue, president of the Sault Ste. Marie Pulp and Paper Company ; Mr. E. V. Douglass, of Philadelphia, and Mr. Knapp, of Chicago, arrived yesterday morning on the steamer Manitoba and left in the afternoon by special train on the Port Arthur, Duluth and Western railway for Kakabeka Falls, in order that development work might be started upon them at once."—The Paper Mill.

The Three Rivers, Que., Iron Company was formed about two years ago, taking over the works standing upon some fifteen square acres of land, previously carried on in the name of the Canadian Water Pipe Company, with the distinct intention of entirely changing the system upon which the pipe castings were produced, to make it second to none in Canada, and, if possible, far ahead of anything adopted in this country. It is stated by persons of experience in such matters and well qualified to give an opinion, that the object has been fully attained. It appears that the whole of the old plant and appliances have been discarded, and practically nothing now remains beyond the mere location. Further, it is claimed that these are the only works in the Dominion producing cast iron gas and water pipes in long lengths of so small a diameter as two inches and three inches. The pipes are cast vertically in revolving flasks with the head, or bell, downwards, ensuring soundness and uniformity in thickness, only the best and most suitable material being used. The pipes are all tested to 300 pounds to the square inch by hydraulic pressure, and while sustained at that pressure are tapped with a two-pound hammer, and not a pipe is permitted to leave about which there is the slightest doubt. An extensive shop, containing the most modern machinery and tools, has been erected, so as to enable the company to supply their improved "Barking," "Double-Edgers," "Slab-Splitters," "Scantling," and other sawmill machinery, also to supply their improved friction and other pulleys, shafting, couplings, bearings, and general shop-gearing, etc., and to construct any special machinery. There is likewise a large foundry for casting hydrants, valves, special pipe castings, as well as general iron and brass castings. So far, the neighboring works have found this a great convenience, and it has been fairly well patronized. The company is represented in Montreal by Mr. Jas. Stubbs, whose office is at No. 54 Imperial Building.—Trade Review.

We can now give the mines here a boom. Mr. J. W. Taylor of Ottawa, with Mr. W. B. McAllister as manager, has purchased from Mr. Thos. Armstrong a valuable feltspar mine. They put on a gang of men on Monday and with the aid of crow-bars and a couple of shots of dynamite succeeded in getting about half a carload the first day. It is of fine quality and is used in the manufacture of porcelain ware, also in making insulators for the telephone. It will be loaded on the cars at Carp a shipment will be made this week. Besides this valuable rock there are traces of other minerals as well as mica. Gold has been found in some quartz large enough to be seen with the naked eye. —Carp, Ont., Star.

The Central Bridge and Engineering Co., Peterborough, is making the ironwork for the York street overhead bridge, Toronto.

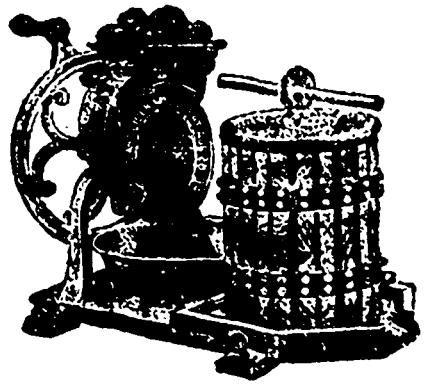
The Rock House Mining Company, Bridgewater, N.S., is being incorporated with a capital stock of $8,000

Another clean up has been made at the reduction works, says the Rat Portage, Ont., Record, and 140 ounces of gold were taken from the tons of rock from the Mikado mine. This run was made as a check on the previous one of 114 tons as reported in our last issue. This last run of twenty five tons produced bullion to the amount of $2,520 free milling product or over $100 a ton. With one-third of the value of the ore still in the concentrates that would make $150 to the ton in all.

The following companies are being incorporated in British Columbia:—The Copper Belle Mining Company, Rossland, capital stock, $1,000,000; Ida Queen Gold Mining Company, Rossland, capital stock, $1,000,000; La Regina Gold Mining Company, Rossland, capital stock, $750,000; The Revelstoke Water-Works, Electric Light and Power Company, Revelstoke; Colonna Gold Mining Company, Rossland, capital stock, $1,000,000; The Gold Hill Quartz Mining Company of Fairview, Victoria, capital stock, $750,000; The Beaver Quartz Mining Company, Vancouver, capital stock, $1,000,000.

THE LITTLE GIANT CIDER MILL AND FRUIT PRESS.

The Little Giant Cider Mill Company of Nashville, Tenn., are manufacturing a clever invention on the form of a cider mill and fruit press, an illustration of which is presented herewith. As will be seen, it is small and compact, weighing fifty pounds, but strong and durable, and has a capacity which compares favorably with larger and heavier mills. The cutter is made of tinned steel and cuts the fruit finely and carries it off before it touches any part of the iron from which it might be stained. By the operation of the press the pomace is brought up



and away from the cider with the screw and taken out at the top, which is an economical process. The "Little Giant" is not intended for wholesale or other extensive cider making, but distinctly for family use. Its adaptability to small growers has brought it quickly and permanently into use for pressing all kinds of fruits. The manufacturers have secured a patent in the Dominion of Canada, and are looking into the matter of establishing a factory here, in the meantime however, they are supplying this trade direct from the factory, and through our jobbers.

CANADIAN PATENTS.

The following patents have been issued from the Canadian Patent Office, from July 17th, to July 28th, 1896.

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.

C. H. Riches, Canada Life Building, Toronto.

A. Harvey, Central Chambers, Ottawa.

Copies of any American patents can be procured from either of these attorneys for the sum of twenty-five cents each.

52,921 Radiator, A Ohnemus, Quincy, Ill.

52,922 Metallic fence post, A. Davidson, Belvidere, Ill.

52,923 Scraper, C. E. Burbank, New York.

52,924 Toggle or cross bar for chains, R. C. Eldridge and H. M. Eldridge, Niagara Falls, Ont.

52,925 Train conductor's signalling valve, J. R. Ide, Salisbury, N.C.

52,926 Track cleaner, J. Baringer, Akron, Ohio.

52,927 Device for oiling vehicle axles, C. T. Moorman, Packwood, Ia.

52,928 *Horse collar*, F. Warner, Wednesbury, Stafford, Eng.

52,929 Folding trestle, W. B. Sigsbey, Harbor Springs, Mich

52,930 Apparatus for piling lumber, A. Stendahl, Ala, Sweden.

52,931 Cooking stove, F. Will, Rochester, N.Y.

52,932 Shoe, G. W. Sleeper, Detroit, Mich.

52,933 Window sash, R. Sutherland, Boston, Mass.

52,934 Glass cover for facing bricks, E. Bohm, Barnsbury, London, Eng.

52,935 Prairie fire extinguisher, J. Dawson, Broadland, South Dakota.

52,936 Wire stitching machine, W. A. Philpot, jr., Niagara Falls, N.Y.

52,937 Railway street sprinkler, The American Car Sprinkler Co., Worcester, Mass.

52,938 Railway street sprinkler, The American Car Sprinkler Co., Worcester, Mass.

52,939 Calculgraph, H. Abbott and E. A. Currier, New York.

52,940 Engine, The Comstock Motor Co., Topeka, Kansas.

52,941 Machine for making fence grips and washers, J. Bennitt and T. Bosser, London, Ont.

52,942 Hydraulic air compressor, The Berner-Mayer Co., Cleveland, Ohio.

52,943 Hydraulic air compressor, The Berner-Mayer Co., Cleveland, Ohio.

52,944 Car brake The La Rose Car Brake Co., New Bedford, Mass.

52,945 Runner for stoops and sidewalks, A. L. Ross, New York.

52,946 Cash register, E. S. Sharpe, Montreal, Que.

52,947 Upper for shoes, L. Tremblay, St. Henri, and J. Tremblay, Montreal.

52,948 Tricycle, F. Malhiot and P. Beaude, Quebec.

52,949 Double acting gas and gasoline motor, J. F. Duryea, Springfield, Mass.

52,950 Advertising and educational systems by coin controlled apparatus, J. S. Barcus, Chicago, Ill.

52,951 Multiple drilling machine, V. Jetty and G. Jetty, London, Eng.

52,952 Hay press machine, D. Pounder, Westmeath, Ont.

52,953 Soles of boots and shoes, P. N. Nissen, Kingston, Ont.

52,954 Locking system, C. N. Dutton, New York.

52,955 Linotype machine, J. A. Erkson, Prattsville, N.Y.

52,956 Device for stamping out cartoons, cards and the like, A. Freidheim, Berlin, Prussia.

52,957 Electrolytic apparatus, T. Craney, Bay City, Mich.

52,958 Apparatus for heating water for boilers, R. Marchand, Montreal, Que.

52,959 Lead press, H. B. Cobb, Wilmington, Del.

52,960 Chemical compound to be used for preparing the surface of suitable material for photographic purposes, E. P. Schoenfelder and E. Kehle, Newark, N.J.

52,961 Violin mute and mute operator, W. Bingham, Philadelphia, Pa.

52,962 Pneumatic tire, B. V. Gintz, Akron, Ohio.

52,963 Dental cuspadore, G. Booth, Toronto.

52,964 Typewriting machine, J. D. Daugherty, Kittanning, Pa.

52,965 Sleigh velocipede, W. G. Burgess, Three Rivers, Que.

52,966 Automatic switch for storage batteries, etc., J. Hopkinson, London, Eng.

52,967 Method of and apparatus for joining pipes, G. Hoyer, Schonebeck, Prussia.

52,968 Camp stove, W. Johnson, Qu'Appelle, N.W.T.

52,969 Cigarette machine, E. R. Colgin, Richmond, Va.

52,970 Pipe tongs, J. M. Palmer and W. F. Trites, both of Marysville, Montana.

52,971 Wrench, J. M. Palmer and W. F. Trites, both of Marysville, Montana.

52,972 Sash holder, W. E. Dowling, Mount Pocono, Pa.

52,973 Truss, D. Reid, New Richmond, Wis.

52,974 Plumber's tack, E. Bookhout, Crawford, N.J.

52,975 Fire extinguisher, S. Banfill, Ayrshire, Iowa.

52,976 Combined punching, shearing and tire up-setting machine, G. Sears, Onslow, Iowa.

52,977 Oil engine, G. J. Altham, Swansea, Mass.

52,978 Gasoline engine, T. Reid, Hamilton.

52,979 Animal trap, J. B. Perkins and P. Flannery, Lewiston, Idaho.

52,980 Bicycle driving mechanism, S. E. Clouser, Brooklyn, N.Y.

52,981 Sight feed lubricator, J. Morison, Toronto.

52,982 Car coupler, G. H. Pacaud, Fall River, Mass.

52,983 Stacking apparatus, O. E. Adolph Bodal, Denmark.

52,984 Hame fastener, J. W. Stanley, Blue Springs, Mo.

52,985 Rubber tire, J. D. Beebe, Columbus, Ohio.

52,986 Electric car trolley, W. H. Russell, Newcastle, N.B.

52,987 Cooking range and stove, G. R. Prowse, Montreal.

52,988 Shoe, Susannah Trimble, New York.

52,989 Combined whip and animal scraper, H. Stokes, Hackettstown, N.J.

52,990 Anti-rattler for thill coupling, J. W. Willard, Pittsford, Vermont.

52,991 Wagon brake, A. Powers and V. Furstenfeld, St. Louis, Mo.

52,992 Steam valve, C. Schneider, New York.

52,993 Manufacture of wire spokes for bicycles, etc., G. J. Capewell and W. G. Allen, Hartford, Conn.

52,994 Device adapted for securing tubes, etc., F. Albrecht, Victoria, Australia.

52,995 Bicycle saddle, Mary F. Henderson, Washington, D.C.

52,996 Gate, F. V. Burner, Elko, Nevada.

52,997 Land marker, A. S. Linthecum, Wellham's Cross Roads, Md.

52,998 Smoke stack, C. Pickring, Richmond, Que.

52,999 Sheet metal pipe, W. T. B. McDonald, Granby, Que.

53,000 Advertising vehicle, J. S. N. Guindon, Montreal.

53,001 Pneumatic tire for velocipedes, etc., Charles Bagot, 59 Cadogan Square, London, Eng.

53,002 Pneumatic tire for velocipedes, Charles Bagot, 59 Cadogan Square, London, Eng.

53,003 Wedge, W. I. Harmon, Vernon, Wash.

53,004 Snap, W. G. Kelly, Niagara Falls Centre, Ont.

53,005 Apparatus for making butter, F. W. Church, Belgium, N.Y.

53,006 Car wheel, W. J. Taylor, Bound Brook, N.J.

53,007 Whiffletree, J. D. Cason and J. H. Jamieson, Nashville, Tenn.

53,008 Window sash holder, E. E. Hull, Silver Cliff, Col.

53,009 Method of and apparatus for smoking fish, Waldemann, Coslin, Germany.

53,010 Arc light support, B. Pickering, Dayton, Ohio.

53,011 Process of preserving substances, Helen Bierer, Pass Robles, Cala.

53,012 Washboard, Rosanna J. Hartwick, Saginaw, Mich.

53,013 Bag holder, M. W. Morton, Kalamazoo, Mich.

53,014 Latch and lock, J. R. Bedell and C. J. Blackburn, Bethany, Mo.

53,015 Bicycle saddle, E. B. Jarvis, Toronto.

53,016 Sash holder, C. Hadden, Mazon, Ill.

53,017 Street cleaning machine, S. Stephens, Hamilton.

53,018 Picture hanging device, W. P. Cave, San Bernardino, Cala.

53,019 Axle bearing, C. A. Sullivan, Windsor, Ont.

53,020 Piano attachment, C. D. Williams, Detroit, Mich.

53,021 Puncture proof tire, The Long Island Rubber and Cycle Co., New York

53,022 Sewing machine, The New Branston Two Reel Sewing Machine Co., London, Eng.

53,023 Raisin seeder, F. H. Chase and T. E. Dougherty, Chicago, Ill.

53,024 Apparatus for branding animals, H. W. Potter, Wellington, New Zealand.

23,025 Pump and oil tank, M. J. Wirre, Washington, D C.

53,026 Bicycle support, Elizabeth Baldwin, Toronto

53,027 Cigarette machine, The Bohls Cigarette Machine Co., Richmond, Va.

53,028 Legging, C. Fisher, San Francisco, Cal.

53,029 Milk wagon, J. L. Owens, A. M. Beattie and G. McAuley Kistler, all of Charlotte, N.C.

53,030 Bank note binder, J. T. Hough, H. Beiber and H. D. Fleming, all of Pittsburgh, Pa.

53,031 Washing machine, H. Burker, St. Louis, Mo.

53,032 Bicycle lock, A. L. Puff and P. G. Smith, Dickerson Run, Pa.

53,033 Insect powder distributor, C. D. Cutts, Fort Fairfield, Me.

53,034 Mowing machine, The Deer Harvester Co., Chicago, Ill.

53,035 Wire fence tool, H. M. Chipman, Waterbury, Conn.

53,036 Binder for bicycles, J. L. Hutchinson, New York.

53,037 Mechanism for and mode of marine propulsion, S. Lawrence, Melbourne, Australia.

53,038 Pump level, E. J. Simmons, Eugene, Oregon.

53,039 Pipe wrench and cutter, F. A. Whitney and A W. Whitney, Sugar Grove, Ill.

53,040 Scraf pin, H. V. Ashby, Erie, Pa.

53,041 Envelope, C. Kelly, Toronto.

53,042 Penholder, J McCarty and T. Craft, Pittsburg, Pa.

53,043 Die for forming nail strips, S M. Cutter, Boston, Mass.

53,044 Base chamber for elevators, G. H. Evans, Oroville, Cal.

53,045 Game holder, McC. H. Parker, Houston, Texas.

53,046 Pneumatic top, E. Gregory, Detroit, Mich.

53,047 Cistern, R. R. Mitchell, Montreal.

53,048 *Chain-making machine*, P. H. Standish, St. Mary's, Ohio

53,049 Can opener, W. Millen, New York.

53,050 Bicycle stall, E. S. Piper, Toronto.

53,051 Fire place or stove, W. A. Hughes, London, Eng.

53,052 Cushions for stamps, J. P. Cooke, Omaha, Neb.

53,053 Method of producing photo-lithographing transferring plates, T. Knowles, London, Ont.

53,054 Gas regulator, E. J. Verrue, San Francisco, Cal.

53,055 Filter, A. Davis, Montreal.

53,056 Rail bending machine, G. E. Smith, Sherbrooke, Que.

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Notice is given by W. Cowan and others of intention to apply for incorporation of the Revelstoke, B.C Waterworks, Electric Light and Power Company, and to erect telephone lines between Revelstoke, Trout Lake City, Illecillewaet, Big Bend, etc.