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MONETARY TIMES PRINTING Co.

OF CANADA (LIMITED).

Per A. W. LAW, Sec.-Treas.

Toronto, July 1, 1893.

CAST iron fly-wheels should not be run at a greater speed than 80 feet per second to be quite safe.

AN Italian engineer has discovered a process of making cheap hydrogen. Apart from its intense heat when ignited, it has the advantage of leaving no ashes and giving out no smoke during combustion.

AN electrical acid meter, or instrument for measuring the amount of acid substance in liquids, has recently been invented, and is expected to come into use in refineries, breweries and similar places.

To harden cast iron heat it to a cherry red, cover it with potash and dip into water. Pulverize the potash so that it will readily melt. Repeat the process three or more times, taking care when reheating not to burn the potash off, or the iron will remain soft.

HOT bearings may be remedied by pouring upon them a liberal quantity of liquid ammonia and following this by a fair amount of good oil. The bearings should not be adjusted too close. A mixture has also been recommended, made from plumbago and cold beef tallow.

AN instrument has been invented for facilitating the stopping of a vessel moving in dangerous places, or in danger of colliding with other vessels. It is fixed to the ship's bow and consists of large pivoted wings, which expand transversely and offer resistance to the further progress of the boat.

PURE metals reduced to abnormally low temperatures increase in the power of conducting electricity. Indeed, Profs. Fleming and Dewar state that perfectly pure metals show a conductivity increasing as the temperature falls in such a manner that all the temperature curves, if produced, would pass through the zero of absolute temperature.

Now that the Hudson Bay railway scheme has temporarily failed, it is proposed to reach the great northern waters by means of combined river and canal navigation. The idea is to utilize the Saskatchewan river from Prince Albert, crossing Lake Winnipeg, and thence up Nelson river to Hudson Bay, constructing short canals where necessary.

THE principle that carbonaceous matter when very finely divided is capable of exploding with great violence has been taken advantage of by a German inventor, who proposes to grind coal to an impalpable powder, and then, after introducing it into the cylinder of an engine, to explode it. Krupp, the gunmaker, is making some engines with which to experiment on the idea.

A METHOD for rendering coal smokeless consists in reducing the coal to a fine powder and feeding this to the furnace by means of a blast of air. Coal prepared in this manner burns up at once and gives an intense heat. There are no ashes and there is no falling dust; the latter floats in the furnace chamber until altogether consumed. It is said to be quite as easy to extinguish or regulate a fire using this fuel as one which uses oil.

A RECENT invention is a draught indicator to be placed at either or at both ends of a ship, in order to show at a glance to the officer how much water she is drawing. It may also be set at any desired point, so that when a certain draught is reached an electrically worked signal bell is automatically sounded and continues ringing until stopped. The rise and fall of the waves alongside do not affect the accurate working of this instrument in any way.

A METHOD is described in the French journals of deadening the noise caused by the puffing of the exhaust pipes in gas engines. It consists of attaching to the end of the exhaust a pipe split for a considerable distance. It is so placed that the split end turns upward, and the slotted opening is widened out toward the top until it is as wide as the diameter of the pipe. Under this arrangement the puff of the exhaust spreads out like a fan and takes place gradually.

TWICE in a year the village of Fairville, a suburb of St. John, has been swept by fire, this time 35 or 40 dwellings and stores being destroyed. The place had no proper water supply and no fire brigade, and all the companies raised the rates so high that few people were insured, so that the loss this time will be more severe than before. The history of the two great fire scourges of St. John and of its unfortunate suburb ought to shed a lurid light on the question of fire protection, and the construction of flammable and inflammable buildings.

EXPERIMENTS made with petroleum vapor for propelling engines show that air mixed with 5 per cent. of the vapor does not explode; when, however, the proportion rises to 6.25 per cent., a slight explosion takes place, whilst with 8.3 per cent. the explosion becomes violent. The most violent explosion takes place, however, with from 11 to 12 per cent. of vapor; beyond this limit the violence of explosion decreases, and when the air contains 20 per cent. of vapor no explosion occurs.

A CHEMIST has invented a sensitive paint, which is a bright yellow at the ordinary temperature, but upon being warmed changes color gradually, until at 220 degrees it becomes a bright red. It returns to its original color upon cooling, and may be heated, with the same effect, over and over again. It is suggested that this paint may be used with advantage to detect a rise in the temperature of the frictional parts of high-speed machinery.

GEORGE HUNT, engineer of the Royal Electric Co., has for some time past advocated the organization of a mechanical engineers' association for Canada, on the lines, we presume, of that of Great Britain. We do not suppose any standard of qualification will be required for membership at present; but such an association organized merely with the object of mutual improvement and social intercourse, would accomplish a good purpose, and justify its promotion. We shall be glad to hear from anyone whose views accord with Mr. Hunt's.

A. J. MOCKHAM has been making a series of experiments with a view to doing away with track joints. His conclusion is that there is no objection to abutting rails, and this is but a prelude to an absolutely continuous track, the rails being welded by electricity. However, it should be remembered, says Mr. Mockham, that a track so laid will be like a huge spring under tension, safe when restrained by the roadway, but ready to spring out with tremendous force, if, while in this condition, the roadbed be removed. An improvement would, perhaps, be to limit the length of each continuous rail to, say, 1000 feet.

THE London papers contain detailed accounts of a new method of producing puddled iron, which has been discovered by an English manufacturer. In manufacturing malleable and gun iron by the hand-puddling process this method is to melt the pig iron in a cupola, with a small quantity of scrap, and when the iron becomes liquid, it is brought to the puddling furnace and remains there until it has reached the proper temperature. If scrap is scarce, manganese may be added to the iron whilst the latter is in a liquid state after leaving the cupola. It is claimed that the output is very considerably increased by the use of this process.

THE late Sir William Siemens, after several experiments as to the influence of the electric light upon vegetation, came to the following conclusions: (1) That the electric light is efficacious both in producing chlorophyll in the leaves of plants and in promoting growth. (2) That plants do not require a period of rest during the twenty-four hours, but that they make vigorous and increased progress if subjected during the night to the electric light. (3) That the flowers produced by its aid are remarkable for intense coloring and the fruit for its bloom and aroma. (4) That the expense depends on the cost of energy and

that it is moderate when the natural energy of water is available.

DYNAMOS require an extremely steady-running engine, as the variations of voltage liable to be caused by difference in velocity materially affect the light's brilliancy, especially in incandescent lamps. The brilliancy of such a lamp increases from three to five times as fast as its working pressure. Engines used for driving dynamos should also be little affected by sudden changes in the load, which occur when additional machines are started up or others shut down, or when machines are changed over from charging accumulators to connection in parallel. In such cases the governors at present in use nearly always fail, and it has yet to be decided, says Dr. Kohlrausch, whether proper electrical regulation will ever become easily attainable.

AMONG comparatively recent inventions is a crank in which the dead point is overcome. The crank-pin works in a slot cut in a steel disc fixed to the end of the shaft, and is pressed upon a spring so adjusted as to be held firmly in place at ordinary steam pressure. If, however, the crank be at a dead point when the full pressure of steam is admitted into the cylinder, the spring is compressed, the crank-pin slides in the groove at an angle with the shaft, and the engine begins to move. The pressure of steam in the cylinder while the engine is in motion is less than that in the boiler itself, and consequently as soon as the shaft begins turning the pressure against the spring is relieved and the crank-pin flies back to its original position.

THERE is a machine in use at one of the English docks for discharging cargoes of grain by means of the creation of a strong current of air. It is erected on a barge and has attached to it the ends of six large flexible pipes. The opposite ends of these pipes are carried into the hold of the vessel to be unloaded, and immersed for a depth of four or five inches in the grain. Upon starting the engine, the grain immediately begins flowing at the rate of 100 tons per hour through the pipe into receivers. From thence it falls by its own gravity into weighing machines, and then again into the receptacles of buyers. The pipes can either be worked all together, or some of them can be shut off. When only one pipe is in use, its capacity is 38 tons of grain per hour.

A new composition for the prevention of rust on any kind of metal has been invented by the German firm of Edmund Muller & Mann, of Charlottenburg. This composition is called "Mannocitin," and is intended for use on iron, steel, brass, copper or nickel plated goods and machinery. It is said to withstand all atmospheric influences, as well as the action of sea water, and that one coating will absolutely protect the goods from rust and oxidation, or from the vapors of acids. Mannocitin is put up in packages of 7, 14, 28, 56, 112, 224 and 400 pounds. The new compound, we learn, is now being placed on the Canadian market through Jas. W. Pyke, 35 St. Francois Xavier street, Montreal, and the trials made of it have proved highly satisfactory.

THE *American Shipbuilder* mentions as a fact not generally known that the shafting of modern steamships is hollow. After the shafts have been forged solid, a core, sometimes six or eight inches in diameter, is bored out from the centre, leaving a safe amount of metal in annular form for the work required. The reason for this is that a hollow shaft is really stronger, as well as lighter, than a solid one, and also that the core of a solid shaft

often embodies impurities and incipient cracks which may radiate to the surface after long use and cause disaster. The same idea of hollowing out is carried through the entire system, even the crank pins being bored. The rule is now for 8 to 10 horse power to each ton of machinery, including boilers and all appurtenances.

THE dates of the coming convention of stationary engineers, to be held in Montreal, have been fixed so as to enable the visiting delegates to take in the Montreal Exposition. The exhibition begins on the 4th September, lasting till the 9th, and the convention of engineers will be held on the 7th, 8th and 9th. A number of delegates will come from Chicago and the west, and will be joined by a contingent coming on by way of Niagara Falls. Seventy-five to one hundred are expected from the United States, and a number of interesting papers are to be read. We understand it is proposed to have a display of models of inventions, and that the exhibits of machinery will fill all the space available for that department in the present buildings. These features might be made very interesting if the management give the matter their attention.

AN inquest was held on the body of Joseph Lanthier, who was killed in the machinery of the Royal Electric Company's works, Montreal, when a verdict of accidental death was rendered. The jury added the recommendation that "in future proper safeguards be placed around all shafting." This is rather a reflection on the administration of the factory act of Quebec, and at the same time an index of popular ignorance on the same subject. While one cannot say that the factory inspectors are chiefly to blame, it must be confessed that in some respects the factory act of Quebec is so far a dead letter. In Ontario the factory act is fairly well administered, and, as a consequence, accidents are far less numerous, considering the larger industrial population, than in any other part of Canada. None of the provinces of Canada except the two named have laws regulating factory work, and for the sake of uniformity in the law, as well as uniformity in the administration of it, it is a great pity that this had not been made a subject for federal, instead of provincial legislation.

IRON and lead pipes rapidly oxidize, and consequently contaminate more or less the water which passes through them; but for want of a better means of conveyance we use them for our water supply. Some Belgian engineers have been experimenting with glass pipes, which they make capable of resisting great interior and exterior pressures in the following way: They place glass tubes in metal tubes of slightly larger diameter, and fill the space between the two with a special kind of cement which perfectly unites the two tubes. It is found that these compound pipes will bear a very great internal strain without damage to the glass, while they present to the external strains rather more resistance than the metal pipe would alone. The method of manufacturing is applied not only to straight pipes, but to every form and shape of conduit. The ends of the pipes can be fitted with flanges so that they can easily be hermetically joined by means of gutta percha washers. These pipes would also appear to be suitable for running electric cables in, as they would not require further insulation.

THE necessity for such an improvement in the waterworks system of Montreal as will prevent a calamity in case of the breakdown of the present ma-

chinery has long been felt, but has of late been urged so strongly that two engineers, Mr. Keefer and Mr. Vanier, have been appointed to make a report on the subject. Each engineer will make a separate report, but both will recommend some essential improvements. About twenty years ago Mr. Lesage proposed a large aqueduct to tap the river above the Lachine Rapids, at a cost then estimated at \$2,000,000. Such a scheme would mean a larger expenditure of money now owing to the increased value of the land, but it would be far cheaper now than ten or fifteen years hence, and now that the electric light can be so economically produced by water-power, the city might make the aqueduct a source of actual revenue by supplying the citizens with electric light. Such a system could easily be inaugurated by the time the present expensive lighting contract expires ten years hence. If the engineers were to make such a recommendation, we are sure it would be heartily endorsed by the citizens of Montreal.

E. S. FERRY, in the *Electrical World*, comes to the conclusion that electrical oscillations and light are identical. The principal points in which they agree are in velocity, reflection, rectilinear propagation, interference, refraction, absorption by material substances and polarization. Practically, the only difference appears to be in the wave lengths. The oscillations of light measure about the hundred thousandth part of an inch, while it is difficult to produce continuous electrical oscillations of less than a foot. The question is, how to produce directly very short wave lengths. So far, only half-way and very meagre solutions of this problem have been offered; but the outlook, on the whole, is by no means discouraging. Hertz, by means of an induction coil and condenser, has set molecules in a rarified atmosphere into such rapid vibration as to produce light, and Tesla has done the same thing with the aid of a special multipolar dynamo. This question is of great importance when wireless telegraphy is under consideration. Much has already been done in this direction, and much more will undoubtedly be done by the aid of electrical oscillations of high power and frequency. The Edison method of telegraphing from moving trains is probably the best known practical application of electrical oscillations in air to commercial practice. Betts' method of telegraphing between ships at sea is another well known application, and depends upon the transmissibility of electrical oscillations through water. Although these methods are far from perfect, the end seems not distant, and we can confidently expect that in the near future we will be able to telegraph on land and sea without wires with great ease by means of electrical oscillations of high power and frequency.

THE IRON SITUATION.

Everyone who has studied the subject realizes that the present iron tariff of Canada is neither fish, flesh, nor fowl. The Government have arrived at an uncomfortable half-way house, and must either turn back or go on. In taking either course, they are confronted by an unusual tide of changes in both the United States and Great Britain—the two countries above all others which exert a vital influence on our own markets. In Great Britain, the year 1892 was, in the words of the President of the British Iron and Steel Institute, "one of the worst years ever known in the iron and steel industries, and these industries are still greatly depressed. The production of pig-iron fell off 600,000 tons, and steel rails are in a worse condition. The

total falling off in the exports of metals and machinery in 1892, compared with 1891, amounted to about \$35,000,000. The markets are now swamped, and there is not enough work for half the country's steel-producing plants," while scores and scores of the blast furnaces are idle. It is true that the last official returns to hand show an upward turn, at length, in the exports, and this turn is most welcome, as the British iron men think it will be more than temporary. But the point to remember is, that the flow of the tide, whether temporary or permanent, is brought about on a scale of prices lower than ever known in the history of the trade. So changed are the world's market prices, in fact, that what was a fair and reasonable protection put on certain classes of iron in Canada six years ago, has now become an absurd and inequitable burden.

Turning now to the United States, we find the record of the past year the same as in Great Britain, with this exception, that at the present moment the condition of the industry is worse and not better than at the close of the last year. The review of the American Steel Association showed the year to have been one of low prices, of moderate profits for some, but of no profits for most and serious losses to many. This was partly due to the fact that while prices were so low the demand increased somewhat, but manufacturers increased their output so that they were always ahead of the demand. This applies particularly to the steel industry, but in the iron industry a new condition of things has arisen which, while creating consternation in the old mining districts, is destined to produce far reaching changes in the American, and very likely in the Canadian, iron trade. This is the discovery and development of beds of iron where the ore can be got out so easily and in such enormous quantities that the old mines cannot compete. Of the mines in the Marquette, Menominee and Gogebic ranges along the south shore of Lake Superior—mines which have shipped over 60,000,000 tons of ore at a good profit—there is hardly one that is not either closed down or working in a limited way without profit; and it is said that at least 12,000 wage earners are out of employment in the Michigan peninsula and Northern Wisconsin owing to this cause. It was supposed by many that this was owing to the dull season and the depression brought about through the silver panic, but this is in reality only a hastening cause. The real cause is very clearly explained by a correspondent of the *New York Sun*, who writes on the 8th inst. from Duluth. He says:—

"The outlook for both mines and villages is alarming. This condition of affairs is due to the newly opened iron range lying back of Duluth in Northern Minnesota, the Mesaba. A year or more ago, when this range was discovered, and it was found that its ore lay in great beds, in consistency and position much like an ordinary sandbank, figures were made as to the cost of mining that seemed so ridiculously low that the men of the older ranges simply laughed. To-day three great mines on the Mesaba, each of which has 'shown up' deposits of not less than 20,000,000 tons, are mining ore direct from the natural deposit, and using steam shovels as their only mining tools. No expensive steam or air drills, no explosives, no underground workings or timberings, no great hoisting or air compressor plants—simply a steam shovel filling a car standing beside it on a track in a cut in the ground at the rate of four or five tons every minute. Including

the cost of stripping the surface off the ore, these mines are mining and loading their Bessemer ore on cars at a cost of fifty cents per ton or less. This they will be able to do for too long a period for the comfort of the operators on other ranges. This Mesaba range is in the market to sell ore. Its greatest mines are the property of a syndicate of which John D. Rockefeller is the chief holder, and which has invested \$7,000,000 in the mines and in transportation facilities to Duluth since January of this year. There are vast ore supplies on the Mesaba, and it is not likely that its owners will let the price of iron ore get to such a point as will allow too free outside competition, as long as they can help it."

Now inasmuch as the existing mines cannot sell ore as low as \$3.75 a ton delivered in Cleveland, and the new mines can go much below that and still make a big profit, it will be seen what great changes are in store for the iron trade—at least in the Bessemer branch. It means a new era for the trade and a general dislocation of present centres of production in the States. What may it mean for Canada? Unless some new mines are opened up in the Dominion, where ore can be got under similar favorable conditions, what duties can countervail the advantages which American producers would have? Happily for us, these wonderful beds run across the Minnesota boundary into Canada, and it is believed that quantities equal to the American fields can be got as easily on the Canadian side. This is a question which will soon be solved, and already American iron men are hunting over Canadian ground in view of the duty on ore being taken off by the Cleveland administration.

This development would mean the establishment of a new centre of Bessemer iron and steel production in Canada; but meanwhile towns by the dozen want smelting works. Hamilton is first in the field, having voted a bonus of \$50,000 to the American firm who are to establish a furnace there. The weak point in the Hamilton enterprise is that the promoters propose to get their ore from the United States. This is not building up a native iron industry, because the chief investment of capital and the chief employment of labor is at the mines and not at the furnace. For instance, at the Radnor mines in Quebec there are only about 100 men employed at the furnaces, while in getting out the ore and bringing it to the furnaces there are 800 to 850 men employed. It is therefore evident that under a tariff which proposes a comprehensive iron industry—as we suppose the Dominion Government do propose to inaugurate next session—the Hamilton firm must either work at a heavy disadvantage in paying duties on ore, or else get their supplies from distant points in Canada. It has been argued by many others besides the correspondent whose letter will be found elsewhere, that a situation like Belleville, Deseronto, Kingston, or Peterboro, would afford a better site for an Ontario charcoal iron industry, as being not only close to mines of good quality, but having supplies of wood for charcoal within easy distance. At all events, the erection of a furnace is the smallest part of the equipment of an iron producing industry, and there are any number of owners of blown-out stacks in the United States who will be only too glad to transfer their now useless property across the line here, if they can persuade a town to pay them a bonus. The Dominion Government, in their new tariff, should take

a comprehensive view of the situation, and study the new conditions that must be met to make the iron trade a success in all its branches in Canada. They have put their hands to the plough, and cannot well turn back.

PATENT TAPE ATTACHMENT.

A NEW LATHE.

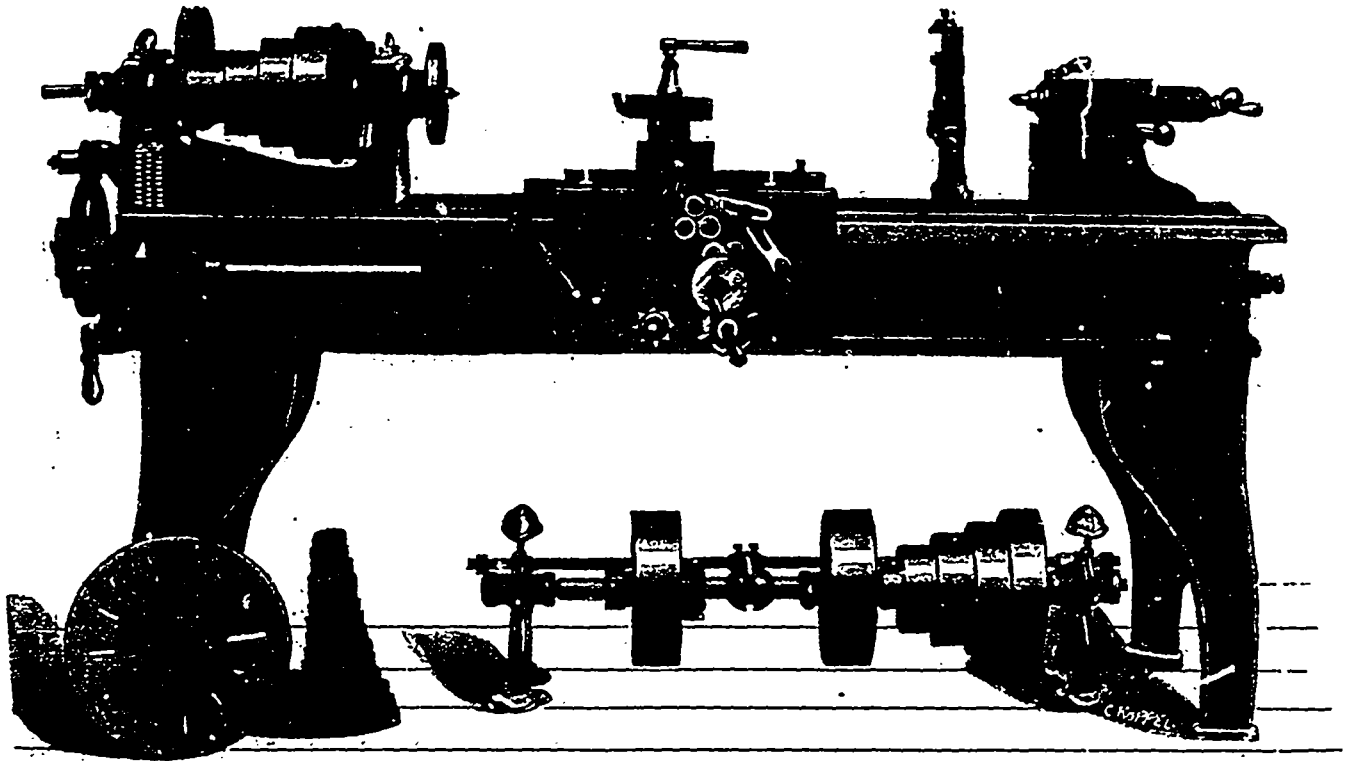
THE combination of adjustable grooved bars with a slide connected with the tool rest, which has hitherto been in use for lathes, is open to the objection not only that it is apt to cause an excessive amount of wear of the screw and saddle guideways, but that, owing to the centres being put out of true line, it produces a jerky action of the tool, and, consequently, uneven work. A lathe, however, has been patented by D. Currie, and is being manufactured by R. Gardner & Son, Montreal, in which, it is believed, these faults are obviated by the addition of a taper attachment. In-

chines are almost sure to become weak, is, by this improved method of manufacture, automatically compensated for at once.

Full particulars may be obtained of Robert Gardner & Son, Nazareth street, Montreal, the well known manufacturers of high class machinists' tools, etc.

HOW TO CHOOSE AN ENGINE.

The first thing for a prospective purchaser of an engine to determine, says W. H. Wakeman in the *Manufacturers' Gazette*, is the amount of power that he will require. Let us suppose, for example, the case of a small factory requiring 82 horse-power to run merely the engine itself and the shafting. It is safe to calculate that 30 per cent. of the whole power used will be needed to overcome friction, and therefore the 82 horse-power represents 70 per cent. of the power needed. Thus, as 82 is 70 per cent. of the amount required, $82 \times 100 \div 70 = 117$. That is, the amount of power to be provided is 117 horse-power. If the conditions are



NEW LATHE, BY ROBT. GARDNER & SON.

stead of the bevel gear to connect the longitudinal and cross-feed screws in ordinary use, means are substituted of transmitting the motion automatically, the cross-feed screw varying independently of the former one. In order to attain this end a worm is attached to a bracket fastened to the apron of the lathe; and this drives another wheel with a corresponding number of teeth. The worm wheel is held in place by a sleeve running in a bearing, and on this sleeve are put the change gears. A quadrant is placed on the same bearing in order to carry away intermediate gearing, which is so arranged as to gear into cross-screw gear. The possession of a reverse feed renders it possible for the tool rest to travel in either direction. The intergears are fastened with a slide in the quadrant, so that when the lathe is displaced, the slide can be moved up to allow for larger gear. It will be seen from the above description that any slight deviation from accuracy in its centres, which is the point on which ordinary ma-

such that it will be most convenient to have the fly-wheel revolve 60 times per minute, it will be well to have a long-stroke engine, so that if the stroke is four feet, the piston speed will be 480 feet. In calculating the power of an engine, three factors come under consideration, viz., the area of piston, the mean effective pressure of the steam acting on this piston, and the piston feed in feet per minute. Our 117 horse-power (previously determined) represents 3,859,200 foot pounds, and if we wish to get from this the factors above mentioned, it is easily done by deciding on one of them and deciding the others by division. We wish to have a piston speed of say 480 feet per minute; therefore $3,859,200 \div 480 = 8,040$. If the boiler pressure is to be 100 pounds, forty per cent. of this 40 pounds mean effective pressure will be about the amount, and $8,040 \div 40 = 201$, which is the number of square inches that the face of the piston should contain. A reference to any table of the diameter and

areas of circles will show that a 16-inch piston is needed. We see then that under the conditions named, in order to obtain 117 horse-power, we shall need an engine with a piston 16 inches in diameter, a stroke of 48 inches, a mean effective pressure of 40 pounds, and a speed of 60 revolutions per minute.

STEEL CHIMNEYS.

A correspondent of the *Boston Journal of Commerce* says that ordinary brick chimneys are built to withstand a pressure of 50 lbs. per square foot upon their vertical sectional area. Calculating in a round chimney, only one-half this area is affected. With a greater pressure than this they are liable to crush on the leeward side and fall. Plate-iron or steel chimneys, erected upon foundations to which they are bolted through and through, have a resistance equal to four times as much as this, besides being infinitely superior as lightning conductors, and not being destroyed by the changes of temperature. They have better draft, for the simple reason that they are tight. Brick chimneys are not tight; they are like sieves, through which the wind blows. It is an odd thing in this day of progress, called the steel age, we should have such an unmechanical thing as a chimney built of bricks, when a continuous shell of steel can be produced for less money, which has a tensile strength of 60,000 pounds per square inch, distributed in the most economical manner to resist the force to be met with; the other simply a pile of little pieces of baked mud, without cement of any kind, as the changing temperatures of brick chimneys have destroyed the cement or mortar in the structure, and it is not to be depended on in the least.

STOVES.

In Canada the use of stoves seems to date as far back as 1737, and these Canadian articles are said to have been of considerably better quality than those made in the United States by Franklin, a few years afterwards. "But cooking and heating stoves in their comparative perfection," says *Hardware*, "are a matter of the last fifty years. To those who can go back to that time, the expedients by which our grandmothers brought their edibles to such a state that they were even digestible would be a marvel to those who never had the fortune to have the experience of genuine camp life. The tin-baker and the bake-kettle have passed away, and through many evolutions the modern range, with hot water attachments and the folding gas stove, have left little to be desired." The stove is an invention, however, of antiquity, traces of it having been found in the historical annals of China and Japan and fragments unmistakably pointing to such an article were found in the ruins of Pompeii.

Large, clumsy stoves were made at an early day in Holland, Germany and England, and to this day in those countries the same forms and styles to a considerable extent are used. In Italy, at the present time, in the small towns, an iron box resting on the ground, with side handles and rude holes cut for draught, is used. In some cases even iron is not employed, but in its place terra cotta and stone are substituted. The American stove dates back to 1742, and credit for it is due to the busy brain of Franklin. It was then the open front, or a departure from the ordinary fire-places. Franklin was urged by his friends to get patents, which he could easily have done; but he considered it his duty to the world to give it the benefit

of his invention without hindrance. "The Franklin" stove was soon introduced into England, and everywhere it is known to this day. It held sway long into the present generation, and then improvements and new inventions rapidly followed one another, beginning with the ordinary air-tight stove, down through every kind of draught, all sorts of dampers, heating stoves in which the fire would not go out, all kinds of gas stoves, and at last electric-heating stoves.

THE SIREN.

The siren is one of the best fog signals, as its penetrating, though rather disagreeable note, can be heard at an enormous distance. As they are only made, however, by one firm in the world, their construction is not generally known, and an account will perhaps be interesting. It is a simple enough instrument, says the *Marine Review*, and consists of two superposed discs, with a certain and corresponding number of holes. One disc is stationary, the other revolves, while at the same time air or steam is forced through the holes. When these are opposite each other, the steam will pass; when not opposite, the passage of the steam is stopped. Hence, when one of the discs revolves, the steam passes in a series of puffs, and if these puffs succeed each other with sufficient frequency a note is produced, rising in pitch with the rapidity of revolution, and increasing in power with the pressure of the steam. The discs may be revolved by a small steam engine, which also opens and closes a valve to allow for the passage of the steam, and this gives the sound which is the siren's characteristic, for a siren fog signal does not sound continuously, but gives a certain number of blasts of a definite length each minute. The steam is supplied by a boiler both for the engine and the siren, and, to avoid possible breakdowns, the boilers, engines, and sirens are always in duplicate. The steam pressure is ordinarily about 50 pounds, and the sound can be heard from ten to fifteen miles, and occasionally much farther, depending on the weather. Another form of siren is the self-acting instrument, which is widely used on steamers. The discs are revolved by the steam itself, and the blasts are given by merely opening the valve by hand. The speed of revolution of the discs is automatically regulated by a centrifugal brake.

AUTOMATIC FARE RECEIVER.

SOME of our street railway companies will perhaps be interested to know that an instrument has lately been invented for automatically receiving fares and for giving out change. There is an inclined tube having a slot in the end for the reception of money, says the *Age of Steel*. This tube is attached to a perpendicular rack at the top, so that a dime, quarter, fifty cents or a dollar will stop at different stations in the rack opposite to a little drawer with four of them facing the said rack, one above the other. These stations are connected at their back ends with six tubes filled with nickels and quarters, so that when a dollar is dropped in the inclined tube, the exact change will be returned by simply pushing a knob that is attached to a 2x6-inch plate with fingers on it, situated so as to enter the rack in front through holes; it thus pushes one of the little drawers and gives back the exact change. The finger presses on the money, which causes the drawer to slide back and cuts off the proper

amount of change from the lower end of the tubes. When the knob is released it resumes its place at the front by a spiral spring, located within the tube of the knob, and drops the dollar inside the box in plain view of the driver. There being four fingers on this plate, it will be seen that whenever the money stops in the rack it will push one of these little drawers in front of it, giving back change to the amount placed in the inclined tube from a dime up to a dollar. This inclined tube is also provided at the lower end with another inclined plane, which has slots of different diameters, so that nothing but a 5-cent piece will enter the fare box, and a 1 or 2-cent piece will be handed back to the depositor.

WATER-HAMMERS.

Water-hammer, in steam pipes, is a sort of concussion of water in the pipes, and is caused by the condensation of steam giving rise to a vacuum. This permits the water to flow from different directions toward the vacuum, the momentum being such, when another body of water, or a bend in the pipe is struck, as to produce a heavy blow, and to break the pipes apart. This effect usually takes place when steam is first turned into cold pipes, for then a quantity of water resulting from the condensation is driven ahead of the steam; but as the latter is much quicker in its movements than water, it will get into the pipe first, and there form a separate body of water. The waters of two different temperatures then rushing along, they will meet with, and be divided by, the imprisoned steam. Condensation will quickly follow, and the partial vacuum formed in consequence will increase the speed at which the water is moving, until its momentum comes into collision with a bend in the pipe and causes a rupture. Accidents have sometimes occurred in which the pipes have been broken in several places, and, indeed, have been rendered leaky in nearly every joint.

THE IMPERIAL INSTITUTE.

In connection with the Imperial Institute which has just been established in London, in order to show to the world the various resources of the British Empire and to extend the trade relations between the Colonies and the Mother Country, circulars have been issued appealing to the manufacturers of Canada to send in suitable exhibits. Separate spaces have been reserved for each of the provinces, with the object of showing the natural resources and manufactured products of each to the best advantage. It is hoped also that owing to the Institute being always open to the public, there will result a large increase in the flow of immigration into Canada. Exhibitors are requested to forward with their exhibits, price lists and circulars giving full information, which will be judiciously distributed by the officials in charge. The curator will carefully attend to any instructions with regard to the position and manner of displaying the goods. Cost of transport and of suitable show-cases will be defrayed by the Government. In arranging the exhibits, an attempt will be made to afford full, scientific, practical and commercial information relating to the sources, nature and applications of Canada's natural products, and of the industrial and commercial condition of the country. The Imperial Institute building itself is one of the most elaborate and elegant in the World's

Metropolis." There will be an increasing interest in the institution as time goes on, and Canadian manufacturers who are cultivating a foreign trade will do well to be represented there. It is the outcome of the Colonial and Indian Exhibition of 1886, at which Canada made such a fine display and from which many Canadian manufacturers developed a foreign trade which has gone on increasing to this day.

The curator of the Canadian section is Harrison Watson, Imperial Institute, Imperial Institute Road, London, to whom all packages should be addressed. Information regarding exhibits from the Province of Quebec will be given by S. C. Stevenson, 76 St. Gabriel street, Montreal.

LUMINOUS AIR.

The rays coming from the cathode of a Geissler tube, which are capable of exciting phosphorescence, can be made to pass through thin metal; and, provided a sheet of metal foil can be found thick enough to be opaque and air-tight, yet thin enough to admit these rays, it is possible to allow them a passage into the open air by closing an opening in a discharge tube with a piece of foil. Dr. Levard having been struck with this idea, has constructed an ingenious apparatus with a hammered and extremely thin plate of aluminum. This plate forms a sort of window, and, though impermeable to sunlight and air, lets the rays from a cathode penetrate it freely from a distance of 12 centimeters. These rays give to the surrounding atmosphere a slightly luminous appearance.

LITERARY REVIEW.

THE ELECTRIC TRANSMISSION OF INTELLIGENCE AND OTHER ADVANCED PRIMERS OF ELECTRICITY. By Edwin J. Houston, A.M. New York: The W. J. Johnston Co., Limited, 41 Park Row. London: Whittaker & Co. 1893. 330 pages, 88 illustrations. Price, \$1.00.

The third and concluding volume of Prof. Houston's *Advanced Primers of Electricity* is devoted to the telegraph, the telephone, electrolysis, electro-metallurgy, the storage battery, electro-therapeutics, electro-annunciators and alarms, electric welding, electricity in warfare, and several miscellaneous applications of electricity. The primers on multiple and cable telegraphy and telephony will be particularly appreciated by those who have had no previous knowledge of electricity, as the author places these subjects in such a light as to make them easily understood by any reader. The quadruplex and other systems of multiple telegraphy, as well as the principles of cable and time telegraphy need not therefore remain mysteries to the intelligent public in the future as they have in the past. The other subjects are handled in the admirable and lucid manner that characterizes the writings of Prof. Houston, and his recent election as president of the American Institute of Electrical Engineers shows that his electrical attainments are appreciated in the higher circles of the electrical profession. The extracts from standard authors at the end of each primer is a feature that has been highly praised in the preceding volumes and has been retained in the present one. Each primer is, as far as possible, complete in itself, and there is no necessary connection between the several volumes of the series of which the present one is third and last.

Among the new exchanges that have come to our table this month is *Paving and Municipal Engineering*, published at Indianapolis, Ind. It is neatly printed in magazine form, and makes a specialty of road improvements. As a good deal of attention is now devoted to this subject in Canada, we commend this paper to our readers.

The *Canadian Advertiser* is the name of a new monthly journal devoted to the subject of advertising. The idea of the paper is to give advice and practical hints to advertisers, not only in the selection of mediums through which to advertise, but in the preparation of advertisements. The paper is neatly printed, and contains a good many useful points. It is issued by the Canadian Advertiser Company, 75 Yonge street, Toronto.

AHEARN & SOPER,
OTTAWA.

Agents for Canada for the **Westinghouse Electric & Mfg. Co.**

Multipolar Railway Generators
Single Reduction Railway Motors
Alternating Slow Speed Dynamos
Direct Current Dynamos
Transformers
Shallenberger Meters

GENERAL
ELECTRIC SUPPLIES

Every successful and dividend earning railway in Canada is equipped with Our Motors.

OTTAWA CAR CO., Ltd.,

- OTTAWA -

Manufacturers of every style of

Electric Cars

FACTORY AND OFFICE:

Corner Kent & Slater Sts.,
OTTAWA.

TELEPHONES

Sold Outright!

Why not fit up your Office and Factory with a system of your own?

SAMPLE LETTER. TORONTO, July 15th, 1893.
T. W. NESS, Esq., Montreal.

DEAR SIR:—The telephones are working satisfactorily so far, and if they continue to do so we shall have our system extended.

TORONTO LITHO. CO.
W. STONK, Manager.

SEND FOR TELEPHONE CATALOGUE No. 8.

T. W. NESS, Manufacturer,
749 Craig St., Montreal.

TORONTO OFFICE. - 106 KING ST. W.



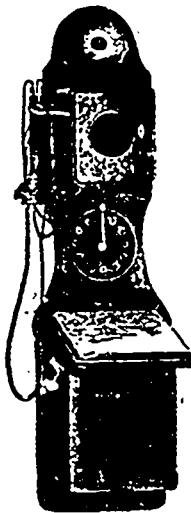
Packard Lamp Co.,
Limited.

HIGH-GRADE
INCANDESCENT
LAMP.

Efficiency, Brilliancy and Absolute
Maintenance of Candle Power.

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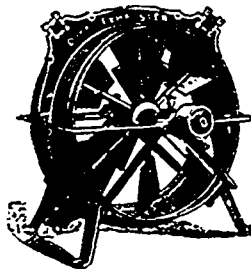
MONTREAL.



JOHN A. BURNS,

B. A. Sc.

MECHANICAL ENGINEER & MANUFACTURERS' AGENT



The Backus
Patent Exhaust
Ventilating
Wheel.

It sands without
an equal.

From the peculiar
shape of its blades
it will show a won-
derful efficiency.

No Curved Blades
to collect the dust.

Write for Catalogue

MOTORS Sole Agent for the Kay Electric Works, Hamilton, Ont.

ENGINES Sole Agent for Nie & Lynch, manufacturers of "Armington & Sims," and "Brown" Engines Hamilton, Ont.

SPECIALIST in making Boiler Evaporative and Engine Economy Tests. Indicating and properly setting the Valves of Steam Engines.

Office, - - 686 Craig St., Montreal.

The Best and Cheapest

BELTING

--- IN THE WORLD

The "Original J. Lechat"

CELEBRATED

SEWED COTTON BELTING

Manufactured at Lille and Ghent,
in Belgium.

For further information, prices, etc., apply to the
Solo Agents for the Dominion of Canada,

KAROLY & CIE

57 to 59 King Street West,

TORONTO.

BALL ELECTRIC CO.

See inside Front Cover.

A. DeBLOIS,

Pattern and Model Maker.

Turning, Sawing, Carving, Moulding,
and all kinds of wood work.

Cast Iron Railing for Building, and Ornamental
Casting a specialty.

No. 171 Nazareth Street, Montreal.
Corner of Ottawa Street.



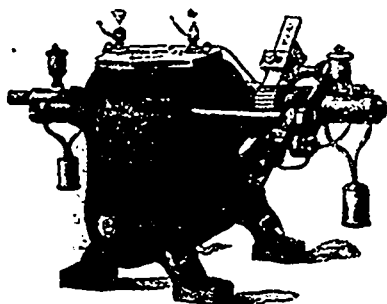
Champion Fire & Burglar Proof

SAFES.

These Safes are in use in
all parts of the Dominion.
They have always proven a
sure protection against both
Fire and Burglars. Be sure
and get prices before buying.

S. S. KIMBALL, M'rs.,
577 Craig St., Montreal.

IVAN BUSHONG, Vancouver, Agent for B.C.



KAY ELECTRIC WORKS

MANUFACTURERS OF

DYNAMOS FOR ARC AND INCANDESCENT LIGHTING

Electric Motors from 1-2 to 50 Horse Power

Plating Machines, Medical Batteries and all kinds of Electric Batteries

263 James St. N., HAMILTON, Ont.

STATE VOLTAGE REQUIRED

Electrical Department.

THE ELECTRICAL OUTLOOK.

There is a limit to the things which electricity can do. It is quite safe to make this assertion, but those who have given the subject the profoundest study have, at present, the most shadowy notions where this limit is to be fixed. Our knowledge of the real principles of electrical science is, indeed, but rudimentary. Even those best posted in the science must confess that what they know relates more to the effects produced by electricity, than to the true nature of the fluid and the laws which govern its various operations. In the field of visible effects alone, there is still much to learn.

To take the phenomena of currents as an example—no sooner have some people fancied that they are getting pretty well at the bottom of the action of current, than the multiphase system comes up to make a revolution in motors, if not in the general application of the science to the mechanical arts. The generation of electricity in waves, suddenly following each other in exact analogy—as will probably be found—to the waves of the ocean, or like the regulated gusts of the South Atlantic trade winds, opens up a wide field for fresh investigation. And yet every week brings up some new development, some new application of electricity even upon the old lines of work and the old lines of thought, if anything connected with modern electrical science can be called old.

One of the most important of the industrial problems which electricity is destined to solve is the revolution of the present systems of distributing and centralizing power. The subject is receiving new and increased attention throughout the world, and if the estimates of American and foreign electricians are not astray as to the power that they may get from Niagara Falls, then Canada is destined to be the seat and centre of the chief electrical force of the earth. No pent-up Niagara confines our powers. In the Lachine Rapids, formed by the vast volume of the St. Lawrence, and the Sault-au-Recollet Rapids of the Back River of equal power on the opposite side of the river, Montreal has a source of power second only to Niagara. Quebec has the Montmorenci Falls with its tremendous depth of fall; Ottawa has its Chaudiere and Rideau Falls; while we could name a hundred Canadian towns and villages with hitherto unused electrical force sufficient to give light and power both to themselves and neighboring communities. Besides this there are hundreds of falls and rapids on rivers and streams remote from any present town or settlement, and utterly unused even as water power for turbine wheels. In short, Canada with its net work of lakes, rivers and streams—unique in the map and plan of the world—has a wealth of unharnessed electricity greater than all the rest of the world combined. Canada with its exhaustless electric power, Canada with its immeasurable stores of coal, Canada with its remarkable beds of special minerals, such as nickel, mica and asbestos, all rising in importance in the mechanical arts—Canada is the controlling centre of future power in the Western hemisphere. We only need to awake to the fact.

SOME articles on electrical subjects will be found in the first four pages of this issue.

THE MULTIPHASE SYSTEM OF ELECTRICITY.

In another article we have alluded to this new system of generating electricity by wave motion. In a paper before the New England Cotton Manufacturers' Association, C. J. H. Woodbury describes the system as follows:—

In the dynamo the electricity is generated in the armature in currents passing to and fro, first in one direction and then in the other, forming what is known as the alternating current. The function of the commutator and the brushes upon a dynamo is merely to convert this alternating current into a continuous current. There is no reason why an alternating current is not just as well suited for electric lighting as a continuous current.

But many years ago, when Sir Frederick Siemens, one of the pioneers in the application of electricity, made a dynamo for arc lighting, he required a continuous current to operate the regulator in the upper part of his arc lamps, and instead of trying to invent a form of regulator to feed the carbons which could be operated by an alternating current, he placed the commutator and brushes on the dynamo, producing a continuous current, and in that manner set for years the practice of electric lighting by continuous currents, although in the meantime there have been numerous devices for regulating the carbon-feeding mechanism of arc lamps by alternating currents.

Electricians have of late years begun at the place from which they were diverted a number of years ago, to investigate and apply alternating currents for lighting and power purposes. These investigations have opened up a wealth of electrical principles and applications, of which the world has but just seen the beginning.

One of these new forms of alternating currents is what is called the multiphase current, of which the electricity is generated in waves, one wave following another before the first wave has been completed, using currents of electricity which will affect other apparatus by induction through space and without the intervention of metallic conductors, being as a matter of principle comparable to the results produced upon a telephone system when it receives by induction the noise of electric motors or the click of the message transmitted along telegraph wires in juxtaposition to the telephone wires, or even the voice which is transmitted over other telephone wires.

In its application to these multiphase motors, I would say that the method of construction differs entirely from the motors hitherto in use. Instead of using commutator and brushes to transfer electricity from one part of the armature to the other, as has been already alluded to in the continuous current motors, the magnetism revolves through the magnet, causing the armature to revolve in exact synchronism with it.

For purposes of comparison the general arrangement of these motors may be compared to that of a hat rim, as representing the circular magnet, and a ball of twine stands for the armature on the inside, which is a suitably-wound collection of insulated wires joined together at the ends and not electrically connected to any

thing else. Electric wires from the generators are wound upon this circular magnet, and the wave-like currents which the wires carry produce similar magnetization travelling around and around through the magnet; and by this inductive effect to which I made allusion, electric currents are produced in the wires of the armature, so that it will be susceptible to the attraction of the magnet. The wires in the armature revolve, following the attraction of the magnetism circulating in the magnet.

Dynamos similar in principle produce the waves of current which supply this motor, but for economy in transmission, both as regards the small amount of wire and the small loss by resistance, these currents can be generated at a high electrical pressure, which is increased by transformers for the main wires, and then at the motors reduced to a very low pressure by transformers, which answer the same purpose as the reducing valve for steam, except that they can act in either direction to increase or reduce the electrical pressure.

The other advantages of these multiphase motors are that being without any brushes or commutators, there is no sparking. There is hardly a possibility of a burned armature. The motor being operated by a succession of wave currents, will keep at a speed comparable to that of the generator as long as it can keep up. If overloaded, it will not run slower, but will stop. Under similar conditions of overloading, a continuous current motor will burn its armature, unless defended by its safety fuses. Its regulation is very close, the variability of some tests being only one and one half per cent. between no load and its full load. Such a motor will start under its full load or even a greater.

In connection with such a system of electrical transmission of power, it is feasible to use a portion of the current for incandescent lighting without any interference. These motors can be stopped and started without the exercise of any particular skill, and can be inclosed for protection against dust and dirt in a case which merely allows for the protrusion of the shafting carrying the driving pulley.

APPLICATION OF ELECTRICITY TO ELEVATORS.

In a previous issue we presented to our readers a cut and a short description of an electric elevator, manufactured by the Fensom Elevator Works, Toronto, the electrical portions being specially designed for

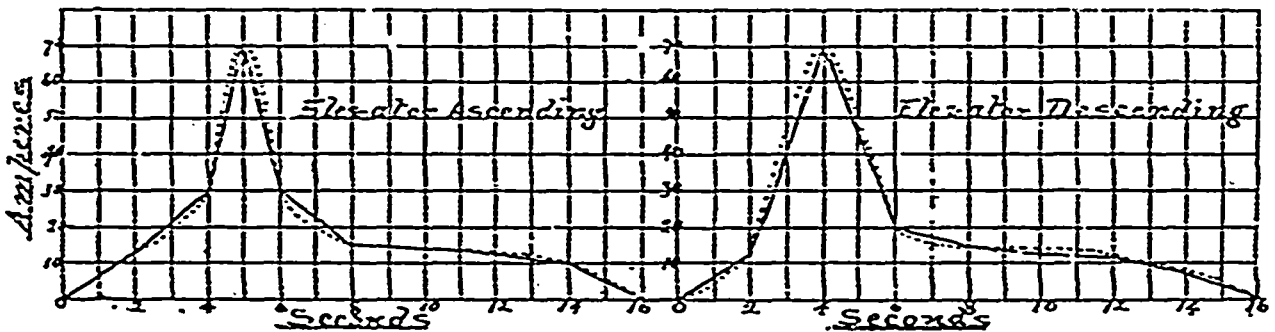
Ampere
Seconds.

Current consumption per round trip of elevator... 588
 One Electrical H. P. per hour (746 Watts per H. P.), supplied at 230 volts pressure, equals a current consumption of11,676
 At meter rate of 4c. per H. P. per hour supplied per electrical H. P. at 230 volts, cost of current per round trip of elevator equals $\frac{588}{11676}$ of 4c., or two-tenths of a cent.

ELECTRIC HEATING.

Two Belgian scientists have just achieved a discovery in heating by electricity, which may likely lead to very important results. A glass or porcelain vessel of any size provided with a lead lining is connected with a conductor of positive electricity. The porcelain vessel is about three parts filled with acidified water. A pair of iron tongs with insulated handles is connected with the negative pole of an electrical current from a dynamo. A bar of wrought iron, for instance, is taken up by the tongs and plunged into the acidified water. In less than a second, the water begins to boil at the point of contact, and the part of the iron bar lying immersed rises quickly to a white heat, emitting all the while a brilliant white light. In a few moments the iron melts and falls off in bubbles and sparks, leaving a clear, glowing surface in perfect condition for welding. Neither the water nor the end of the bar held within the tongs becomes very warm during the operation, so rapid and local is the heating process. Indeed, it is quite possible, after the current has been switched off, to hold the bar, with its submerged end glowing with heat, in the naked hand. And yet a temperature of 4,000° Celsius has just been developed! The explanation of the process, says *The Water and Gas Review*, is that the hydrogen, one element of the water which has been decomposed by the passage of electricity, collects round the immersed portion of the bar, forming a close envelope. Hydrogen being a bad conductor of electricity, a powerful resistance is immediately created to the passage of the current, and this, as is well known, produces an enormous amount of heat.

The new process is said to be perfect for welding purposes. Owing to the heated metal being surrounded by a clean envelope of hydrogen, there is no oxidation,



the Fensom Elevator Works by the Ball Electric Light Company, Limited, of the same city. We now present a diagram showing the current consumption of one of these elevators in operation in the Land Security Company's building, Victoria street, Toronto.

The Diagram here shown was made by John Langton & Co., Electrical Engineers, Toronto, and is the Mean Current Curve obtained from twelve tests, made May 6th, 1893.

and the presence of sulphur and other impurities which distinguish coal fires is avoided. It is believed that the power of electricity to heat quickly any desired spot, leaving the rest of the metal cool, may eventually be turned to useful purposes in the tempering of armor plates, etc. With a view to its use in the hardening of steel cannon, Krupp & Co. are making experiments at the present time.

A NEW and rather difficult problem now confronts electrical engineers in their work in cities. This is the effect of the earth-return current on lead pipes and lead covered cables. Complaints have been made in several American cities, notably in Boston, Cleveland, Minneapolis and Chicago, that the water pipes have been seriously injured by the flow of electricity through the earth in the completion of the circuits. Mr. Barrett, the city electrician of Chicago, has made a report on the subject, published in the *Western Electrician*, and this report seems to show beyond question that escaping current from this source does accomplish injury to the pipes. The situation, says our contemporary, "is clearly one of considerable gravity and must be fairly met. Various remedies have been proposed, but so far none have been devised that have proved entirely successful. Of course the substitution of the double trolley system would remove the cause of complaint, but electric railway companies will exhaust every other means before going to the great expense and introducing the complications which this remedy would involve. Electric railway engineers are devoting themselves assiduously to the problem, however, and we hope that their inventive ability will be equal to the task of hitting upon a successful palliative adapted for commercial use."

WITH regard to the subject of the electrical transmission of power, we have the following letter from a gentleman in British Columbia: - "I have just received from a friend a copy of THE CANADIAN ENGINEER for the month of May. I read that Von Siemens was expected in Canada soon, in connection with electrical transmission of power from Niagara Falls to Hamilton. Now, I write to inform you that I can produce an underground conductor, which, under favorable conditions, that is to say, when properly applied, will prove superior to any other conductor for long distance on land or in shallow water; and will cost a great deal less than any other kind of conductor. I have not means myself to do anything with it. If you can do anything to assist me, or suggest to whom I should apply, I would thank you very much." We shall be glad to put our correspondent in communication with any firm interested. It may easily be that the writer of this letter has a valuable idea.

It is said that one of the subjects which is likely to engross a great deal of attention at the forthcoming convention of stationary engineers in Montreal, is the question of "High-speed vs. Slow-speed Engines" as applied to electrical work. Some prominent members who have given the subject close thought will come out as the uncompromising champions of the low-speed engine.

THE advantages of electricity for heating street cars is apparent; there is no stove room wasted and the heat can be turned on or off at pleasure. For an ordinary 16-foot car a current of about 1,200 or 1,400 watts is sufficient in all sorts of weather.

THE telephone-meter is a newly invented instrument for registering the time of each conversation at the telephone. By its use, rentals of telephones would be fixed on a scale according to the amount of service rendered.

NIKOLA TESLA observes that the day when we shall know what electricity is, will chronicle an event probably greater, more important, than any other recorded in the history of the human race.

It is said that a plate of iron, when used as a telephone diaphragm, will respond to and transmit perfectly all sound vibrations, even though it be an inch in thickness.

Electric Flashes.

THE new electric light system at Renfrew is in operation.

A CAVASS is being made for a \$25,000 electric light plant at Kaslo, B.C.

WORK is proceeding upon the electric street railway at Amherstburg, Ont.

AN independent new electric street railway is being agitated for in Hill, Ont.

THE Vancouver, B. C., City Council are offering \$360,000 for the street railway.

J. B. SMITH & SONS, Callender, Ont., have put in an electric light plant at their mills.

THE Toronto Street Electric Railway system will, perhaps, be extended to Long Branch.

THE Kingston Electric Light Company are putting new engines and boilers in the power station.

THE Niagara Falls and River Electric Railway is now in good running order and is paying well.

THE Hamilton and Dundas Railway Co. is asking for permission to convert its road into a trolley line.

THE by-law providing for the grant of \$31,000 for an electric railway from Hamilton to Beamsville has been carried.

THE Vancouver Electric Railway, Light and Power Company (Limited) have advertised their plant for sale by tender.

THE Toronto Electric Railway Co. will this summer build a motor house on Esplanade Street, at a cost of \$30,000.

JOHN A. BURNS, engineer, Craig street, Montreal, has been appointed local agent for the Kay Electric Works, Hamilton.

THE Ottawa Electric Railway Co. have decided to build an electric car factory as a separate branch of their business.

WM. NEWMAN has been appointed engineer for Windsor, in connection with the special work of the new electric railway.

THE village of Maisonneuve, an eastern suburb of Montreal, is extending the arc light system throughout most of the streets.

JOHN A. CULVERWELL, late with the Edison Company, is now general agent for the Automatic Telephone and Electric Company.

PEOPLE in Edmonton, Alta., are agitating for the construction of an electric railway from the town to the C. & E. Railway station.

JAMES ANDERSON has been appointed manager of the electric light branch of the Sandwich, Windsor and Amherstburg Railway.

SOME merchants at Peterboro' are seeking an injunction to restrain the Electric Railway Company from laying their tracks along George street.

JOHN BAIN, with the R. G. McLean Company, has been appointed to the superintendence of the Niagara Falls and River Electric Railway.

A RESOLUTION has been passed by the Toronto and Scarborough Electric Railway Company, authorising its directors to issue debentures to the amount of \$50,000.

THE Montreal Electric Street Railway Company are pushing the work on the extension of their lines to the utmost: that along Notre Dame street is nearly complete.

THE Montreal Street Railway are extending an electric line from their present eastern terminus at the Hochelaga convent to the toll gate at the village of Longue Pointe.

A NEW electric light plant has been ordered by New Westminster, B.C., to the value of about \$25,000. It is expected that it will yield an annual income to the city of \$20,000.

W. H. FITZPATRICK, proprietor of the woolen mill at Hopewell, N.S., proposes to form a company to put in a plant to supply electric light to New Glasgow, eight miles distant.

A. W. CONGDON has succeeded C. F. Medbury as agent for the Quebec district for the General Electric Co. Mr. Congdon's quarters are, as before, in the Temple Building, Montreal.

A PEOPLE'S vote will be taken on August 26th as to whether the Toronto Street Electric Railway service shall be run on Sundays. The expenses of taking the vote will be borne by the company.

THE contract for putting in electric power for manipulating the Beauharnois canal gates has been given by the Department of Railways and Canals to the Canadian General Electric Company, Toronto.

PRIVY COUNCIL has decided that the old Street Railway Company of Toronto have not a perpetual right to run cars on the streets, and that they are not entitled to remuneration for giving up the franchise.

J. WILSON, one of the superintendents of the C.P.R. Telegraph, returned from Revelstoke the end of last month. He says that the work of fixing the new Kaslo-Silverton-Revelstoke telegraph line is now being pushed forward.

THE Royal Electric Company of Montreal are surveying the site of the proposed dam on the Richelieu River at Chambly Rapids, and Massey & Howard are preparing plans and estimates of cost for the proposed water-power at that point.

JAS. W. PYKE, successor to Geo. Reaves, 35 St. Francois Xavier street, Montreal, has been appointed Canadian agent for the firm of Siemens Bros. & Co., Ltd, London, Eng., the renowned engineering firm and manufacturers of electrical appliances.

As mentioned in a previous number, the St. Catharines & Thold Electric Road is being remodelled. This was one of the first electric roads built on the continent, and its equipment now seems crude compared with the electric roads of to-day.

THE Incandescent Light Company, Toronto, are building a new brick chimney 150 feet high. The addition of a new vertical Cross compound engine will give a capacity to the company of supplying the current for 35,000 sixteen-candle-power lamps.

THE Keewatin Power Co., capital \$1,000,000, has been incorporated by Alex. Frazer, Westmeath, Wm. Gibson, M.P., Richard Fuller, Hamilton; John Mather, of Ottawa, and W. H. Brouse, of Toronto, to furnish hydraulic and electric power from the Winnipeg river, and establish factories, dwellings, etc.

GEORGE BAREAU, an electric lineman, while putting an incandescent light wire in the Molsons Bank, at Ottawa, last month, accidentally made contact between two ends of the wire outside the converter and received a charge of 1,000 volts. He died in two minutes, and his body hung on the pole until taken down by his comrades.

THE application of the Hamilton Radial Electric Railway Company for incorporation has been refused, as the powers asked for are exceptional, and cannot be granted to a street railway company. The directors of the company are considering the advisability of seeking incorporation as an ordinary railway.—*Canadian Electrical News*.

F. N. DAVIS, manager of the St. Stephen Electric Light Co., offered the town council a reduction of \$2 per light per year, the present price being \$72, if the council would make a five years' contract. The council did not accept the proposition, and it was finally agreed that the rate should be \$66, with the same number of lights as now.

WITH further reference to the proposal to adopt electrical power for opening and closing the locks at the Canadian Sault Canal, Collingwood Schreiber, who has returned from Sault Ste Marie, says that he is well satisfied with the feasibility of the motive power, and that the necessary arrangements are being made for putting an electric plant in.

THE business of the Packard Lamp Company, of Montreal, has increased at a remarkable rate. The orders for the past two months have almost equalled those of the previous year. The Packard electric lamp is now in use in every large city in Canada. It is noted not only for its brilliancy, but for its constant maintenance of candle power.

THE Canadian General Electric Company have purchased Hunt Bros' electric lighting and power business at London, Ont., and will make it the nucleus of their new plant and business. The arc lighting plant will have engines of an aggregate of 400 horse power, and the incandescent of 700. Mr. C. B. Hunt has been appointed local manager.

THE Merchants' Electric and General Service Company, Montreal, have elected G. A. Greene, president; John A. Grose, manager; and A. W. Ogilvie, S. H. Ewing, James Cooper, G. S. Brush, E. Hanson and S. Finley, directors. This company have obtained the permission of the City Council to proceed with their work, and are advertising for coal to start operations as a rival of the Bell company.

SETTING UP A DYNAMO.

Use special care to avoid dropping anything on to the lamp rods or arc lamps.

Never lay an arc lamp on its side, but set it up in some secure place.

After taking lamps out of boxes, remove the packing blocks, and see that all parts are in proper position and working freely.

In unboxing the dynamo, do not attempt to remove it from the box after simply taking off the cover; but, instead, knock the entire box apart, leaving the machine standing on the bottom piece only. If the armature is shipped in a separate box from the balance of the machine, it will, in most cases, be necessary to use a hoist for the purpose of placing it in position, and great care should be used to avoid scraping or cutting of the shaft wires, or armature bobbins, in dropping the armature into place. Look the machine over thoroughly, and see that everything is in place and all screws tight. Secure the pulley firmly on the shaft.

It is a good plan to run a dynamo idle for a day, or even longer, if possible, following this with several hours' run with only a light load. This load should only be sufficiently heavy to warm up the fields and armature, so as to dry them out thoroughly in case they have become damp during transportation. A little care of this kind before putting the machine into regular service, will avoid trouble at a later stage of the proceedings.

It is very important to locate the machine in a dry place, and as near the source of power as possible, providing of course for sufficient length of belt to prevent accidents to shafting, or slippage of belt, and also arranging the distance so as to get sufficient belt-grip on the pulleys.

If the power is taken from an engine used specially for the lighting work, and this engine drives a main shaft, which, in turn, drives the various dynamos, it is best, if possible, to locate the machine on that side of the shaft opposite the engine, so as to divide the strain as equally as possible.

It is often the case that an engine must be used on other work as well as for the electrical apparatus, or, if it is operating a number of lighting machines, it may not be necessary to run all of the dynamos for exactly the same length of time. Under such circumstances, a clutch pulley must be provided on the main shaft, which will permit throwing on or off the dynamo which it drives, as such dynamo may be needed or dispensed with.

A light double belt is the most desirable for lighting work. It should never be less than 30 feet long and should be very pliable. If the belt is new and stiff, it can be softened up by applying neat's foot oil, or belt oil, on the outside.—*Scientific Machinist*.

WHAT THEY THINK OF US.

THE CANADIAN ENGINEER is the name of the latest arrival in the field of trade journalism. It is racy and readable, full of items and articles likely to interest those engaged in the mechanical, mining, and other branches of the engineering trades. It has a field peculiarly its own, and if the first number be taken as a token of what may in future be looked for, then this newcomer will occupy the field. From an article on the first page we take it that THE ENGINEER believes in a moderate amount of protection. It is of opinion that the days of wooden ships being past, encouragement should be given to iron shipbuilding. We may share in that opinion, but if any encouragement is necessary then let it be by hard cash in the shape of a bonus. The bonus could be given for a term of years, and might consist of a guarantee of so much interest on the money invested. But even bonuses are bad things, and should only be given in exceptional cases.—*Stellarton Journal*.

THERE are excellent journals of this kind published in England and the United States; but it is the aim of THE CANADIAN ENGINEER to supply the lack in these journals of Canadian news and information bearing upon the special needs and circumstances of our country.—*Christian Guardian*.

THE latest arrival in the arena of trade journalism is THE CANADIAN ENGINEER, published in Toronto and Montreal, and devoted to the mechanical, mining, marine, locomotive, sanitary and other branches of the engineering trades. The promoters of the new paper have given us a bright, newsy journal, and in its special field it ought to find general favor.—*Canada Lumberman*.

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Montreal

This initial number exactly meets the wants of the constituency to which it appeals for support, and we do not see how anyone in Canada interested in any branch of engineering or manufacture can do without this new applicant for public favor.—*Truth*.

We have received copies of three newspapers this week. One published in Toronto and Montreal, THE CANADIAN ENGINEER, is a most creditable piece of work in every way.—*The Golden (B. C.) Era*.

Its province promises to be an extended one, for its conductors propose not only to cover the simple engineering field, but also the allied branches of mining, locomotive, sanitary and marine engineering, with excursions into that of electricity. The paper is brightly written, neatly printed and replete with news of interest to our Canadian cousins. If it adopts as aggressive a demeanor in its mission as is the cherry-red color of its cover, it will speedily be counted among those journals which have come to stay.—*Electrical Power*, New York.

In design and typographical appearance it does credit to the publishers. It is thoroughly Canadian in tone; every article has a practical purpose, and gives a great deal of Canadian news of interest to the trades concerned. We trust our latest contemporary will have a full measure of success.—*Water and Gas Review*, New York.

Its business news summary is very interesting. It compares very favorably with any of the other trade journals.—*Bowmanville Statesman*.

We cheerfully acknowledge the receipt of the initial number of THE CANADIAN ENGINEER, a very bright appearing monthly journal. The new paper is thoroughly Canadian in tone, being devoted to the mechanical, mining and other branches of the engineering trades of Canada, and is certainly sure of success if it keeps on in the manner it has started. It contains well-written technical and illustrated articles, and a surprisingly large amount of Canadian news of interest to the trades concerned.—*Metall. & Eisen Zeitung*.

SIMILAR journals have succeeded elsewhere, and there is no reason why success should not attend such a venture here. The first number has been issued, and is a very creditable exhibit of the ability which lies behind it.—*St. John Gazette*.

This publication comes to supply a place hitherto vacant in the periodicals of Canada. It is intended to supply "the element of Canadian news and of information bearing upon the special needs and circumstances of the country." The title indicates the scope and object, and the contents of this initial number are of a character to give promise of usefulness and success.—*Carleton Sentinel (Woodstock, N.B.)*

It is attractive in appearance and is well illustrated. Price, single copies 10 cents, or \$1.00 per year, and it is well worth the money. We wish the paper success.—*Fredericton Reporter*.

We are in receipt of the first issue of THE CANADIAN ENGINEER, a new publication issued in Toronto and Montreal. It is a monthly of attractive appearance, and gives evidence of care in the selection of the special articles and news items contained in the initial number. It devotes much space to notes of engineering and mechanical development. We learn that E. B. Biggar, of Montreal, is connected with the new publication.—*The Merchant*

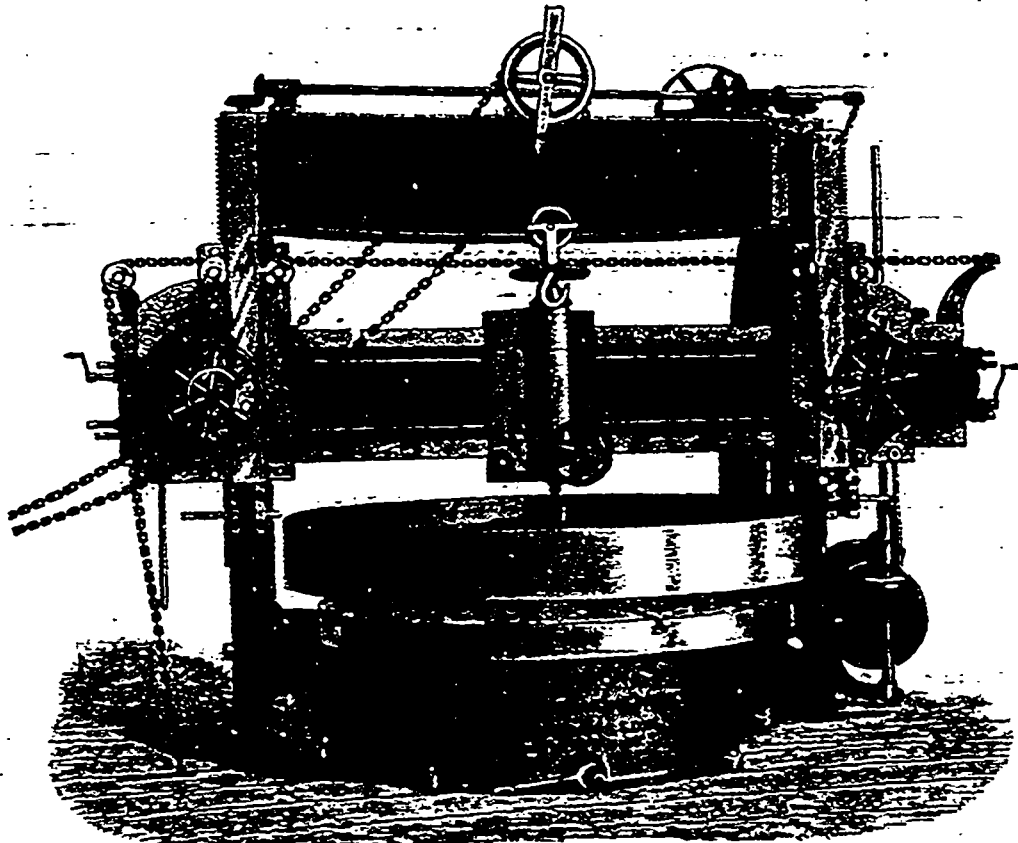
GREASY BELTS.

There are many places where leather belts are used so greasy from drippings that cannot well be prevented, from flying oil and spray, or from other unavoidable causes, that they become thoroughly saturated with grease, so much so that they become very inefficient. In such a case take a large piece of chalk that will cover the width of the belt, and hold it hard against it while running. The chalk takes up the grease as it is worn off by the friction of the belt. After chalking awhile, take a scraper and hold it against the belt in such a manner as will scrape the accumulated mixture of chalk and grease all off, and then renew the chalking operation, and keep repeating until the belt is in good working condition, when the cleaning process can be discontinued until it becomes dirty again. This is a simple remedy, and is by some considered the best way for keeping greasy belts clean and in good working condition.

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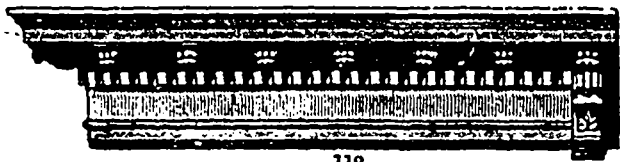


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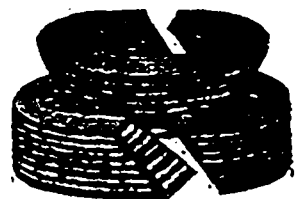
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Industrial Notes.

THERE is talk of a new roller mill at Pontypool, Ont.

THE second gas well at Ridgeway, Ont., has been finished.

THE Petrolea (Ont.) waterworks' construction is going on apace

OWEN SOUND is to have an evaporating and pickling factory.

A NEW bridge over Chemong Lake, Quebec, is being agitated for.

WORK has been commenced on the new hospital at Nelson, B. C.

A NEW pumping plant is to be placed in the Winnipeg waterworks.

THE bridge over the Deer River, at Belmont, has been completed.

TENDERS for a new elevator at Lumsden, N.W.T., are invited.

THE building for the new brewery at Neepawa, Man., is finished.

TYE & Co., hardware merchants, Vancouver, are retiring from business.

THE plans for the new elevator to be erected at Winnipeg are now ready.

J. LUNDY's planing mill, at Niagara Falls, has been burned to the ground.

KINGSTON and Sarnia, Ont., have been created entry ports for petroleum.

CHAS. FORSTER and Wm. Lockston are starting a new planing mill at Galt.

CULLIS BROS.' saw mill, at Auburn, Ont., has been totally destroyed by fire.

SEVERAL large buildings are to be erected in Bridgewater, N.S., this season.

THE Lethbridge Hardware Co., Lethbridge, Alta., has sold its business to J. Lawrence.

THE new brush factory in Berlin, started by J. Bingeman & Co. is now in operation.

W. ATKINSON is going to move his saw mill from Learnington, N. S., to Windham, N.S.

THE new saw-mill at Sturgeon Falls, Ont., will employ two hundred and fifty hands.

THE present furnace at the Port Colborne Smelting Works is to be replaced by a new one.

THE contract for repairing the Central School, Peterboro', has been awarded to R. Clinkscales.

THE pile bridge being built by S. V. Bray over the Wolf Creek, N.W.T., is nearly finished.

THE Waterloo, Ontario, Manufacturing Company's woolen factory has been fitted up with new machinery.

THE grading of the streets on the Government town site at New Denver, B.C., is to be proceeded with at once.

PLANS are in course of operation for the new bridge over the M. C. R. at Windsor, Ont. It is to cost about \$15,000.

LEONARD CLEMINSON, of Aylmer avenue, Windsor, Ont., broke his leg the other day by a casting falling on him at the Malleable Iron Works, Walkerville.

STEVENS & HAMILTON, Galt, Ont., have shipped a radial drilling machine and four engine lathes to the Northey Manufacturing Company, Toronto.

THE city engineer for Toronto thinks that a good plan for carrying the water mains from the Island to the pumping station would be the erection of a high level bridge.

IT is not decided yet what will be the motive power for operating the lock gates of the "Soo" Canal; but in all probability the initial power will be obtained from the rapids.

THE plans of R. B. Rogers, Superintendent of Trent Valley Navigation, for the new iron bridge at the Narrows, N.B., have been accepted. Tenders will be invited shortly.

IT is estimated that whilst the re-building of the Woodstock, N.B., bridge on the present site would cost \$72,482, it would only cost \$53,864 to build a better one on a different site.

PERMITS have been granted for the erection in Toronto of a three-story club building for the use of the Toronto Canoe Club, and for the building of additions to the Ontario Bank.

THE saw mill at Alberni, B.C., is now ready to commence operations.

ROUSSEAU's tannery at Sapperton, B.C., has been burned down. Loss \$9,000.

JOHN MURPHY is building a salmon saltery at South Westminster, B.C.

THE Canada Pipe & Foundry Co. have the contract for iron pipes for Montreal.

A. McMULLEN has rebuilt the mill at Folly Lake, N.S., and it is now running again.

WORK is proceeding rapidly on the new observation tower at Lundy's Lane, Ont.

THE Minister of Militia has promised to give New Westminster, B.C., a new drill hall.

THE by-law for extending the intake pipe of the Windsor, Ont., waterworks has been defeated.

A LARGE addition to the works of the pork packing factory at Ingersoll, Ont., is being built.

ROBIN & SADLER, leather belting manufacturers, Montreal, are building a new belting factory.

PLANS have been prepared for a four-story addition to L. Griesinger's brewery at Windsor, Ont.

G. T. THOMSON & Sons, paint manufacturers, St. John, assigned this month to James F. Sutherland.

JOHN WHITESIDE's sawmill at Huntsville, Ont., has been burned down. Loss \$10,000; insured for \$3,000.

ROMAN CATHOLICS in Kaslo, B.C., propose building a school and hospital at a cost of \$20,000 or \$30,000.

THE Lake of the Woods Milling Company are going to build one of the largest mills in America at Winnipeg.

A NEW bridge is being built over the Musquedoeit River at Meagher's Grant, N.S., the old one being unsafe.

JOS. BROWN's shingle and lumber mill at Coldwater, Ont., has been burned down. Loss about \$2,500, mostly insured.

THE Polson Iron Works and Shipbuilding Company, of Owen Sound, are removing their heavy machinery to Toronto.

CHRISTIE BROS. & Co., of Amherst, N.S., have shipped an order of casket trimmings, etc., to St. John's, Newfoundland.

THE machinery for the new flour mill belonging to McBroom Bros., Washburn, Ont., is being made by John Inglis & Sons, Toronto.

RHODES, CURRY & Co., Amherst, N.S., have received an order for twelve flat cars for the new railway between Montreal and St. Fyacinthe.

A SUBSCRIPTION is being raised for the purpose of helping the construction of a wagon road between Three Forks and New Denver, B.C.

BUILDERS in St. John's, Nfld., are exceptionally busy this year. The great fire has, however, not done away with the building of wooden structures.

THE Breithaupt Leather Company are to erect a three and a half story building, 40x84, at Listowel, to take the place of the one recently destroyed by fire.

A NEW Roman Catholic Church is to be built in Hamilton, at the corner of Locke street and Herkimer street. The estimated cost is about \$10,000.

THE E. B. Eddy Co., of Hull, now get their coal supply direct from England. It costs a little more than Canadian coal, but they say it is better for their purposes.

THE contract for dyking the water front of the Delta municipality, New Westminster, B.C., is nearly complete. Eight out of the eleven miles of dyking are finished.

THE municipal council of Cote St. Antoine, Que., have decided to ask the ratepayers' authority to borrow \$250,000 for general improvements, and another \$250,000 for parks.

P. DESCAUV, engineer of the City Hall Building, Montreal, has invented a machine for pumping water, etc., from the street gullies into a wagon, in order to be removed.

THE congregation of the Taylor Presbyterian Church, Montreal, have decided to erect a new building at the corner of Logan street and Papineau road, at a cost of \$20,000.

TENDERS are to be invited for adding another story to the Wolseley, N.W.T., town hall, and for renovating the building throughout. If these do not prove satisfactory there is a possibility of another building being erected altogether.

St. SAUVEUR, Que., is to have a tannery.

WEIR & LEWIS' sawmills, Easton, Ont., have been burned down.

JAS SPARLING and John Power propose to erect a sawmill at Meaford, Man.

AT New Denver and Silverton, B.C., a good deal of building is going on.

W. DUNN has the contract for constructing a granolithic walk at Stratford, Ont.

It is reported that the Sarnia Oil Factory is about to pass into the hands of a syndicate.

THE Water Works Committee, Galt, Ont., are hard at work on the extension of the mains.

IN the Royal City Planing Mills, Vancouver, B.C., Ole Johnson was caught in a belt and killed.

PHILLIPS & RICHARDSON, of Portage la Prairie, will erect an elevator at Lumsden, N.W.T.

McMILLAN'S elevator, at Sintaluta, Assa., has been purchased by the Farmers' Elevator Company.

THE new tannery in connection with Storey & Son's glove works at Acton, Ont., is nearly finished.

KER & HARCOURT, Walkerton, Ont., have been extra busy in their spools and bobbins for the last six months.

AT J. D. Shier's sawmill, Bracebridge, Ont., a large fly-wheel burst, causing damage to the extent of nearly \$5,000.

E. E. BOUCHARD had his thumb and three fingers cut off while working in the Waterloo (Que.) Wood Mfg. Co.'s factory.

A BOILER in A. McMullen's saw-mill at Folly Lake, Truro, N.S., exploded on July 4th, seriously injuring T. R. McMullen.

PLANS have been prepared for the new Knox Church building in Montreal. It is to cost \$50,000, and will have a seating capacity of 1,200.

A JOINT stock company with a capital of \$10,000 has been formed at Kaslo, B.C., for the purpose of forming a wharf and warehouse.

J. JOHNSTON has the contract for building the McCurry Bridge at Hinchingsbroke, Que. The clearing and widening of the stream are to be done by Rich. Boyd.

A MEETING has been held at Lumsden, N. W. T., to consider the establishment of a grist mill there. A German gentleman will erect one if a bonus of \$1,000 is given.

G. E. WARING, engineer, of Peterborough, Ont., estimates that the cost of the sewerage extensions contemplated under the plans of Alan Macdougall will be about \$125,000.

A MAN named March was caught in a belt and carried round the fly-wheel in the Pillow Hersey Co.'s factory, Montreal, on the 16th ult. He had a foot crushed and was badly shaken up.

THE machine shop, wood-working shop, and tin shop of the North American Mill Building Company's Works were burned on the 4th inst. Loss estimated at \$30,000. Mostly insured.

BUILDINGS for the new foundry of R. McDonnell at Parkdale, Toronto, are being erected, and machinery is being purchased at Cleveland. The *Parkdale Times* expects the foundry to be running in a month.

THE proposed new pulp mill on the Liverpool River, near Milton, N.S., referred to in last issue, is to be proceeded with at once. Tenders have been invited this month for the canal and dam leading to the site.

ADOLPHE MULLER, of South Algona, has commenced the manufacture of turpentine, pine tar and charcoal. For this purpose he uses red pine stumps. Mr. Muller worked at this trade in Germany. —*Pembroke Standard*.

THE Petrolia, Ont., *Advertiser* reports active operations in the oil wells of that vicinity. Several new wells are being drilled, and considerable interest is centered in the Holmes and Rosebury farms, where prospects are good.

JAS. A. BELL, engineer, of Elgin county, Ont., reports that a 30-ft span bridge is to be built over Big Otter Creek, between Bayham and Middleton, that the Grange street (St. Thomas) bridge is to be rebuilt at a cost of \$1,933, and the Port Burwell bridge at a cost of \$1,860.

THE county council of Huntingdon, Que., has decided to erect a steel bridge at Brims. D. Brims is to superintend the stone work, and D. Boyd the steel work. The masonry will be done by J. R. Labelle, of Montreal, and the iron work by a Hochelaga company. The bridge is to be finished in September.

WORK has been commenced on the isolation hospital at Victoria.

TENDERS have been called for a new R.C. convent to be erected in Arnprior.

MRS. McDONNELL is erecting a roller flour mill on Indian Road, Toronto.

N. K. FAIRBANK & Co. are going to build a lard factory at St. Henri, Montreal.

TAYLOR & BLAIR, of Lima, Ohio, propose to start a window blind factory in Toronto.

THE Dominion Bridge Co. have begun the work of roofing the Drill Shed at Toronto.

W. THIBAUT has the contract for a new bridge over Mitchell Brook, Hinchingsbroke, Que.

THE new saw mills of Kelly Bros., River Herbert, N.S., have a capacity of 50,000 feet a day.

THE Morrison Lumber Mills at Fredericton, N.B., have been sold to James Murchie & Sons.

It is expected the new elevator at Carleton, St. John, N.B., will be in operation in a few days.

THE dry-house of F. W. Titcomb's mill at Houlton, N.B., has been destroyed by fire. Loss, \$7,000.

G. G. BRYANT has the contract for the construction of the Protestant hospital at Sherbrooke, Que.

THE Columbia Carriage Factory, Vancouver, has been revived, and is being carried on by James Duke & Co.

AN iron bridge is to be built by the Niagara Falls Electric railway across Smeaton's Ravine, near Queenston.

W. L. GRIFFITH'S elevator at Emerson, Man., has been burned down. Twenty thousand bushels of wheat were destroyed.

THE cotton-waste warehouse of E. Lichtenhein, Montreal, was damaged by fire to the extent of \$3,000 last month. No insurance.

J. PARENT, working in the C. P. R. shops on Delormier ave., Montreal, was badly burned by an explosion of molten metal a few days ago.

A BY-LAW has been ratified by Mile End, Montreal, authorizing the borrowing of \$100,000 to build sewers, roads and other improvements.

THE bankrupt stock of Wm. Darling & Co., wholesale hardware, Montreal, was bought by Thos. Davidson & Co., at 40 cents on the dollar.

THE Rhodes Curry Co.'s new wood-working shop is in operation, and the machine and moulding shops are to be working by the end of this month.

THE Manitoba Wire Factory on Lombard Street, Winnipeg, has been leased to Richard & Houde, who propose to make considerable improvements.

J. W. ROSS & Co., Oxford, N.S., are manufacturing large quantities of excelsior for packing purposes. This is a comparatively new industry in Oxford.

ABOUT \$35,000 has been subscribed for the new Science School at Kingston, and \$3,000 have been paid in. The school will be opened in the autumn with four teachers.

It is reported that the water power of Dick & Banning's saw mill, Rat Portage, is to be bought by a United States company who will erect one of the biggest saw mills in that region.

THE Gill-Smart Manufacturing Company, of Brockville, has bought out the moulding plant of Chown & Cunningham, Kingston, and may possibly move the foundry plant to Brockville.

TAYLOR SCOTT & Co., manufacturers of woodenware, Toronto, have assigned. They now offer creditors 25 cents cash on the dollar, and to continue the business in the chief partner's wife's name.

THE Record Foundry and Machine Co., of Moncton, recently took over the management of Weir's machine shop, which has been leased for one year. John Weir has been retained as foreman of the shop.

A NEW company is seeking incorporation under the title of The Tobique Valley Gypsum Mining and Manufacturing Company, with headquarters at Ottawa. It has for its object the development of a gypsum mine in Victoria county, N.B.

THE Franciscan Fathers who arrived in Montreal, in June, 1890, have now begun the erection of a \$40,000 monastery in Dorchester street, in that city. These monks depend entirely on articles of food and clothing given as charity, and do not accept any money contributions, except for building purposes.

D. H. TAYLOR & SONS' stave mill and lumber yard, Dutton, Ont., have been burned.

PERMANENT street improvements in Montreal are contemplated, aggregating about \$750,000.

A LARGE wharf is to be constructed opposite the B. C. Iron Works Foundry, Vancouver.

W. MCGREGOR has the contract for erecting the wharf and main buildings of the sampling works at Kaslo, B.C.

AN extension is to be made to Notre Dame street, Montreal, as far as Cote St. Paul, with a uniform width of 66 feet.

THE contract for the new works of the Moffat Stove Company, Weston, Ont., has been given to Alex. Green, Owen Sound.

THE town council of Meaford, Ont., have accepted the offer of the county council of \$500 in aid of the bridge over Big Head River.

HARRY WATSON was assisting to raise a boiler in Stevens & Burns' foundry, London, Ont., when it fell, causing him to break his collar bone.

THE Dempster saw-mill, now owned by Geo. Heurtin, on the Petawawa, was carried away bodily last month, the result of a jam of logs.

THE new file factory at Almonte will get exemption from taxes for ten years, provided the proprietors give evidence of successfully carrying on the work.

ANTHONY STRONG, mechanical engineer at the Kingston, Ont., cotton mill, was badly scalded the other day by the sudden opening of one of the valves.

THE masonry work on the new Canadian Sault Canal is said to be very fine. It is uncertain, however, that the locks will be finished before winter.

AN emery wheel burst in the Sarnia Stove Works the other day. The workman attending it had just stepped aside to pick up a casting, and thus escaped death. The pieces went through the two-inch floor.

THE present officers of the Owen Sound Portland Cement Co. are as follows. President, J. Lucas, Toronto; vice-president, W. Manders, Owen Sound, manager, R. P. Butchart, and secretary-treasurer, John Corbet.

THE Dominion Bridge Company has declared a dividend of six per cent. The following is the board for the current year:—James Ross, president; J. P. Dawes, vice-president; R. B. Angus, Duncan McIntyre, T. G. Holt, James Cooper and S. Donaldson, directors.

THE contract for building the crematory for consuming night-soil, in Montreal, has been awarded to C. Thackeray & Co. The capacity of the machine will be 150 barrels a day, or 900 cubic feet. The crematory will be ready in August, and is being built near Sault au Recollet.

WORK is to be begun at once on the new Pitt Meadows dyke, New Westminster, B.C., under the management of the Maple Ridge dyking commissioners. The dyke is to be fourteen miles in length, and, it is hoped, will reclaim 9,000 acres of rich soil. Its cost is estimated at \$80,000.

GEO. WEBB, who has the contract for the building of a Sunday school in connection with the First Methodist Church, Hamilton, has built a wooden tower, which was to have been bricked over. He has now been summoned before a magistrate for infringement of the building by-laws.

THE affairs of the James Hay Company, furniture manufacturers, of Woodstock, Ont., are creating a good deal of discussion, the old firm having given a bill of sale in trust to H. J. Finkle for \$275,000 in order to secure the Bank of Commerce, by whom its affairs are practically controlled. Several writs have already been issued against the company.

C. B. McALLISTER has bought out his father's interest in the flour mills at Pakenham, Ont., and the business of the mills there and at Pembroke will be conducted under the old firm name of W. B. McAllister & Son. W. B. McAllister retires from active work in the mills, and will devote attention to his mining properties in Hastings and Frontenac counties.

THERE is depression in whiskey manufacturing in Canada. Forty employees of Gooderham & Worts' distillery have notice that the distillery is to close down for nine months, owing to there being an overstock, 2,500,000 gallons of whiskey. It is likely Walker & Sons, Walkerville, H. Corby of Belleville, Seagram of Waterloo, and others, will fall into line, as they have a surplus on hand.

THE shingle business at Vancouver is reviving, says the *Victoria Colonist*. Large consignments are going East, and the C.P.R. are doing all in their power to encourage manufacturers.

A LAB of 15 named Elzear Terriault, while working at Moir & Davidson's foundry, Montreal, was last month so badly burnt by a lot of molten matter spilt upon him that he died within twenty-four hours.

THE town of Windsor, Ont., has ratified the by-law to raise a loan of \$50,000 for the extension of the water-works system. A new intake pipe will be laid to the Detroit River, at a point above the Starch Works.

THOUGH the general business of J. Harris & Co. (Ltd.) is announced to be carried on by Rhodes, Curry & Co., Amherst, N.S., the Portland Rolling Mills, Portland, N.B., will still be under the former firm's control.

A COMMITTEE of the Waterloo, Ont., county council recommends the building of a new bridge between the township of Blandford and Wilmot, if Oxford county will pay half. A sub-committee was appointed to let the contract.

ARRANGEMENTS have been made for purchasing pipes for the purpose of bringing a supply of natural gas from Kingsville, Ont., to Walkerville and Windsor. It is probable that an early service of gas in Walkerville will be the cause of the setting up of many new industries there.

LAWRASON'S soap works, London, Ont., were struck by lightning on the 29th ult. A hole eight inches in diameter was cut through the wall by the lightning, which appeared like a ball of fire, and some timbers were splintered. The foreman and a workman were badly stunned.

LAFONTAINE & LEMOINE, civil engineers, have been awarded the contract for the Brock street tunnel, Montreal, at \$135,557. In speaking of the work, Ald. Stevenson said that if Canadians could build the Hoosac tunnel, after the Americans failed, there was no reason why they could not do this.

SOME large contracts were awarded this month in Montreal for asphalt paving and block stones. The Sicilian Asphalt and Paving Co. (Cochrane) received contracts to the amount of \$400,000, Bastian & Valiquette to the amount of \$170,000, and Warren-Scharff to the amount of over \$160,000.

THE striking nailmakers of Pillow, Hersey & Co., and of Peck, Benny & Co., Montreal, have returned to work. The strike arose out of the fact that the proprietors would not enter into an agreement to fix the rate of wages a year in advance, as was done before. As there was a large amount of stock on hand the men saw their chances of success would be small. It was not a question of increased pay. There are about 350 hands employed in the two factories.

THE road and bridge committee of the Huron, Ont., county council recommend repairs to the Manchester bridge, that all iron bridges in the county be repainted, that the award of the contract for the Grand Bend bridge be left to the engineer acting with the Warden of Lambton; and that \$300 be granted to aid in erecting a foot bridge on the site of Graham's bridge near Wingham. The contract for the bridge at Bayfield, and for Hall's bridge has been let to Robt. Jamieson, the price of the former to be \$1,145, and the latter \$655.

AT a meeting of the Montreal Water Committee contracts were awarded for various stores and supplies to the following firms: Prefontaine & Co., H. Bulmer, E. Tribey & Co., James Shearer, Frothingham & Workman, Amiot, Lecours & Lariviere, P. Dansereau & Son, Bellhouse, Dillon & Co., B. J. Coghlin, Charles Shephard, Wm. McNally & Co., R. E. Boyd & Co., Alexander McPherson & Sons, Thomas Gauthier, A. Bremner, Frances Hyde & Co., James Wilson, jr., The Bushnell Company, Wm. Sclater & Co., A. F. X. Beaudry, Montreal Lime Company, The Edward Cavanagh Co., Wm. Rodger & Co., Garth & Co., Caverhill, Leamont & Co., and P. D. Dods & Co.

THE Rodwell Manufacturing Company held its annual meeting at Niagara Falls on the 29th ult. The stockholders were generally represented. The following officers were elected:—President, S. J. Moore, of Toronto; vice-president, J. J. B. Rodwell; secretary, L. W. Pettebone; treasurer, H. Duck. The same day a meeting of those interested in the business represented by the Carter Company, Limited, of Toronto and Niagara Falls, and the Housman Art Metal Works, was held to decide upon a plan of reorganization, which places all the companies formerly managed by Mr. Moore on a more extended financial basis. The company has a new process for treating metals.

PROBABLY the largest shipment of raw material ever made to a paper mill in Canada was that which arrived the other day at the mills of J. C. Wilson & Co., Lachute. It consisted of thirty-one carloads of cotton covers for paper stock. It made a trainload, and weighed over 300 tons, including the contents of some extra cars which came in by a later train the same day.

AT the regular meeting of the Canadian Association of Stationary Engineers No. 1, of Toronto, held on the evening of the 14th, the following officers were installed: Wilson Phillips, president; W. M. Butler, vice-president; Herbert Terry, recording secretary; Geo. Mooring, financial secretary; Sam Thompson, conductor; John Thompson, doorkeeper; delegates to annual convention, Bros. Mooring, Phillips, Lewis, Gilchrist and Sutton; representative on Technical School Board, Chas. Heale. The Association meets 2nd and 4th Fridays of each month at Shaftesbury Hall.

THE town of Fort William has passed a by-law granting a company \$50,000 to build a smelter, for the purpose of reducing the iron ore brought down by the P. A., D. & W. Railway; also a by-law to raise \$18,000 for the erection of a new public school. The council is at present considering the advisability of putting in waterworks. An electric street railway is being built from Port Arthur through Fort William. The road is completed to Fort William already, and cars running every hour between the two towns, which are a distance of only four miles apart.—*Cor. Renfrew Mercury.*

Mining Matters.

A LARGE find of galena has been made at Argenta, B.C.

AN expert has been examining the Rajah mine at Rat Portage, Ont.

THE Horsefly placer claim, Cariboo, has been purchased by a syndicate.

WORK on the new smelting works, Hamilton, will probably be begun early in August.

THE Galena Trading Company, Pilot Bay, has opened a branch at Lardo, B.C.

W. EVANS has located a claim at Grizzly Creek, B. C., which runs \$400 in grey copper.

THE Mountain View Mine (B.C.) ore shows \$75 in gold and 18 ozs. of silver to the ton.

THE Victoria, B.C., Hydraulic Mining Company are spending \$10,000 on prospecting this summer.

THERE are stated to be at least 6,000 tons of ore on the dumps at the various mines in the Kaslo-Slocan district.

THE Thompson River Hydraulic Mining Co. (Ltd.) has been incorporated. Capital stock at present \$100,000.

RECENT assays for the Elkhorn Mine, Boundary Creek, B.C., show over 296 ounces of silver and \$10 of gold per ton.

REPORTS agree in saying that the mines in the Slocan district improve, rather than deteriorate, with the depth worked.

A MOVEMENT is being made to re-organize the General Phosphate Corporation operating at High Falls on the Lievre River.

A ROAD is being opened up to Gallup Creek, thirteen miles from Duncan, B. C., where a number of new strikes have been made.

E. MAHON's claim on Four Mile Creek in the Slocan district shows ore averaging 233 ozs. of silver to the ton, and 46 per cent. of lead.

Two claims have been located at East River, B.C., carrying respectively \$334 in antimonial silver, and \$87 in silver galena and lead.

IT is said that the owners of the Grady group at New Denver, B.C., have refused \$175,000 for the property. The principal ledge is 16 feet wide.

H. W. EDWARDS, mining expert, reports the discovery of rich copper deposits on Triangle Island, B. C. He and others propose to develop them at once.

THE McArthur-Forest process of treatment is being introduced at the Sultana mines, Rat Portage, Ont. Portions of the plant are being made at the Vulcan Iron Works, Winnipeg.

WORK is to be commenced this month on the celebrated Silver King mine recently bought by the Scotch syndicate. The capital of the company is £300,000, and their properties include some other claims besides the Silver King.

A LARGE deposit of fossil fluor spar has been discovered at Lily Lake, N.S.

MACHINERY is being put in at the No. 1 mine, in Ainsworth district, B.C.

E. DUGAN's claim near Duncan River, B.C., assays 334 ounces of silver to the ton.

A SAMPLE from the Edith Morey claim, Nelson, B.C., recently showed \$32 in gold.

ANOTHER strike of galena is that recently found by D. Cameron on Falls Creek, Kaslo-Slocan.

AT the "American Boy" mine, near Vernon, there is a carload of ore ready for shipment.

A HALF interest in the Dorly claim on Spring Creek, near Kaslo, has been sold for \$6,000.

THE output of coal from the Protection Island, B.C., shaft during June exceeded 12,000 tons.

A SEVEN-FOOT ledge of galena has been discovered on the Black Fox claim in the Kaslo-Slocan district, B.C.

A RICH gold ledge has been discovered a few miles from the first strike of galena at Adams' Lake, B.C.

AT Hamilton the by-law granting \$40,000 and a site to the smelting works' committee has been carried.

IN the Lardeau district, B.C., a twenty-foot ledge of gray copper and silver has been struck on Glacier Creek.

THE Minnie claim near Nelson, B.C., shows a 4-foot vein of galena carrying \$60 worth of gold and silver to the ton.

WORK at the Acadia, N.S., mines is reported dull. The blast furnace is in operation, but the mill has been closed down.

A STRIKE of galena assaying 165 ounces has been found at the North Fork of the Carpenter River, in the Slocan district, B. C.

IN the Nonsuch mine, Vernon, B.C., there are two veins, one consisting of iron pyrites carrying gold, and two others carrying galena.

SALT has just been struck near Hamilton at a depth of 450 feet. The operators were boring for natural gas and have not yet given up hope.

IT is rumored that an American company will buy out the Bastion and Montana Mining Co.'s property at Kaslo, B.C., and erect a smelter.

W. H. BAINBRIDGE, secretary of the Thunder Hill (B.C.) Mining Co., has received information that the machinery is now in operation at their mines.

A STARTLING find is reported from the foot of Slocan Lake. Samples show at the lowest assay 920 ounces of silver and \$40 in gold to the ton, besides a little copper.

STENGER & REYNOLDS, who own a claim on Siwash Creek, B. C., have taken in a small stamping mill, and will begin crushing the ore as soon as the machinery is set up.

AN old miner recently from Duncan reports a location of gold-bearing quartz near Kaslo, the vein being ten and a half feet wide and traceable for 400 feet. It assays \$158 to the ton.

THE Quesnelle Forks Canal and Hydraulic Mining Company, limited, has been incorporated by W. H. Ellis, Joseph Pierson, and T. C. Nuttall. Capital, \$250,000; Victoria is the head office.

THE following companies have applied for incorporation: The Kookagamaming Gold Mining Co., of Ont., Ltd.; the Rat Portage Mining Co., Ont.; the Holmes Fibre Graphite Co., Ont.; the Horse Fly Hydraulic Mining Co., B.C.

J. H. EAST and Geo. Simmons have bonded a gold proposition on Boundary Creek to a Boston syndicate for \$20,000, and are negotiating for the bonding of two more in the same district and to the same concern for \$100,000.—*Victoria Colonist.*

SAMPSON (to whom we referred in last number as the inventor of a gold trap) on his way to the Nation River, B.C., is reported as being charged by members of his party with fraudulent misrepresentations and as being held as a prisoner by them.

D. MCGILLIVRAY & Co., New Westminster, B.C., have in hand a contract for supplying the Horse Fly mine, in Cariboo, with 500 tons of steel pipe for hydraulic mining. The pipes will be shipped to Ashcroft, and then carried 150 miles by wagon.

THE object of the work now being done at the nickel mines near St. Stephen, N.B., is to determine the amount of ore in the vicinity. The quality is all right, says the *St. Croix Courier*, and if the quantity warrants the expenditure an English syndicate will come in and purchase.

A GOLD mine has been discovered near North Bay, Ont.

PLENTY of work is going on at the Chester Basin Gold Mines, N. S.

THE South Fork Hydraulic Co., Quesnelle River, are getting to work.

THE San Juan Lime Works at Vancouver are going to resume work soon.

THE Bridge River, B.C., Gold Mining Co., Ltd., has been incorporated.

WHAT is reported to be a rich gold deposit has been found near Bird's Creek, Ont.

SPECIMENS of ore from the south fork of Kaslo River have assayed 600 ounces.

THE Redondo, B.C., iron mine will turn out 300 tons daily. E. C. Geves is manager.

JAMES BAIRD, manager of the Joggins gold mine, N.S., has sent in his resignation.

DR. SELWYN is searching for coal oil wells in the neighborhood of Edmonton, Alberta.

A NUMBER of capitalists have lately arrived in Vancouver from Australia on a visit to the Kootenay country.

FOUR inches of snow fell at Kaslo, B.C., on the 25th June. Snow in the mountains has hindered prospecting work a good deal.

THE Victoria Hydraulic Co., Quesnelle Forks, B.C., has now about a mile of pipe in working order. The new saw-mill is in full operation.

W. PEARCE, Superintendent of Mines, says that if a straight line is drawn between Edmonton and Lethbridge, Alta., wherever it crosses a river it will intersect coal beds.

A FACTORY for preparing mica for the market is to be erected at Perth (Ont.) or Ottawa. It will employ a large number of people, and the motive power will be electricity.

MANY indications have for some time pointed to the existence of coal on Mayne Island, B.C., and we now hear that chiefly through the enterprise of W. H. Mawdsley, who has always taken much interest in the affairs of that island, a syndicate has been formed to work it.

THE Dominion Coal Company (limited), the Cape Breton syndicate, have given a mortgage to the New England Loan and Trust Company on mining areas, mines and equipment, railway tracks and wharves in trust, to secure an issue of debentures to the amount of \$3,000,000.

PROBABLY if there were not so many gilt-edge propositions in the country there would be more actual work done. Toad Mountain bristles with promising prospects and mines, but the hum of concentrating machinery will hardly be heard for many years to come.—*Nelson Miner*.

THE Canada Consolidated Gold Mining Company, near Brockville, Ont., which was owned by the late John S. Newberry and Captain W. H. Stevens, and which ceased operations on the death of the former, is likely to be started again, to be worked by the Emmes process.

THE new ore-crusher erected by Reynolds and Atwood of the Strathoe Mining Company at Osoyoos, B.C., is ready for operation. It is said that a Spokane company who have bought a property on Boundary Creek, near the mouth of Rock Creek, B.C., will erect large reduction works this summer.

THE sampling works at Kaslo, B.C., are regarded by the *Claim* as an accomplished fact. Mr. Bartlett has turned over the management to W. O. Clymo, who has cleared a site and deposited a cheque for \$1,500 on the work. The plant is to have a capacity of 100 tons per day and will cost about \$10,000.

THE Prince Albert Flat Hydraulic Mining Company, limited, has been incorporated with a capital of \$200,000. The incorporators are: A. H. MacNeil, W. J. McGuigan, Geo. D. Scott, Donald MacLeod, C. S. Phillips, Wm. Ralph, W. H. MacLaren, J. Sheasgreen, and Allan Sharp; office in Vancouver.

ALLAN & WATERS, of Ottawa, have begun operations with thirteen men mining for mica on the O'Neil lot, North Burgess, on the road to Pine Lake. The mica is of the best white variety, and there is said to be plenty of it. This will make quite a stir in this part of our mica and phosphate township.—*Perth Courier*.

UPON what slender chances life and death depend! Several men employed in a mica mine at Eel Lake, Ont., recently came out of the pit twenty minutes too early, owing to mistaking the time. They had not been in the open air ten minutes before the mine caved in. As it was, one man was caught and had to be dug out.

W. I. EVANS and Wm. Davidson have struck a ledge of rich grey copper ore assaying 177 ozs. to the ton in silver, on Glacier Creek, near Howson Lake, B.C. The ledge of copper is four feet wide in a vein of quartz twenty feet in width.

JOHN PATTERSON, the owner of a portion of the site proposed for the erection of smelting works at Hamilton, offers to deed it to the city and allow payment to be deferred until they are complete. He thinks the owners of the rest of the property would do the same.

THE gas well being drilled by the Ontario Gas Company on Wesley Wigle's place, two miles east of Kingsville, will be the best one yet struck. Another great gusher was struck on Wesley Wigle's place in Gosfield South, below Kingsville. When the drill works down the gas pushes it up, and the pressure often stops the engine. The head driller says it will be the best well in the field.—*Amherstburg Echo*.

THE Ontario Peat Company expect to begin operations this month in the Wainfleet, Welland Co., marsh, and will employ about fifty men. The *Welland Tribune* says the manufacture of peat was tried there about twenty years ago, but proved unprofitable and was abandoned. Those engaged in the present enterprise expect a different result this time on account of the great improvement in peat manufacturing machinery.

THE following officers have been elected for the new Memramcook (N.B.) Gold Mining Co.:—J. B. Neilly, Halifax, (president); A. C. Vanmeter, Moncton; J. E. Masters, Moncton; J. W. Y. Smith, Dorchester, (vice-president); W. Fowler, Sackville; T. N. Campbell, Amherst; F. P. Prince, Truro; W. S. Covert, Halifax, (secretary); A. N. Whitman, Halifax; and Fred. W. Summers, (treasurer). The office of the company will be at the mines.

THE Nelson, B.C., *Miner* says information was received in the town that a new and rich strike had been made up on Grizzly Creek. The owners are keeping very mum and refuse to disclose the result of the assay, but it has leaked out at Kaslo that the result was over 200 ounces. Next week will probably see some development work on the Toad Mountain mineral properties. The respective owners of the Dandy and Goldendale will set the fashion. A recent experimental clean-up of one hundred and sixty cubic yards of dirt on the Kootenay Hydraulic Company's property produced \$60.

THE Mining Society of Nova Scotia held a two days' session at New Glasgow last month. They visited the works and mines of the Pictou Charcoal Iron Company at Bridgeville, where they were entertained at lunch by the New Glasgow Iron, Coal and Railway Company. Several speeches were made by J. C. Stairs, M.P., president of the N. G. I. C. and R. Co., Hon. D. C. Fraser, the attorney-general, J. D. McGregor and many others. They also visited the limestone quarries and ore deposits of the latter company at Black Brook, and on their return trip visited the company's works at Ferrona.

COUNTRY HARBOR is as lively as ever. The Antigonish Mining Company are obtaining satisfactory results. Their neighbors, the St. John Mining Company, had a clean-up, and result was in the vicinity of fifty ounces. Their rock is low grade, but seems improving as it is sunk on. The Richardson mine at Isaac's Harbor is looking very well. The ore is abundant, easily mined and yields a fair amount of gold. The unproclaimed districts between Sherbrooke and Sheet Harbor are idle for the most part. We hear there is little prospecting at Harrigan Cove, but we have not received any details as yet.—*Halifax Critic*.

Two samples of ore from J. G. Myers' claim near Adams' Lake, B.C., give a showing of over \$176 and nearly \$112 per ton. The Washington Mine in the Slocan district is reported by the *Victoria Colonist* as having four feet of solid, clean shipping ore, running over 120 ozs. of silver and 70 per cent. lead. The Alpha shows four feet of clean ore, some running as high as 200 ounces, and the Mountain Chief, says the same authority, has six to twelve inches of ore, averaging 111 ounces, and has recently struck a chute running into thousands of ounces to the ton. The Loto Mine ore assays 206 ounces in silver and \$12 in gold.

ALMOST every day the news of new discoveries of vast mineral wealth is sent abroad, and capital is pouring in to develop what is already in sight and to encourage the search for more. In short, those who are watching the signs of the times carefully see in them reason to believe that a set of circumstances are shaping themselves similar to those which peopled the United States from the Rocky Mountains to the Pacific Ocean, and caused such cities as Denver, Butte City, Salt Lake City, Sacramento, San Francisco, and hundreds of others to spring up in the waste places as if by enchantment. There is nothing visionary in this belief. The resources are here.—*Nelson Miner*.

JOHN G. MYERS, a prospector, who represents a number of capitalists in Tacoma, states that he has located a mineral district at Adams Lake, B.C., and that, although he has been prospecting for years, it is the best that he has ever come in contact with. It is a ledge of galena, six feet wide, and can be seen for miles across the country. He has shipped 451 lbs. to Tacoma for assay.

THE Messrs. Burchell, formerly proprietors of the Gardiner mine, C.B., have purchased from T. E. Kenny, of Halifax, what are known as the New Campbellton mines, Bras D'Or, C.B. The pit has not been worked for many years. Every effort will be put forth to have coal shipped this year. A pump has been purchased, and James Burchell went to P. E. I. to purchase rails.—*Stellarton Journal*.

THE capital specified in the charter applied for by "The Talc Fibre Company," of Frontenac and Hastings, referred to in May number, is \$150,000. C. H. Corbett has been to Montreal, where he was called by capitalists who wish to get control of these fibrous-talc mines. The capitalists made Mr. Corbett an offer which the latter did not consider large enough, and the sale was not effected.

THE annual meeting of the stockholders of the Sudbury Nickel Mine Company was held at Berlin, June 5th, J. G. Reiner, president, in the chair. The old board of directors were re-elected, and are as follows: J. G. Reiner, Wellesley, president; James Livingstone, Baden, vice-president; C. A. Ahrens, Berlin, sec-treas; F. Walter, Bamberg; C. Kritzinger, Heidelberg; Dr. W. Morton, Wellesley; F. B. Puddicombe, Haysville; George Fleischhauer, Tavistock; J. D. Moore, M.P.P., Galt. A motion was carried authorizing the board to work the mine to the best interests of the stockholders.

THE president of the Eastern Townships Bank, referring to the local mining operations of the past year, says: "Mining has been in part prosperous, and in part affected by over-production. The copper mines at Capelton and Eustis have been carried on with success, but dullness, unfortunately, continues to prevail at the asbestos mines. The manufacture of mineral manures at Capelton has proved doubly valuable to the country, for, in addition to the employment of labor, the products—pure in quality, without adulteration—have been found to be of essential service by those farmers who have learned how to use them.

THE Lardeau correspondent of the *Victoria Colonist* writes:—One of the largest transactions in mining circles in the West Kootenay district transpired to-day (June 1). William B. Poole, Edward Crockett, Tom Livingston, Ben Reamey, W. M. Downing, and James Robinson bonded the Lexington group, composed of the Lexington, Lone Star, and Fairhaven, to J. M. Kellie, M.P.P. The latter, it is understood, represents some American capitalists, who are anxious to obtain a foothold in this district. The mines lie twelve miles north and a little east of Lardeau, on Poole Creek, a tributary to Fish Creek. An easy trail can be made or a wagon road built at a small cost.

A NUMBER of Toronto gentlemen have taken steps to organize a body to be known as the Ontario Mining Association, the objects of which will be the promotion and development of the mining industries of the Province. James Conmee presided at the organization meeting. A committee was appointed to promote the formation of local organizations, and it is expected that a mass meeting will be called at an early date, when a permanent central organization with headquarters in Toronto will be formed. Among those present at the meeting were: Thomas Long, Stratton, Brown, Tolfee, J. Proctor, F. C. Ireland, H. C. Jones, Dunstan, J. W. Cheesworth, R. Hahn, H. A. Hilyard and M. Hunter.

THE mining season has opened bright on Rock Creek, and the property which has opened the boom is the great Copper Mine claim at the mouth of Rock Creek, owned by Moran & Hamer. The fame of this claim reached the ears of Jim Wardner, says the *Vernon News*, who paid the district a visit, with the result that he has purchased the claim, for which it is said he has paid \$50,000. The ledge is of enormous size, having a width of 70 feet in places and can be traced for a long distance on the surface. The development which has been done on it shows that the ledge improves with depth. The ore carries some silver, but it is in the copper that it has its principal wealth. To work it with the best results will require good transport facilities, and it is the opinion of many that in spite of the high grade ore, it cannot be shipped until a railway is built into the vicinity of the camp. The purchase of this mine is taken as an indication that the construction of the C.P.R. southward, with branches running into Rock Creek, will be commenced.

A BOUNDARY Creek, B.C., correspondent writes: "Fresh mining locations are being constantly recorded, and those already obtained are being energetically developed with satisfactory results. The Spokane and Great Northern Milling Co. have made a rich strike on the Elk Horn, one of the famous Providence group. The new strike shows remarkably fine, ranging 1,184, 1,147, 261, 90, 137 and 74 ounces of silver, and averaging \$10 per ton of gold. The Bonanza ore body is fully four feet wide. Several thousand dollars worth of ore are in sight. In the twelve-foot Discovery shaft six men can take out \$500 worth of ore per day, and production can be increased as room is made for the engagement of more labor. This, and other claims of the company now in course of development, will pay their own expenses for present working, thus proving the value of their other numerous and promising properties. As the S. & G. N. M. Co. is only one of many operating in this hardly known region with most satisfactory results, the wealth of this section must be almost fabulous, and an era of prosperity is dawning that will outshine the Cariboo excitement as the sun outshines the moon.

THE Kaslo correspondent of the *Victoria Colonist* reports that three young men named Gillis, Adams and Anderson, have made a valuable discovery of yellow ochre on the north shore of the lake, about seven miles from town. The vein is fully six feet wide and of unknown depth and it can be traced for several hundred feet. A peculiarity of the vein is that running parallel with it and connected thereto is a foot vein of rock bearing gold and silver in equal quantities and of high grade. The ochre is pure and can be taken out in immense blocks. Some idea of its value may be gleaned from the fact that an offer has been made to the owners of six cents per pound for all that can be produced, the buyer guaranteeing to erect a mill at the site for pulverizing the rock. The ochre, or mineral paint, when mixed with oil, makes a beautiful yellow substance that would delight the heart of any knight of the brush. This is the only discovery of the article in quantities in the province, though croppings may be seen in various places on the lake shore; also near Kemp's mineral springs. There is a mine of the article in the Cœur d'Alenes, but it is so impregnated with sand that it does not pay to work. The trio of fortunate prospectors some weeks ago located a ledge bearing ruby silver to the value of \$750 to the ton, which, with the last strike, makes a group of four valuable locations in that neighborhood.

Brief, but Interesting.

VASELINE will keep polished tools from rusting better than any thing else.

COAL shale, which hitherto has been looked upon as waste, is now being used for the manufacture of water-gas.

THE Suez Canal, the greatest work of marine engineering, is 88 miles long, and reduces the distance from Europe to India from 11,379 to 7,628 miles.

A PERMANENT and durable joint can, it is said, be made between rough cast iron surfaces by the use of asbestos mixed with sufficient white lead to make a very stiff putty. This will resist any amount of heat, and is unaffected by steam or water.

IF whitewash be mixed with common salt in the proportion of about three to one, the hardness of the former is considerably increased. This is probably due to the hygroscopic action of the salt, which, absorbing the water, allows the speedier combination of the lime with the atmosphere's carbonic acid.

AN able and discriminating official on the staff at the World's Fair writes us: I have to thank you very much for No. 1 of THE CANADIAN ENGINEER. Since it reached me yesterday it has lain on a table in our court, and has been examined and perused by many. Personally I am not deeply enough interested in the topics you discuss to become a subscriber, but I wish the venture a high—the highest measure of success. The mechanical get-up of THE ENGINEER is very creditable indeed, and your "fair-play all-round" platform will commend itself to the general reader.

THERE have been many theories put forward to account for the formation of petroleum. Mcndelejeff considers it to be formed by the decomposition of a carbide of iron by steam, ferric oxide and a hydrocarbon being produced; Sokoloff, by a combination of carbon and hydrogen; Ross, by the reaction of sulphureted hydrogen and calcium carbonate; Daubree, by the decomposition of vegetable matter. Now M. Engler is inclined to consider it produced by the decomposition of animal substances. It is possible to obtain petroleum by distilling animal matter under pressure.

Railway and Marine News.

ONE ounce of gold will cover 1460 square feet.

A NEW C.P.R. station is being built at Brandon, Man.

THE G.T.R. are going to purchase the Brockville & Westport track.

THE Buffalo and Niagara Falls Navigation Co. are going to build another steamer.

LANTALUM & Co., St. John, N.B., have bought the ship "Mabel Taylor," of Halifax.

WORK has been commenced upon the new Electric Street Railway at Kingston, Ont.

THE schooner "Novelty," of North Sydney, has been destroyed by fire at Dalhousie, N.B.

WORK will be commenced soon on the C.P.R. branch line from Arrow Lake to Revelstoke, B.C.

THE Rockliffe extension of the Ottawa Electric Street Railway was formally opened on June 23rd.

THE Niagara Central Railway are going to submit their bonus by-law to the Hamilton council again.

THE steamer "Falcon" is being fitted up by Bowring Bros., St. John's, Nfld., for the Peary expedition.

J. HOGAN, contractor for the Baie de Chaleurs Railway, has completed the eighth mile at the Metapedia end.

A. ELDERKIN & Co., Port Grenville, N.S., are building a 500 ton barquentine and a three-mast 300 ton schooner.

THE Toronto & Scarborough and the Mimico & Lake Shore Street Electric Railways began running on the 1st inst.

THE Yarmouth and Annapolis Railway is being re-laid with steel rails. Large additions are being made to the rolling stock.

THE extension of the Toronto Street Electric Railway system from Lee Avenue to the city limits was opened on the 30th June.

THE "Mallory" line are going to put a new boat on the St. John, N.B., and New York line, to take the place of the "Winthrop."

IT is reported that the Toronto Street Electric Railway Company are going to purchase the Toronto and Mimico Electric Railway.

THE Dety Engine Works Co., Toronto, have the contract for supplying safety valves for fog alarms required in the Nova Scotia marine department.

THE contract for the erection of light towers on the Brisland rocks, at the mouth of French River, has been given to Wilson Bros., Collingwood, Ont.

J. W. McRAE has been elected president of the Ottawa Electric Street Railway, and G. P. Brophy, vice-president. A dividend of 8 per cent. has been declared for last year.

THE contract for ten miles of the Dominion Coal Company's railway to Cape Breton has been awarded to McDonald & McManus, Moncton. The price is just upon \$100,000.

A CLOSE alliance has been effected between the Grand Trunk and Reading railway systems, which will result in a very great interchange of all kinds of freight and passenger traffic.

THE contract for the construction of a breakwater at Pointe du Chene, N.B., has been awarded to Henry & Smith, of Ottawa. The breakwater will serve to protect the railway wharf.

AN agreement has been signed between the Toronto city corporation and the Street Electric Railway Co. for the consolidation of the present electric tracks with the horse car roads.

THE hydrographic survey of the Bay of Quinte is now being proceeded with quickly. That portion lying between its head and Big Bay, six miles below Belleville, has already been covered.

BARRISTER BUCKE, of Kaslo, gives notice that he will apply for a charter to build a railway to the Kaslo mines, in opposition to the Kaslo-Slocan Co. It is thought the Great Northern are at the back of the scheme.

THE price agreed on for the new railway from Bishop's Falls to Port-aux-Basques, Newfoundland, is \$15,600 per mile, to be paid in debentures of the Newfoundland Government, bearing interest at the rate of three and one-half per cent., and maturing in 1947. The total cost will be \$4,000,000.

IT is possible to gild a wire the length of the circumference of the earth with sixteen ounces of gold.

A LODGE of the Canadian Brotherhood of Railway Trackmen has been organized at Dorchester, N.B.

THE metal palladium is said to be capable of absorbing five hundred times its own volume of hydrogen.

THE "Soo" extension of the C.P.R., the grading of which is now finished, will be ready for traffic Sept. 1.

IF all the power in Niagara Falls could be made available, it would be sufficient to work all the engines in the world.

A NEW steam pleasure yacht, the "Cleopatra," has just been turned out from the yard of the Hamilton Bridge and Tool Co.

THE quarantine building for the accommodation of first-class passengers at Grosse Isle will be in working order about the end of this month.

THE melting points of the following metals are: Cast iron, 3479°F; copper, 2548°; gold, 2590°; silver, 2233°; lead, 617°; and cast tin, 442°.

TENDERS are invited for constructing and setting five pairs of lock gates at the Sault Ste. Marie Canal. They must be sent in by August 12th.

THE borings in connection with the survey of the Prince Edward Island tunnel have been resumed by Mr. Hendry, the Government engineer.

THE ship channel between Montreal and Quebec is now completed to a depth of 27½ feet at low water. Two dredges are still at work on the Grondines Shoal.

THE contract for the construction of the Dominion Coal Company's railway from Caledonia to Cow Bay has been awarded to McDonald & McManus, of Moncton.

THOMAS HUGHES, weigher at one of the elevators belonging to the Montreal Transportation Company, fell into the hold of the "Shickluna" and broke his collar bone.

THE old iron bridge formerly used at Wellington Street, Montreal, has been moved to Cornwall. The work was under the superintendence of David Brown, foreman for the Dominion Bridge Company, of Lachine.

THE nett profits of the C.P.R. during May were \$509,585, whereas in May, 1892, they were \$600,984. For the five months ending in May, 1893, the nett profits were \$2,346,942, while for a similar period last year they were \$2,651,334.

A GOOD deal of discussion is going on about the projected air line between Collingwood and Toronto. The distance is seventy miles, and the intervening country is highly suitable for railway construction. It would effect a very material saving in the local rates for carriage.

J. R. BOOTH proposes to make direct connections with Montreal and Quebec, by the Ottawa and Parry Sound road. They will enter Montreal by St. Jerome, Three Rivers by a branch line, and Quebec by the Lake St. John Railway. About 110 miles are to be constructed in the Province of Quebec.

A VESSEL has recently crossed the Atlantic driven part of the way by steam generated by petroleum. Owing to some slight derangement in the machinery, the use of coal for fuel had to be resumed after the third day out, but otherwise the trial trip seems to point to the success of oil-fuel in the near future.

H. F. DEVEAU is constructing a dry dock at Metegan, N.S., which will accommodate a vessel of about 50 tons. Mr. Deveau expects to finish his work in about five weeks. Allan Bros., of this city, are making some iron work for the new structure, which it is estimated will cost about \$3,000.—*St. John Telegraph.*

GILMOUR & Co., the lumber firm of Trenton, Ont., are going to build a railway or canal connecting Hewitt's Bay with Raven Lake. This, amongst other new constructions which are to be carried through, will facilitate the transportation of logs from Trading Lake to the Trent River, where the firm's mills are situated.

THE Muskoka Navigation Co. are having another steamer built. The plans call for construction of a composite hull, 125 ft. keel, 25 ft. beam and 8¾ depth of hold. The dining-room is to accommodate nearly 60 persons. On the promenade deck there is a saloon 50 x 16 ft. The engines are being made in Toronto.

CHIEF ENGINEER E. J. ROBERTS, of the Nelson and Fort Sheppard Railway, says trains will be running over that road by October 1st. The track is now at Pend d'Oreille bridge, and will be across by July 1st. After August 1st, the track can be laid at the rate of a mile a day. Five hundred men are at work on the Fort Sheppard end, and as many more are waiting to go on.

THE C. P. R. are putting in a siding to Campbell & McNab's mills at Douglas, Ont.

ADDITIONS are to be made to the railway bridge across the Grand River at Galt, Ont.

J. NICKSON has the contract for clearing the right of way on the Revelstoke and Arrow Lake railway.

WORK is now proceeding on the long talked of extension of the Grand Trunk from Parkhead to Owen Sound.

IT is reported that the Great Northern Railway have purchased the franchise for the Kaslo-Slocan Railway.

THE new light house at Port Dalhousie, Ont., is now practically finished. It is octagonal in shape and about 60 feet high.

A. L. HOGG, C.E., Montreal, is making a survey of the Kaslo-Slocan district, in the interests of the Canadian Pacific Railway.

THE Chicoutimi branch of the Lake St. John Railway has been opened, and Quebec is now in communication with the Saguenay.

A STEAMER is now running between Kamloops, B.C., and the Kamloops Coal Company's colliery on the North Thompson River.

THE R. & O. Nav. Co. have bought the steam yacht "Elida," of N.S., and placed her on the route between Longueuil and Montreal.

THE SS. "Bohemian" of the Richelieu and Ontario Navigation Co., on July 8th went aground near Coteau on her way from Kingston.

THE SS. "Lake Nepigon" ran on to some sunken ice in the Straits of Belle Isle, and received such injuries as necessitated her being run ashore.

THE grading of the Victoria, B.C., and Sidney Railway is now being carried on. Sufficient skilled labor for the work is hard to be obtained just now.

A VESSEL of 500 tons was launched from the yard of John H. Zwicker, Mahone Bay, N.S., last month. This is the 138th vessel launched by Mr. Zwicker.

IT is reported that the Nelson and Fort Sheppard Railway will be extended to Balfour. This will ensure the through passage of merchandise, even in winter.

JOSEPH WHALEN, a brakesman on the Grand Trunk Railway, fell from a train near Alvinston, Ont., and was run over, with the result that both his legs were crushed.

A BALLAST train met with a serious accident near Rosspoint, Ont., on June 29th. In backing up it ran into a hand car and was thrown off the track. Thirteen persons were injured.

CHIEF ENGINEER MOUNTAIN, of the O. A. & P. S. Railway, is confident that the grading will be completed to Egansville by the first of September, and trains running into Egansville this fall.

THE dredge "Canada" is working on the deepening of Cape Traverse Harbor. By making this harbor navigable the route between the mainland and P. E. I. will be shortened several hours.

THE newly-elected president and vice-president for the Parry Sound Railway Company are Charles J. Booth and P. McCurry, respectively. The head office of the Company will in future be Ottawa.

THE new steel steamship has just arrived from a Middlesborough, Eng., yard for the service of the Montreal Transportation Co., and is being taken up the canals to Lake Ontario in sections.

THE iron bridge for the Ottawa and Parry Sound Railway which will span the Madawaska river, is completed at the Dominion Bridge Company's works at Lachine, and will now be sent up for erection.

F. E. BAKEMAN, president and managing director of the British Pacific Railway Company, is shortly going to England on affairs connected with the company. He says the survey of the line is now nearly complete.

AT a meeting of the shareholders of the Union S.S. Co. held in Vancouver the following were elected directors: A. St. G. Hamersley, J. Oppenheimer, C. D. Rand, F. C. Cotton, J. C. Keith, H. McDowell, and G. T. Legge.

J. H. BILES, the designer of the steamships "Paris" and "New York," expresses the opinion that within a few years it will be possible, by leaving New York at noon, to reach Southampton at noon on the fourth day out. Among the most important factors in the requisite increase of speed will be, he thinks, the use of nickel steel in boilers, etc., of oil for fuel, and a considerable lengthening of the vessels.

A NEW kind of pen, said to have all the good qualities of the old-fashioned goose quill pen with none of its squeakiness, is made out of compressed celluloid stamped in the proper shape.

THE Government steamer "Alert" is down the Lower St. Lawrence, having on board Col. Anderson, chief engineer of the marine department, who goes to investigate the changes necessary to improve the channel north of Hare Island for deep-draught vessels.

THE North Bay Times reports that, acting under instructions from the Grand Trunk, two parties are out surveying for the railway from North Bay to James Bay. One party is working from North Bay and another will start from Lake Tamagamingue.

THE mechanical superintendents of the G. T. R. and C. P. R. have been engaged by the Richelieu & Ontario Navigation Company, to enquire into the cracking of the cylinder of the steamer "Montreal," and into the striking of the steamer "Carolina."

REPRESENTATIVES of the Cleveland (Ohio) Lake Transportation Syndicate and of the Erie and Huron Railway Co. held a conference on July 1st at Chatham, Ont., with a view of deciding upon the best connections available between Cleveland and the Canadian shore.

REV. W. G. LANE has a model of a patent coal dumping car patented by him in the U. S. and Canada, now on exhibition in the Methodist book room. It is understood that negotiations are in progress with Rhodes, Curry & Co., for building it on a royalty.—Halifax Herald.

PRESIDENT C. D. RAND, of the Burrard Inlet and Fraser Valley Railway, says that tenders will be called for at once for the construction of that road. The line has been located and the section from Vancouver will be built first. This will give the Northern Pacific an entrance to Vancouver.

THROUGH the efforts of Hugh John Macdonald, M.P., son of the late Sir John, an arrangement has been made for the more thorough examination, by a Government engineer, of the Red River, with a view to making it navigable for larger vessels and to develop water power from the river.

THE officers of the Atlantic and Lake Superior Railway Company are: Hon. J. R. Thibaudeau, Montreal, president; A. R. Chisholm, New York, first vice-president; Dr. Bergin, second vice-president, Cornwall; A. Campbell, Montreal, Treasurer; and C. N. Armstrong, Montreal, secretary.

THE engine, boiler, propeller and shafting of the steam scaler "Worlock," which recently had so satisfactory a trial trip, were from the Killely-Beckett Engine Company of Hamilton, Ont. A fac simile of the engine is now on exhibition in the Canadian department of the World's Fair.—Victoria Colonist.

KENNEDY BROTHERS say that the work upon the Montreal and Western Railway, on which they are sub-contractors, will be suspended in a few weeks time. About fifty miles of the road have been completed, but the subsidy for the remainder of the road has not yet been granted, hence the suspension.—Amherst, N.S., Press.

THE steamer "Bon Esprit," running between Lachine and Caughnawaga, had on the 3rd instant a narrow escape from being dashed to pieces; while in mid stream some of her machinery gave way, and she drifted rapidly towards the rapids. Fortunately, before the worst part had been reached, the boat grounded without having received much injury.

CREMENS & HALSKE, the well-known German electrical firm, have in hand the contract for supplying electric machinery and plant required to convey power from Niagara Falls to Hamilton, to be used in operating the system of radial electric railways connecting Hamilton with the towns and villages in the neighborhood. The estimated total cost of construction is about \$4,000,000.

THE new railway between Jaffa and Jerusalem is 53 miles long, 30 miles being located on the plains, and the remainder over a mountainous country. There are four fine iron bridges and five deep cuttings, while the steepest grade is 104 feet to the mile. The gauge is one metre. The rails were made in France and Belgium, and the locomotives at Baldwin's works, Philadelphia. The Jerusalem station is 2,476 feet above the level of the one at Jaffa.

NEWFOUNDLAND is about to embark in a railway undertaking of considerable magnitude. The government has made a contract for the construction of a highway directly across the island from the present line on the eastern coast to the south-western extremity. It will commence at the Bay of Exploits, and terminate at Port au Baron. The railway, which will be two hundred miles in length, is to cost \$3,120,000. In addition to this sum the contractor is to receive for operating the line 500,000 acres of land and \$50,000 a year for twenty years.

The iron railway bridge at Lockeport, N.S., which John Stewart, of New Glasgow, is now building, will consist of two fixed spans of eighty nine feet nine inches, and one pivot span one hundred and thirteen feet three inches. These will be supported by eight cylinders filled with concrete.

The Ontario Legislature has granted subsidies as follows:—The Irondale, Bancroft and Ottawa railway, \$3,000 a mile for 15 miles; the Ottawa, Arnprior and Parry Sound railway, \$3,000 a mile for 35 miles; the Kiugston, Napance and Western railway, \$3,000 a mile for 30 miles; the Central Counties railway, \$2,000 a mile for 46 miles.

The directors of the Sandwich, Windsor & Amherstburg Railway have elected: Dr. Coventry, president; G. M. Hendrie, vice-president; W. S. Pulling, secretary-treasurer; with the following directors: W. Hendrie, R. Thompson, Hamilton; W. J. McKee, James Anderson and John Davis. The rails for the Ouellette avenue extension are being laid, and as soon as that is completed the Boomer line will be rebuilt and extended to the Michigan Central Railway.

SENATOR POIRIER, of Shediac, accompanied by Dr. De Bertram, of New York, and two other Americans, have been visiting Buctouche and Richibucto Cape, with a view to pushing forward the Richibucto Cape and P. E. I. ferry scheme. The party secured boats and crossed to the Island, making soundings at different places. Dr. De Bertram, it is said, is heading the movement for the purchase of the B. & M. railway and the extension of the road to the Cape.

Work will be begun between Rockland and South Indiana, on the Central Counties Railway, immediately the result of the Ontario Legislature's consideration as to the disposal of the bonus is known. The agreement was that the bonus of \$2,000 per mile was to be given to the Vaudreuil Railway, provided work was begun within a period of thirty days, failing which it was to go to the former company. The thirty days have expired, but no operations have been commenced by the Vaudreuil company.

The route for the proposed Atlantic and Lake Superior Railroad will be from Sault Ste Marie to Ottawa, thence to Montreal, crossing the St. Lawrence by a new bridge to cost \$5,000,000. The line will then traverse the south shore of the St. Lawrence over the Intercolonial and Baie de Chaleur roads as far as Gaspé Basin, from which place it is proposed to run a fast steamship line to Liverpool. Connection will be made with the Great Northern or Northern Pacific at Duluth. It will thus enter into competition with the C.P.R.

The Grand Trunk are building several powerful new express engines. They are built to carry a pressure of 180 lbs. per sq. inch, and the driving wheels, of which each engine has four, are 6 ft. 1 1/2 inches, and are coupled. The weight of each will be about 105,000 lbs. without the tender. No. 82, one of these new engines, is now out, and is much admired. The company are building a number of fine new suburban cars for service between Montreal, Lachute and Cornwall. For the latter service a whole train is being fitted with the Thurmond-McKeen coupler, and is to be ready this month.

HUGH JOHN McDONALD, M. P., son of the late Sir John A. Macdonald, has been working hard in the interests of his Winnipeg constituents to show the great results that will follow from improving the navigation of the Red River. Engineer Ruttan estimated that the cost of these improvements would be about \$650,000; the Govt. Engineer estimates it at \$900,000. It is shown that if the river was made navigable for larger vessels it would greatly cheapen the cost of supplies in Winnipeg, and not only that, but the iron ores of Big Island—of which Prof. Bell says there are 4,000,000 tons in sight—could be utilized.

The Nelson and Fort Sheppard Railway, the Kaslo Claim learns, is not after all to be built into Nelson. To get in there a detour of several miles would be required in order to obtain a suitable gradient to the water level at that point. Engineer Stewart and a staff of men are now at work locating a continuation of the Fort Sheppard railway eastward from Nelson along the western arm of Kootenay Lake. It is said to be the intention of the company to carry the railway to the shores of Kootenay Lake proper, to avoid the obstruction to traffic which the ice annually presents in the western arm. The town of Nelson, it is said, will be connected with the Fort Sheppard Railway by continuing the track of the Columbia and Kootenay Railway eastward for a distance of five or six miles to a junction with the Fort Sheppard.

REGARDING the St. Clair and Lake Erie Canal projected by Col. Tisdale, the *Canadian American*, of Chicago, has this to say of

Mr. Wyatt, the engineer promoting the work: "Mr. Wyatt may be a celebrated engineer and a promoter of more than ordinary ability; but from the tone of a letter received from a Minneapolis correspondent we should judge that financiers up there have very little faith in his ability to do anything entitling him to the confidence of capitalists. The statement that the money required for the proposed Lake St. Clair and Lake Erie Canal has been found in Minneapolis is characterized as a lie. Members of the Ottawa Ministry should enquire into Mr. Wyatt's antecedents and scour Duluth and Minneapolis for information as to this celebrated engineer's doings in Minnesota before entering into an engagement of any kind with him. Col. Tisdale may be piloting into Government circles a promoter who is living entirely by his wits and who deserves the confidence of no man engaged in the prosecution of works of a semi-public character."

Personal.

JOSEPH TASKER is travelling for the Canada Refining and Smelting Works, London.

R. RANDOLPH BRUCE is the engineer who will superintend the Red Deer Valley Railroad construction.

W. H. LANGDON, contractor, fell from Fitz Bridges' new building and his right leg was broken.—*Windsor Quill*.

J. C. ALLISON, C.E., engineer in charge of public works in New Brunswick and part of Nova Scotia, is dead.

ALPHONSE ROBERT has been appointed assistant engineer for the hydrographic survey from St. Laurent to Portneuf.

A THREE year old son of W. Booth was killed on the 7th inst. at Snyder's mill, Sarnia, Ont., by being caught in the machinery.

GEN. HERBERT is now in London, Eng., submitting to the Imperial Government alternative plans for the Esquimalt defence works.

TOUSSAINT TRUDEAU, late Deputy Minister of Railways and Canals, died on June 27th, at the age of 67. He was an old civil engineer.

JAMES JEFFREY, of Jeffrey Bros., of Petite Cote, Que., well known as implement and machinery makers, died a few days ago in Montreal.

R. E. HORCHKISS, late superintendent of the Granby Rubber Factory, is now superintendent of the Boston Rubber Company, Chelsea, Mass.

GRANT M. HALL, the new chief mechanical engineer of the I. C. R. at Moncton, is a brother of John Hall, the Provincial Secretary of Québec.

N. D. McDONALD, proprietor of the Winnipeg Plumbing Company, was knocked down by a bicycle a few days ago and died from injuries received.

WILLIAM HAULT, senior member of the Hault Manufacturing Company of Ingersoll, died this month from inflammation of the lungs, at the age of 60.

J. S. N. DOUGALL, of McCaskill, Dougall & Co., varnish manufacturers, Montreal, is taking a holiday trip with friends to the Pacific Coast this month.

CORNELIUS SWEENEY, caretaker of the powder house for Ryan & Co., the contractors for the ship canal at Sault Ste. Marie, committed suicide on the 2nd inst. by shooting himself.

DR. SELWYN, of the Dominion Geological Survey, is now making a survey through south-west Manitoba, with a view of discovering whether artesian wells are suitable to that district.

GEO. S. WILSON, late of J. C. Wilson & Co., paper manufacturers, Montreal and Lachute, has been visiting Canada. Mr. Wilson is now conducting a cloth quilting factory in London, Eng.

M. J. McDONNELL, president of the Hames Manufacturing Company, Merrickville, Ont., died on the 24th ult., from injuries received in jumping off the train at that station while the car was in motion.

ENGINEER WILLIAMSON, engineer on the Welland branch of the G. T. R., will be succeeded at Port Colborne by Engineer Durham, of Point Edward. Mr. Williamson will go to Fort Erie for the present.

MRS. GRIMASON, Toronto, who was injured by falling from the Suspension Bridge, Niagara, last fall, and who brought action against the Clifton Suspension Bridge Co. for \$5,000, has been awarded \$1,275.

Five hundred yards of masonry per day is the rate at which the Sault Canal work is being pushed forward.

G. HOLLOWAY, late Hong Kong agent for the C. P. R., is returning to Canada owing to ill health being succeeded by D. L. Brown, of Vancouver.

On June 24th the funeral took place of Geo. McRae, son of John McRae of the firm of McQuat & McRae founders, Lachute, Que. The late Mr. McRae who was a machinist in Bluefield, was hanging the door of a large safe when suddenly it fell, crushing his leg to a pulp. Owing to loss of blood he died within twelve hours.

JOHN A. WILLS, chief engineer of the Toronto custom house, died last month at the age of forty-eight. He served his time in the machine shop of E. & C. E. Gilbert, Montreal, and afterwards worked for some time in Fall River, Mass. On returning to Canada he was three or four years engineer of the Dominion Parliament Buildings.

Mr. SPURRIER, who has been appointed analyst of iron ores to the Radnor Forges, Que., was formerly assistant to Woelcker Bros., the well-known chemical analysts of London, Eng., where he was distinguished for his scientific methods and for the general accuracy of his "results." Mr. Spurrer also gained a good deal of attention in the Old Country by his lectures on popular scientific subjects.

NEW BUILDINGS IN MONTREAL.

Among the new buildings which are being erected in Montreal, in addition to those mentioned in our last two numbers, are the following:—

S. Carsley's dry goods store on St. James street. This block will be eight stories high, and will be 66 ft. by 96. Its designer is John James Browne, and it is estimated to cost over \$300,000.

The Banque du Peuple, St. James street, has purchased the two lots adjoining its premises, east of Place d'Armes Hill, and is going to erect a fire-proof building six stories high. The material used will be Montreal limestone, the facade being ornamented with grey and red granite. Including the land, the cost will be \$200,000. For lighting purposes a large shaft will be run through the centre from top to bottom. Plans have been prepared by Perrault, Mesnard, and Venne.

The street railway company have purchased a property on Craig street, where they propose building offices larger than those at present at their command. Plans have been prepared by J. W. Hopkins. It has been decided to spend about \$50,000 on the building, which is to be constructed of Montreal limestone.

Theo. Daoust has prepared plans for the erection of a large block of stores on St. Lawrence street. The estimated cost is \$300,000.

The congregation of Erskine Church have decided to erect a larger building on Sherbrooke street. Plans have been prepared by A. C. Hutchinson. It will cost about \$100,000.

A new church also is to be built by the Knox congregation, on the corner of Dorchester and Mansfield streets. Its dimensions are to be 50 x 125 ft., and it is estimated to cost \$50,000.

Another important building in course of erection is the new library in connection with McGill University, designed by Taylor & Gordon. The reading-room will be 110 feet long by 44 wide. The book-room will be four stories high and will accommodate about 150,000 volumes. It is to be made fire-proof. Besides these there are furnace rooms, cloak rooms, study rooms, unpacking quarters, cataloguing and librarians' rooms. Important additions are also to be made to the medical building.

Three new schools are to be established, two by the Protestant commissioners and one by the Catholic. The latter will be known as the Montcalm School, has been designed by Joseph Haynes, and will be placed on Mignonne street. It will cost about \$50,000. The two Protestant schools are Mount Royal School, on St. Urbain street, to cost about \$30,000, and the Dufferin School, which is to replace the old British-Canadian School, at a cost of \$40,000. The latter will be 160 feet long and 67 deep, and will accommodate 500 pupils. A. C. Hutchinson is the architect for both.

An addition to the Home for Incurables is to be erected on Sherbrooke street, at the expense of Hon. Geo. A. Drummond.

Another charitable institution is the Protestant Orphan Asylum, shortly to be erected on the Cote des Neiges Road. The building, which will be four stories high, of Montreal limestone, was designed by J. M. Perrin. It will be capable of holding a hundred or more children, and will cost in the neighborhood of \$50,000.

The Young Women's Christian Association Building is to be erected on Drummond street, opposite the Victoria Rink, at a cost of \$50,000.

The Bank of Toronto's new premises, before alluded to, now going up at the corner of St. James and McGill, will be a very fine structure and will occupy a commanding site.

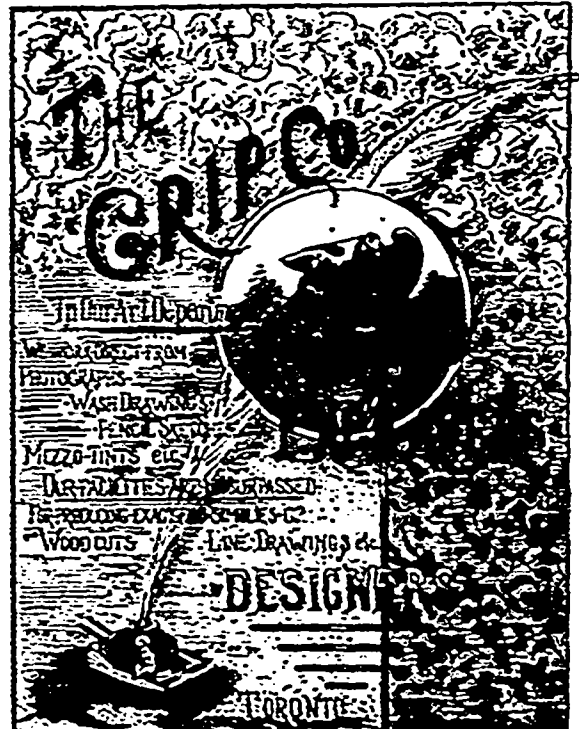
It will be seen from the above that Montreal builders will be by no means idle during the present season. And we have only mentioned the chief buildings, besides the above-named there are several large business premises, two police stations and a fire station, to say nothing of a large number of private residences, to be erected.

NORTH-WEST LAKES DRYING UP.

It has been noticed in Alberta and other parts of the Canadian North West says the *Calgary Herald*, that during the past eight or ten years a large number of the lakes have dried up. Where formerly there were large bodies of water, there are now hay meadows. A similar state of things is noticed in the State of Minnesota. At a lecture by Dean C. W. Hall, recently delivered in St. Paul, under the auspices of the Academy of Sciences, his subject was the formation and deformation of Minnesota lakes, and he gave an interesting account of the lakes of this region. There are 10,000 lakes in the State, largely due to the natural hollows in the land and the fact that the State is comparatively new in discovery. Prof. Hall says that with age these lakes will all disappear, and that a large number which were in existence when the country was first explored are now hay meadows.

TORONTO WATER SUPPLY.

Dr J. J. Cassidy, chairman of the Ontario Provincial Board of Health, speaking of the Toronto water supply, says that it is unlikely that any material lasting improvement will be effected in the conduit. Many plans may be devised by which the defects in the supply may be remedied, for instance, a tunnel could be constructed under the bay, extending from the pumping-house three miles out into Lake Ontario. A six foot tunnel supplying 72,000,000 gallons would be ample, and if protected from sewerage pollution the water should be of excellent quality. Or if the building of a tunnel is not feasible, filtering the present supply would do a considerable amount of good. The doctor, however, considers the best plan which has presented itself so far to be for the city to purchase water from the York Waterworks Company, the water to be connected with the Toronto water system by means of a large main extending down Yonge street as far as Bloor street. The present impure supply costs 7 1/2 cts. per 1,000 gallons, whereas the company offers pure spring water at 3 1/2 cts. per 1,000 gals. It offers to supply to Toronto 4,000,000 gals. in six months, 14,000,000 gallons in 18 months and 24,000,000 in 30 months. The citizens, it is thought, will appreciate an alteration meaning an almost immediate relief, even though it be only a partial one. The water has been proved to be pure by analysis.





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THE SMELTER QUESTION.

Editor CANADIAN ENGINEER:

THE CANADIAN ENGINEER for May duly received. I beg to say that I am so favorably impressed with it that I enclose one dollar for one year's subscription beginning with the June number.

From what I have read in the Canadian papers, it is my opinion a Mr. Drummond, of Three Rivers, Quebec, has a pretty correct idea of the American Promoters' scheme at Hamilton, Ont. Last year Messrs. Thompson & Monahan of your city wrote me for estimates of the cost of a coke furnace of one hundred tons daily capacity. I stated about \$150,000, they to pay the duties and freight across the frontier and furnish the foundations, which might be from \$7,000 to \$10,000, on a good soil of loam or clay, and not on a marsh. I have not had occasion to change my mind as regards a one hundred ton furnace. A furnace of one hundred and fifty tons daily capacity might require \$25,000 more, making \$175,000. As regards a pioneer furnace, one of one hundred tons capacity should answer the purpose, and have the ground plan so arranged as to allow a second furnace to be erected if the business warranted it. I think Belleville, Ontario, a favorable site for a charcoal furnace plant if a company could be formed. Hoping I have not trespassed too much on your time and attention,

I remain, yours very truly,

Hudson, N. Y.

CHARLES ALGER.

A NEW POWER HAMMER.

An opportunity was afforded, since our last number was issued, to observe the working at the workshops of the Ontario Central Prison, in Toronto, of what is designated the Optimates Power Hammer. This powerful, yet convenient tool, is the invention of Wm. H. Law, of Peterboro, Ont., who has secured a patent therefor under date June, 1892. It illustrates a most ingenious application of power, the mechanism transforming a pendulum motion into a lever motion of the first quality. It has been objected to, as a defect in power-hammers such as the Bradley and the Beaudry, that in order to strike a light blow the operator has to let the belt slip. In the case of the Optimates hammer, the motion of the propelling power is continuous, but the force of blows given by the hammer can be varied from one-quarter inch fall to ten inches, and thus made light or hard. The weight of hammer is about 150 pounds. A marked advantage is the nature of the adjustment, which permits the hammer to be raised so that whatever thickness of material you wish to pound, the extent of fall desired can yet be obtained, and rapid continuous motion at the same time secured. Some very well-known and experienced Canadian manufacturers have expressed great admiration of its working. THE ENGINEER is indebted to R. E. H. Buchner for courtesies in showing the working of the hammer.

Mr. Lowe and Mr. Eaton, of the Dominion Geological Survey, started last month to explore thoroughly the interior of Labrador. Their object is in connection with the contemplated extension of the northern limits of Quebec. They will be absent two years or more

METAL IMPORTS FROM GREAT BRITAIN.

The following are the values in sterling money of the shipments of metals, etc., from Great Britain to Canada, as shown by the British Board of Trade returns for May and the five months ending May, compared with like periods last year:

	Month of May.		Five months ending May.	
	1892.	1893.	1892.	1893.
Hardware and cutlery.....	8,547	10,223	40,130	39,454
Iron, etc.—				
Pig iron	9,193	4,932	17,482	11,637
Bar, etc.	3,593	3,182	15,272	10,905
Railroad	48,381	59,941	79,437	128,459
Hoops, sheets, etc.....	6,553	8,553	18,361	16,685
Galvanised sheets.....	3,619	8,707	14,126	21,665
Tin plates	14,518	28,278	84,538	60,681
Cast, wrought, etc., iron.....	8,685	20,937	44,001	45,764
Old (for manufacture)	9,364	18,416	23,773	37,438
Steel	13,196	15,810	46,354	50,512
Lead	7,838	4,068	11,545	5,051
Tin, unwrought.....	1,581	1,477	11,896	6,267
Alkali	9,445	8,069	24,493	24,843
Cement	5,977	8,871	10,391	17,010

In the five months ending May there were imported into Great Britain from Canada copper ore to the value of £6,665 compared with £1,845 in the same time last year.

THE Geomagnetifier is the name of an electric apparatus used for stimulating the growth of crops. It consists of a high pole which supports an insulated head of galvanized iron terminating in the air in a sort of plexus of copper points and branches. This collector of electricity, which is set up in the field where the crops are growing, is connected with a network of wires which ramify through the earth among the growing roots. This apparatus gathers up the electricity which is ever present in the atmosphere, and transmits it to the earth. The stimulus which results from this is said to be very marked.

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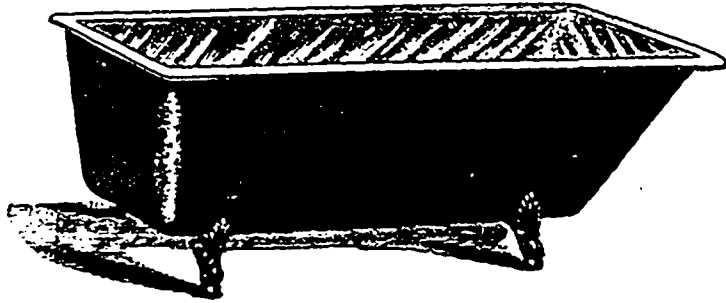
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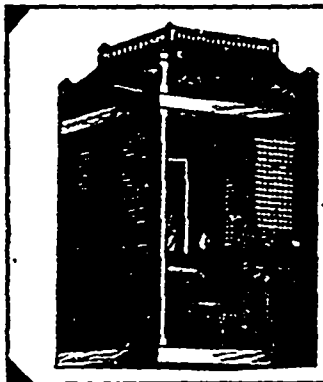
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A DICTIONARY OF LITTLE ECONOMIES.

The following directions for removing stains, spots, etc., must be used with exceeding caution. Chloroform, benzine, turpentine, kerosene, and gasoline are all dangerous substances unless handled with extreme care.

Sponge a grease spot with four tablespoonfuls of alcohol to one of salt.

Sprinkle salt over the soot on a carpet and sweep all up together.

Rub finger marks from furniture with a little sweet oil

Put a lump of camphor in an airtight case with silverware to keep it from discoloration.

Remove paint spots from a window by rubbing a copper cent over them.

Sprinkle salt over fresh claret stains.

Wash ink stains in strong brine and then sponge with lemon juice.

Hold a fruit-stained article over a bowl and pour boiling water through the cloth.

Rub egg stains on silver with salt on a damp cloth.

Use wood ashes on discolored tableware.

Clean steel knives with raw potato dipped in fine brickdust.

Rub brass with hot vinegar and salt and scour with fine ashes.

Clean a carpet with a broom dipped in a very weak solution of turpentine in hot water.

Cleanse grained woodwork with cold tea.

Scour ironware with finely sifted coal ashes.

Soak mildewed clothes in buttermilk and spread on the grass in the sun.

Wash rusty gilt frames in spirits of wine.

Wash oilcloth with a flannel and warm water, dry thoroughly and rub with a little skimmed milk.

Purify jars by soaking them in strong soda water

Wash blackened ceilings with soda water.

Rub white spots on furniture with camphor.

Rub a stove zinc with kerosene

Cleanse bottles with hot water and fine coals.

Remove fruit stains from the hands with weak oxalic acid.

Clean jewelry with prepared chalk.

Wash hair brushes in weak ammonia water.

Rub stained hands with salt and lemon juice

Remove ink from wood with muriatic acid, after rinsing with water.

Wash japanned ware with a little lukewarm suds.

Rub mirrors with spirits of wine.

Apply spirits of salt to ink-stained mahogany.

Use sulphuric acid, wash off with suds, for medicine stains on silver.

Remove oil stains from wall paper by powdered pipeclay moistened.

Use gasolene for removing paint.

Use jeweler's rouge and lard for rubbing nicke' plating.

Remove writing from books by a solution of tartaric acid.

Wash willow ware with salt water.

Clean hard-finished walls with ammonia water.

Rub whitewash spots with strong vinegar.

Rub soft-grease over tar and then wash in warm soda water.

Dip a soft cloth in vinegar and rub on smoky mica.

Sponge faded plush with chloroform.

Take paint out of clothing by equal parts of ammonia and turpentine.

To remove machine oil from satin use benzine. Be careful about having a light in the room, as it is very explosive.

The history of invention is a medley of successes and failures. It has the world owes of its progress and prosperity to the inventor, its debts have seldom been paid to this particular creditor. No biographies of man can show so sad a series of misfortune, struggle, ostracism and poverty of appreciation as those of inventive genius. Sacrifice, patience, will power of the indomitable type, and an unquenchable faith in results have been peculiarly characteristic of inventors as a class. It is seemingly a law in the process of mechanical evolution, that, as in that of the organic world, the end to be reached is found over a rocky roadbed of sacrifices and penalties.—*Age of Steel.*

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