

# INDUSTRIAL WORLD

AND NATIONAL ECONOMIST.

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## THE INDUSTRIAL WORLD AND NATIONAL ECONOMIST.

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FRIDERIC NICHOLS, GENERAL MANAGER,  
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FRIDERIC NICHOLS,  
INDUSTRIAL WORLD OFFICE,  
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## THE TRADE QUESTION IN AUSTRALIA.

The proximity of Canada to a great  
nation of fifty millions, with a thorough-  
going Protectionist policy, has created  
circumstances which are unique and ex-  
ceptional, and really unlike those of any  
other British colony whatsoever. In our  
case there are exceptional circumstances  
of such importance that even staunch  
advocates of Free Trade, on general  
principles, may fairly admit the force of  
those practical reasons which have  
drawn us in the opposition direction.  
The problem may be put thus:—Given  
a nation of fifty millions, active, ener-  
getic, and enterprising, with another of  
only four or five millions touching it  
along a frontier of three thousand miles,  
is it possible for the latter to carry out a  
policy of even comparative Free Trade,  
while the former holds determinedly to  
a policy of high Protection? To this  
question the common sense of the coun-  
try answers "no," though we still hear  
"yes" from some who feel themselves  
able to defend at all costs and  
under a theory to which they have  
already committed themselves. But,  
however this particular question, re-  
lating to Canada only, may be answered,  
it has no application to the case of the  
Australian colonies. They have no  
Protectionist United States lying along  
their border, and they can consider the  
trade question apart from those peculiar  
complications which we have to deal  
with. Further, these colonies have  
been less open than Canada to Protec-  
tionist influences, and have been more  
directly influenced by the Free trade  
concept and example of the Mother  
Country. And yet there, as well as here,  
Protection is making headway, though  
not to the same extent. On this subject  
we get some information of recent date  
from the correspondence of the London  
Times.

The letter referred to is dated  
the first of January last, and it is worth  
noting that it comes from Sydney, the  
capital of New South Wales, which is  
the most pronounced of all the Austral-  
ian colonies in favour of Free Trade.

At that date an Intercolonial Conference,  
assembled at Sydney, had just concluded  
its labours. This was in continuation  
of a Conference held towards the close  
of last year at Melbourne, at which only  
three colonies were represented, and the  
primary object of which was to come to  
some arrangement as to border Customs  
between the Governments of New  
South Wales, Victoria, and South  
Australia. The practical meaning of  
the term "border Customs" in  
Australia may require a word of explana-  
tion. New South Wales allows com-  
parative Free Trade, while Victoria, the  
neighbouring colony, has imposed pro-  
tective duties, for the avowed purpose  
of developing home manufactures. In  
Sydney and Melbourne, or anywhere  
along the coast, the two systems re-  
spectively can be administered without  
conflict with each other. In the in-  
terior, however, long-extended boundary  
lines running through sparsely settled  
districts complicate matters very much,  
and the revenue laws of one colony are  
easily defeated by adventurers having  
the near territory of another for their  
base of operations. Some idea of the  
situation may be had by imagining the  
Province of Quebec, for instance, to have  
adopted a policy of Protection, with  
Free Trade as the law of the land in  
Ontario and New Brunswick. Other im-  
portant topics were, however, intro-  
duced at the Melbourne Conference, and  
it was resolved to adjourn and invite  
colonies not there represented to take  
part. At the Sydney Conference all the  
Australian colonies were represented,  
and many and various subjects were  
discussed. An agreement was arrived  
at as to an Australian Court of Appeal,  
the execution of warrants for the arrest  
of offenders, for the apprehension in any  
colony of men deserting their wives and  
children in another, and for anticipating  
by telegram the effect of such warrants.  
On other subjects unanimity was not  
obtained, and the Times' correspondent  
says that at the head of all disputable  
points was that of the future Australian  
tariff. It is seen plainly enough, he  
continues, that there can be no Federa-  
tion without a Customs Union; and  
the different colonies have such  
different financial needs, and  
are so variously circumstanced, and  
have developed such different lines of  
fiscal policy, that it does not seem  
possible at present to agree upon any com-  
mon tariff. The chief difficulty, how-  
ever, it is said, lies with the Protectionist  
policy of Victoria, a statement which,  
coming from a Free Trade source, at  
once disposes of recent rumours to the  
effect that the people of that colony are  
"going back" on Protection. Had  
Protection proved a failure with them,  
as some assert, there would have been  
no great difficulty in persuading this  
colony to join the rest of the group in  
framing a comparative Free Trade  
tariff. But the fact that there is a great  
difficulty, and the statement as to where  
it lies, speaks volumes, and gives us to  
understand that at least one Australian  
colony, that one being the most pro-  
gressive of them all, has adopted Pro-  
tection as its permanent policy. The  
conference was asked to go to work with  
the tariff of New South Wales as a  
basis, but to this the Victorians objected,  
asking that their tariff be taken for a  
basis instead. Ultimately, a resolution  
was carried in favour of a Joint Com-  
mission of all the colonies, except West  
Australia, to consider and construct a  
common tariff. The Commission, it is  
said, will probably be formed, but  
whether Victoria will be a party to it is  
uncertain. The idea of this Commis-  
sion is due to an impression that it  
may be possible for the other colonies  
to unite, even if Victoria does not, and  
that at any rate a partial Customs union  
tariff cannot be agreed upon. The fol-

lowing paragraph we give in the corre-  
spondent's own words—

"All colonial politicians perfectly under-  
stand that the British Government wished  
to see the Australian colonies federated,  
and at the same time wishes to see them  
adopt a Free Trade policy. Unfortunately,  
we cannot have the two things together.  
We could probably get federation pretty  
quickly if we could surrender Free Trade;  
but New South Wales is quite unwilling to  
adopt that course, and in taking that stand  
sets a varying degree of sympathy from  
the other colonies. Mr. Berry (Chief Secretary  
of Victoria) ridicules the pretended enthu-  
siasm about Free Trade in Sydney. He  
argues that there is not such a thing as an  
absolutely Free Trade tariff among any of  
us, that consequently Protection is not a  
question of principle, but only a matter of  
more or less. To this it has been replied  
that the whole of the New South Wales  
tariff has been constructed with a view to  
revenue, and that any protection it may in-  
volve is incidental and undesigned, while  
that of Victoria is deliberately framed on  
the principle of protection in native indus-  
tries. Under those circumstances, a com-  
plete Customs union must for the present be  
deferred."

These few lines of information, coming  
from a Free Trade source, and through  
Free Trade channels entirely, may con-  
vey to us, even at this distance, a fair  
idea of how the trade question stands  
with our antipodes kindred. It is  
something to know that Victoria resolu-  
tely "holds the fort" for Protection,  
while New South Wales, taking a stand  
for Free Trade, gets what is called "a  
varying degree of sympathy from the  
other colonies." The two principal col-  
onies of the group appear as champions of  
the two systems respectively; and much  
interest attaches to the result of the  
struggle. Let it be remembered, mean-  
while, that the Free Trade party have  
on their side all the weight of influence  
—governmental, financial, commercial,  
literary and social—that can be brought  
to bear from the Mother Country. The  
Protectionist appeal to the popular ear  
will have to be strong and effective  
indeed to prevail against such odds.  
We firmly believe that it will prevail,  
however; and, further, that the example  
of Canada will not be wholly without  
influence, even on the other side of the  
globe.

## THE CANAL QUESTION.

Our neighbours across the line are  
considerably exercised over the canal  
question. The important enlargement  
of the Welland and the improvements  
on other canals have caused no small  
commotion in the State of New York.  
About a year ago the New York Herald  
sent a special commissioner—commis-  
sioner is the word now—a days—to  
Canada to report upon what was being  
done. He did his work well. His  
letters attracted considerable attention,  
and upon them were based many news-  
paper articles, urging the necessity of  
enlarging the State canals, if they were  
to enter into competition with those of  
Canada, as routes for the conveying of  
grain to the seaboard. In the American  
Protectionist of the present week there  
appears an article on the subject, from  
which we call some extracts. "The  
New York State Legislature," says the  
Protectionist, "has at last inaugurated a  
movement for free canals, and we may  
expect that the people will soon be  
permitted by their political attorneys to  
vote upon the necessary amendment to  
the Constitution. It was high time.  
The Canadians are determined to give  
us no rest, and to bid any amount for  
the safe trade of our great North  
West. Last week a deputation from the  
Montreal Board of Trade called upon  
the Ministers of Finance and Agricul-  
ture to suggest the removal of all tolls  
on through freight passing through the  
St. Lawrence and Welland canals. This  
suggestion, it is said, was received with  
much favour, and we may well believe  
it. Should the Dominion succeed in  
securing any large portion of the com-  
merce to which our exports of grain give

occasion, the loss of canal tolls to her  
Government would be trifling compared  
with the gains of her merchants. We  
must express some surprise, however, at  
the attitude of the New York Commer-  
cial Bulletin on this question. Our col-  
lected contemporary, though it boasts  
of representing the commercial interests  
of this great port, is opposed to free  
canals. The argument deserves a pass-  
ing notice and may be summed up as  
follows:—"The Canadians should be  
allowed to monopolize our grain trade  
if they can afford to be so liberal as to  
provide a free water way for the export  
of our products, for if on our side we  
should make our canals free, and it  
were found that the Canadian route was  
still offering superior advantages, we  
could not preserve our trade in  
any other way than by pay-  
ing a bounty to the shippers  
on all freight passing on our  
own water lines of communication.  
Therefore it were better to lose our  
trade at once." This suggestion the  
Commercial Bulletin respectfully recom-  
mends to the consideration of the large  
majority in the New York Produce Ex-  
change, who have voted for the abolition  
of the canal tolls. The majority so  
respectfully addressed is likely to laugh  
very disrespectfully at this unexpected  
modification of Greeley's advice: "Go  
to Canada!" Evidently our neighbours  
are beginning to realize the fact that  
Canada as a rival, in some respects at  
any rate, is not "to be sneered at."  
When they abrogated the Reciprocity  
Treaty, they fondly hoped that they  
would coerce us into political annexa-  
tion, but they found out that Canadians  
have no desire to consummate such a  
union; and when we adopted a policy  
of protecting our own industries, they came  
to the conclusion that it is not the inten-  
tion of this country any longer to be a  
hewer of wood and driver of water to the  
United States.

## THE SUGAR QUESTION IN NOVA SCOTIA.

We transfer in its entirety to our  
columns the following article from the  
Halifax New Era, entitled "Our Sugar  
Refinery": There is, probably, no object  
of greater interest, at the present mo-  
ment, to the people of Halifax, than the  
successful working of our new and  
magnificent Sugar Refinery. Magnificent  
is a term, perhaps, that may be thought  
too grandiloquent to apply to a sugar  
factory, but we humbly think it may be  
well allowable in this particular, when  
not only the whole population of our  
city, but also of our whole Province, has  
been for a long period hopefully looking  
forward to its completion and successful  
working. As it now stands, perfected,  
and in actual working order, it may be  
well said to be truly magnificent in its  
proportions and machinery. Magnificent,  
also, in its admirable situation, com-  
manding a water front and dockage that  
may well claim no superior in the world,  
and where the imported raw sugar of  
East and West Indies, Brazil, Cuba and  
British Isles can be landed, at all  
seasons, and in all tides, in a safe dock-  
age for the vessels bringing and landing  
it, almost into the very melting pans of  
the factory, and thus command the very  
lowest possible freight terms, and, more  
especially so, when the ships bringing  
such cargo can be offered a fair chance of  
outward freight, as several of the sugar  
ships are now availing of, in deal freights  
to England, and other increasing railway  
products, brought close to the factory,  
and lastly, we trust it will be magnificent  
in its perfected product of the various  
grades of refined sugars, and above all,  
by-and-bye, magnificent in its dividend  
to its enterprising shareholders. In so  
large an adventure in a new business,  
there will be, doubtless, among many  
people, a serious question of its success,

on so large a scale, for this factory is, it  
we are rightly informed, perfected in  
every particular, in full staff and machin-  
ery for the output of 5,000 barrels of  
refined sugars per diem, and it is, we  
believe, a recognized fact in such cases,  
that, for profitable working, the largest  
product attainable should be manufac-  
tured. It therefore, becomes an im-  
portant consideration—in fact, one on  
which the profitable working of the  
factory, in a great measure, depends,  
where can a favourable market be found  
for its large product, when working to  
its greatest extent? As far as Nova  
Scotia is concerned, we know that a very  
small proportion of refined sugar, has  
heretofore been used, in comparison  
with the annual import of Muscovado  
sugars and molasses; but as in Europe,  
and now in the United States, doubtless  
this will all be changed in a very short  
time. Our people will, from moderate  
prices, especially in the lower grades of  
refined sugar, soon be educated up to use  
refined sugar altogether, and thus the  
consumption will be largely increased from  
month to month—in fact soon take the  
place of raw or Muscovado sugars alto-  
gether. We must, however, bear in  
mind that the whole estimated con-  
sumption of sugars, of all kinds, including  
maple, is estimated at 28 to 30 lbs. per  
head, for 4,000,000 people, the whole  
estimated Dominion population. As  
we before remarked, our refinery  
must be kept in full operation, its  
best results are to be looked for. An  
opening must, therefore, be found for a  
considerable excess of production, be-  
yond our local requirements, or even our  
Dominion consumption, until, as we be-  
fore remarked, our people are larger  
consumers. We might, therefore, feel  
some doubt as to the future of this  
industry, had we not the experience of  
other countries, largely engaged in the  
same industry, for our encouragement  
and guidance. Let us, for instance, look  
to that bee hive of industrial produc-  
tion—Belgium; this thriving kingdom  
is but a little in advance, in population,  
of the Dominion of Canada, as it is  
stated at 5,113,080 against our rising  
4,000,000. Yet here, in Belgium, the  
sugar refining industry is, proportionate-  
ly, the largest in Europe, and we may  
well be amazed when we find Belgium  
manufactures and sells the product of 41  
cane sugar refineries, and 170 manufac-  
tories of beet root sugar besides—all  
productive of large profits and immense  
advantages to her people. The consump-  
tion of sugar and treacle in Belgium is small  
yet she finds profitable sale for her enor-  
mous product of refined sugar. It would  
be interesting, indeed, had we the means  
of tracing out her large export sale, and  
would doubtless, be of great advantage  
to those more immediately interest-  
ed in the direction of our large estab-  
lishment to make themselves practically ac-  
quainted with her efforts in so success-  
fully disposing of so large a product of  
her refined sugar. What makes the  
action of this little kingdom in this  
sugar industry the more remarkable is that  
she is surrounded by the extensive sugar  
refineries of France, Holland, Germany  
and England. To whom, therefore,  
does she export her sugar? Where  
does she find profitable sale for her  
large product of refined cane sugar?  
To say nothing of her beet root  
production? That she does so, and that  
in increasing proportion, is as evident as  
that the sun shines. On this point we  
are not informed particularly, but are  
inclined to think Belgium largely sup-  
plies the Spanish, Italian and Sicilian  
markets of the Mediterranean, and per-  
haps the larger markets of Portugal, all  
large consumers of refined sugar. Thus,  
Belgium, with like population as to  
numbers as the Dominion of Canada,  
has 41 refineries of cane sugar, besides  
her large number of beet root factories.  
Let us, therefore, say Canada is

overdoing it—too sanguine of results, etc., and just let us for a moment consider the difference in our favour in our geographical situation. Here we are within twelve or fifteen days' sail of the largest cane sugar producing countries. This sugar can be landed at the smallest possible cost, freight and charges, into—as we have before remarked—the very melting pans of our refinery, and with smallest port charges to the vessels bringing it, probably, of any Atlantic port in Europe or America. Belgium on the contrary, is a long voyage to and from any cane sugar producing country, and must procure her cane sugar for manufacture at a great disadvantage compared to Halifax, and yet we see, with all these disadvantages, Belgium keeps 41 cane sugar refineries in active operation. Our refinery directors may well, therefore, take courage and not be easily disheartened at any present seeming difficulties in their way. A bright prospect is before them of a profitable and extensive business, and we will hope to see, ere long, a large export of refined sugar added to our trade lists.

EDITORIAL COMMENTS.

The excess of United States exports for the year ending 31st of March, 1881, over exports for the same period amounted in value to \$243,445,899. For the twelve months ending 31st of March, 1880, they amounted to \$194,471,809.

It is interesting to read at the head of a long advertisement in the Montreal Herald "Further Effects of the National Policy," such "further effects" being the increase of the accommodation of one of the largest furniture establishments of the Province.

The canal toll reductions by the Canadian Government continues to attract attention on the other side of the line. The New York Daily Indicator says:—"If the Canadian Government reduces the tolls on its canals about 67 per cent, as proposed, it will probably force the abrogation of tolls on the Erie canal, and the railroads will then have to carry grain from the west to the seaboard at pretty low rates."

Save the Railway Age, a journal published in Chicago and devoted to railway interests.—"As soon as the Canadian Pacific Railway came into the hands of private capital a material reduction upon the tariff rates charged by the Government managers was made, which illustrates the fact that Government management of the public is not necessarily better for the railroads than individual ownership. Indeed private capital and enterprise are far more likely to make these works successful than political appointments can be."

A recent return shows that at the close of the year 1880 there were in the United States 170,103 miles of telegraph line, and during that year 33,163,991 messages were sent. The miles of wire were about 300,000. This does not include the lines used exclusively for railroad business. The other countries having the greatest length of lines are as follows: Russia, 56,170 miles; Germany, 41,631; France, 36,970; Austria-Hungary, 30,403; Australia, 26,842; Great Britain, 23,156; British India, 18,200; Turkey, 17,085; and Italy, 15,861.

A STATISTICAL just published shows the volumes most consulted in the Astor Library, New York, during the year 1880. The readers numbered:—English Literature, 13,042; United States History, 11,071; Classical Literature, 7,451; American Literature, 6,179; British History, 5,420; Heraldry and Genealogy, 4,997; Medicine and Surgery, 4,966; Chemistry and Physics, 4,572; Encyclopaedia, 4,460; French Literature, 4,415; Philology and Linguistics, 4,095; Fine Arts, 4,061; Theology, 3,917; French History, 3,443; Jurisprudence, 3,365; German Literature, 3,191.

AMERICAN newspapers are informing those interested that they would do well to be on their guard connected with the perpetration of frauds on the Customs revenue of Canada. The St. Louis Age of Steel says:—"A black list has been printed by the Canadian Customs officials, copies of which have been sent to every Collector in the Dominion. The list contains the names of exporters of goods from the United States who have at any time presented invoices

under value. The Collectors are directed to pay particular attention to all entries of goods, machinery, merchandise, etc., made by these suspected parties." The painful experience of certain importers within the last few months should have a salutary effect upon others who have carried on the same fraudulent practices.

The New York Bulletin's Liverpool correspondent writes:—"Special and authoritative returns, which have, during the month of March, been collected throughout the iron and engineering branches of the country as to the condition and prospects of trade, are of anything but a satisfactory character. The revival which have appeared to have taken place a few months back has not been continued, and has been confined only in some exceptional or special departments, and there is generally an increasing feeling of depression. The result of the returns, in fact, is to show that the iron and engineering trades of the Kingdom are in 1881 in really no better position than they were in 1880. Of course all branches of trade have not suffered to the same extent, and one very marked exception has been the iron shipbuilding and marine engineering trade, which has been in striking contrast with every other branch of industry."

The Chicago Journal of Commerce says:—"All advices from New York are to the effect that the World's Fair is languishing and likely to die. One more effort to encourage the railroads to subscribe is to be made. It is hoped, if this succeeds, to put the enterprise on a sound basis. But the time to produce an exhibition on a grand scale is now considered too short, even if the money were all subscribed. And there is still much necessary delay to be encountered. The gentlemen having charge of the enterprise claim that if there be a failure the failure is not theirs. A meeting to take place this week is considered to be the turning point in the life of the project. If that meeting be not satisfactory the fair will be either fairly launched or stopped altogether. Some are, however, still sanguine of success. Others are indignant at the lukewarmness shown by those who would receive the greatest benefit from the proposed location. These latter disgusted parties are determined to make no further effort to secure subscriptions, until their people come to the front and at once take their share of the heat and burden of the enterprise."

According to a bulletin just issued by the United States Census Office the number and capacity of the blast furnaces, rolling mills, steel works, forges and bloomeries in the United States at the close of the census year, May 31st, 1880, was as follows:—Blast furnace establishments, 490; completed blast furnaces, 681; rolling mill establishments, 324; single puddling furnaces, each double furnace counting as two single furnaces, 4,319; rotary puddling furnace (Sellers') 1; Danks' puddling furnaces, 19; hammers in rolling mills, 239; heating furnaces, 2,105; trains of rolls in iron rolling mills, 1,206; nail machines, 3,775; steel works, 73; Bessemer steel converters, 24; open hearth steel furnaces, 37; pot holes for crucible steel, 2,691; trains of rolls in steel works, 136; hammers in steel works, 219; forges and bloomeries, 118; forge and bloomery fires, 495; Siemens' rotator, 1; hammers in forges and bloomeries, 141; daily capacity of blast furnaces in net tons, 9,218; daily capacity of rolling mills in net tons, 16,430; daily capacity of Bessemer steel converters in net tons, 4,467; daily capacity of open hearth steel furnaces in net tons, 827; daily capacity of crucible steel works in net tons, 445; daily capacity of forges and bloomeries in net tons, 526. The whole number of establishments in 1880 was 1,005.

Notice has been given of application for the re-incorporation of the Superior Loan Company of Ontario, with head office at London. The capital stock is \$2,000,000 in \$50 shares.

A monster schooner has just been built at Toledo, Ohio. The Blade states:—"The old sailors say that the finest sight they expect to see short of their heavenly home is when she hoists all her colours, spreads her acres of canvas to a stiff breeze, and starts for Buffalo at the rate of thirty miles an hour, with 100,000 bushels of wheat in her hold."

NATIONAL INDUSTRIES.

The Industrial World will be pleased to receive items of news from its readers in all parts of the country, for publication in its columns. It will take but a few minutes time, and a postal card to acquaint us with what is going on in your neighbourhood, and we will be glad to send you for all the latest information, which must be accompanied by the writer's name as a guarantee of good faith.

LACHINE INDUSTRIES.

We are indebted to Mr T H Ayers, of the firm of Hamelin & Ayers, Lachine, PQ for the following items under date April 24th, 1881:—

J C Wilson, of Montreal, has just got his paper mill started, and is turning steady day and night to meet the demand.

Messrs. Fish & Ireland are enlarging and improving their flom and grist mills, also making improvements in their saw mills.

Messrs. Mattison & Chapman are turning their door and sash factory overtime to keep up with the demand.

Messrs. Hamelin & Ayers are working overtime to fill contracts for summer goods, of which they manufacture tweeds, flannels, stuffs, blankets, and Halifax tweeds. They are about to enlarge their present mill two stories higher, which will make a three set woollen mill. This firm claims the largest local trade in the Dominion.

F. R. Bannerman, of Montreal, is building an extensive rope and cordage factory here.

Earl Brothers' grinding and sawing mills are kept busy.

There are fifteen dwelling houses, two churches and one hotel in course of erection in this town.

Lachine has water power, within half a mile of the railroad, aggregating at its lowest ebb ten thousand horse power, with only about one thousand horse power utilized at present, a rare chance for cotton mills, also manufacturers of farming implements. The balance of water power is held by J. C. Wilson, Messrs. Fish & Ireland, first dam, from 10 to 12 feet head, Messrs. Hamelin & Ayers, second dam, 11 to 12 feet head, with two privileges further down stream of 10 feet head each, and Earl Brothers, 9 feet head.

The Q. M. O. & O. R. R. passes through the entire length of this town. There has been a survey made to run a railway from this place to St. Andrews, a distance of five miles, and connect with the Ottawa river at Carillon.

We are glad to learn that the interest in this subject is growing. Another meeting of citizens was held in the Board room of the Eastern Townships Bank on Tuesday, when Mr. Cantile, of Cantile, Ewan & Co., of Montreal, gave very full and interesting information as to the number of mills in operation in the Dominion; the comparison of splindles running in the United States and Canada, and other details of live interest. We drew attention to the preliminary circular issued by the committee, inviting the citizens to meet on the afternoon of Tuesday, the 8th May, at 2 o'clock p.m., in the City Hall, and we hope that sufficient interest will be then manifested to start the company with a good subscription. "The gods help those who help themselves."—Sherbrooke Gazette.

A Mr. W. G. Beach is at present in New Glasgow establishing a company for the purpose of starting a glass manufactory in that enterprising town. The company is to have a capital of \$100,000, nearly all of which has been subscribed in New Glasgow. Mr. Beach proposes to start the industry during the present summer. He says he needs no special protection. There is only one manufactory of glass in Canada, and that is situated in Hamilton. The advantages of New Glasgow can be easily understood when it is known that the coal is the most important factor, and while \$5 or \$6 a ton is the price paid in Hamilton, in New Glasgow it can be obtained for this purpose at less than \$1. Tableware, glasses, decanters, lamp chimneys and such fancy ware is the kind of glass to be manufactured. \$240,000 worth of this ware was imported into Canada from the United States last year. It is to be hoped that the new enterprise will prove successful. In the meantime what about the Halifax Cotton Mills? Is it creditable to this city to allow such an enterprise to be strangled at its inception for want of encouragement?—Halifax Recorder.

We cannot too warmly commend the enterprise of the Quebec boot and shoe manufacturers, as well as their apparent determination to preserve for the ancient capital the preeminence which, by their unadded exertions and perseverance, they have won for it in this important branch of trade. We notice, among the latest signs of progress among them, that Mr. Bresson is about to add an extension of 40 feet, as well as another story, to his already immense establishment. This is a healthy indication and shows conclusively to what satisfactory dimensions the boot and shoe business has grown in Quebec and what an important role it is destined to play in the industrial future of this city. In point of fact, as we stand, it is our leading industry par excellence and has unquestionably come to the front most conveniently to supply the place of our defunct shipbuilding trade, while those engaged in it are all ener-

getic, enterprising, self-made men, altogether independent of the shavers of St. Peter street. No better guarantee of the prosperity and permanency of the boot and shoe manufacture could be had than the simple fact, and we sincerely congratulate Quebec upon it.—Quebec Budget.

New hands are being taken on at the Pater's Combination Lock works nearly every day and new machinery is being added. Some 37 hands were at work at the factory yesterday, and the rush of work is so great that tool and pattern makers and moulders are working extra hours. The silverware and plating department has lately been taken charge of by Mr. B. Ebraud, who for five years had charge of the bronzing and plating department of P & F Corbin's hardware establishment, New Britain, Connecticut, and previously had charge of the Tucke, Manufacturing Company, of Boston, for a long time. Between two and three tons of iron castings are now lying at the factory to be nickel plated, in addition to a great quantity of lighter goods for silver plating, etc. The builders' hardware turned out is of very superior design, and the company are now turning out every description of this class of goods in brass, and will give its attention to lines of iron hardware in a short time. The 600 key locks for the St. John post office are nearly ready for shipment. The works are visited by a great many people, and as the presence of so many visitors interferes with the workmen the manager has been obliged to post up a notice about the works to the effect that in future visitors will not be allowed in the building further than the office.—Moncton Times.

We hope that the Corn Canning Factory, of which we spoke last week, will not turn out one of those enterprises whose promise is never fulfilled. The destruction of the skating rink, where the company proposed to establish it, was an untoward accident, but we think they could find some other place to suit them. If the company start the factory they will require 25 acres of corn—the average yield per acre is 2,000 ears, or 3,000 lbs., or in all, 50,000 ears, or 75,000 lbs. They propose to pay 3 cents per ear or 2 cents per lb., which would be \$60 per acre, or \$1,500 for the 25 acres. The corn would have to be cut when full and in the milk, and delivered in the husk at the factory the same morning it was gathered. Those who supplied the corn would have the privilege of hauling away the husks and the cob. Corn husks make excellent food for cattle, and go half as far as cured hay, and cattle have been kept in good condition through the winter on husks alone. Canning corn is carried on to a great extent in Maine, and it must be profitable to both the producers and processors. There are 25 factories in that State, which pack over 7,000,000 cans annually. The price per can was 2 1/2 cents per can in the interior, and 3 cents in the vicinity of Portland. What is to hinder more than one corn canning factory to be established here? In Fredericton and its vicinity, on both sides of the river, any quantity of corn and tomatoes could be raised. Everyone with a patch of ground could do something to raise corn and tomatoes for canning factories. It pays to do so elsewhere, and there is no reason under the sun why it should not do so here. All that hinders is a want of public spirit, in those who have the capital, but who are afraid to venture it, even in enterprises that can be shown to be perfectly safe, and certainly remunerative.—Fredericton Maritime Farmer.

THE SUGAR QUESTION.

To the Editor of the Moncton Times.

SIR,—I have seen the Toronto Globe of the 13th and read the article, "The Burden of the Sugar Trade," replying to your leader of the 2nd.—"The Sugar Trade of Canada as affected by the National Policy." I see that the Globe, in the most extraordinary manner, denies the correctness of your conclusions.—"That the N. P. has given us cheaper sugar, an expenditure of \$2,300,000 at home instead of a foreign country, a valuable foreign trade, a market for produce, much of which is otherwise unmarketable, work for our vessels, work for our railways, work for our unemployed capital, home market for our coal, and generally a healthy condition of a great variety of industries." As the logic of facts is irresistible, it can easily be proved that the assertions of the Globe are unfounded and that your statements are correct. The Globe at one time held very different views on the sugar question, and in an article on the complaints respecting the tariff in 1874, said:—"There is more reason for what was urged regarding sugars by the growers, who last week pressed their views with clearness and cogency, and it may be that the Finance Minister will see his way to act on the suggestions of the deputation. Yet it must not be forgotten that there was much to be said for the arrangement proposed regarding sugar—for the trifling difference would probably have led to a direct trade with the West Indies. At present the sugar is sent to Grenock from Java and other islands, and there refined and then sent here. If sugar refineries were established in Halifax—and we understand they will be in circumstances are favourable—it would help to well open up the trade between this country and the West Indies, and such a trade would not only ultimately secure us cheaper sugar, but would in other ways directly and indirectly enrich us." You see that the Globe, then, frankly conceded that our trade with the West

Indies and our sugar refineries were one boat, and our importing process another. The question is, which of these rival boats carries the interest to advantage of the consumer? It is duty to make the policy I helped to originate a success. The Globe's tariff reminds the people of Canada that "here the burden of the tariff tax on sugar in the N. P. companies must therefore again take up my pen—and combat the assertions of my most doughty antagonist doing so, but to prove that the N. P. tariff has been conferred upon the Dominion in benefits stated so graphically by you."

(1) "Cheaper sugar." The average price of granulated sugar in 1870 was \$9 50, in 1877, \$10 00, in 1878, \$9 50, in 1879, \$9 50, in 1880, \$9 12 1/2. It clearly proves that the average price of sugar was lower in 1879 and 1880 (the two first years of the N. P. tariff) than in any of the three preceding years (the last years of the old tariff), and let the Globe take the price of raw sugar in New York in any month under the old tariff in 1876, '77 and '78, and compare it with the price of refined in Canada at the same time, as contrasted with the price of raw and refined sugar in Canada under the present tariff in 1879 and 80, and it will be found that the consumers have obtained their sugar—and of much better quality—for less money than they would have had to pay had the old tariff been continued. It is true that the revenue on sugar has been lessened, but it is true not because the tariff has been reduced but because the duty is now collected on raw sugar instead of refined sugar as formerly under the old tariff.

(2) "An expenditure of \$2,300,000 at home instead of in a foreign country. We paid in 1878 (the last year of the old tariff) \$8,186,220—in hard cash—108,463,915 pounds of sugar—94 per cent of it refined in the United States and Great Britain—only 6 per cent of it coming from countries of growth. In 1880 (the first complete fiscal year under the N. P. tariff) we paid only \$3,994,450—1/2 in cash and 1/2 in the exported production of Canada—fish, lumber, etc. for 116,847,030 pounds. Sugar—about 70 per cent being raw sugar from the West Indies and other countries of growth, and about 30 per cent refined sugar from United States and Great Britain. The Globe cannot deny without truth but that this is a blessed change to the country. The difference—upward of 2 1/2 millions of dollars going into the pockets of our own people instead of the pockets of foreigners—who are neither interested in the Dominion nor contribute to its revenue. I would here remark the lower the form in which the raw product comes to us the better—the juice of the cane being the earliest form of material, the nearer it comes to that point of its progress towards a consumable product the more work there will be to do at home, and the less there will have been done abroad. What is this the Globe says in this connection? "Of course there has been substituted for the trade in Scotch refined sugar, a trade in West India raw sugar, and it follows that a market has been found for a few carcases of Canadian produce in the West Indies. But in respect of every ton of British sugar which has been displaced by raw sugar, the rates of freight of Canadian produce to England have been increased enough to make up for the loss of freight on the voyage to Canada. The small market for Canadian fish and lumber in the West Indies gained for us by the N. P. has then, been provided at the expense of the Canadian farmer." This is the very opposite of the facts of the case but I will allow a master mind to reply Sir Leonard Tilley, in his able budget speech last session, speaking on this very subject, said: "The vessels that brought that sugar into the port of Montreal—because it was confined to Montreal during the last year—and brought the coal necessary to refine it, amounted to 62,000 tons. What effect had that upon the general industries of the country? It had this effect, that while it gave a large increase of revenue to the port of Montreal, it gave a largely increased business to that district of country. But it did more. The fact that these 62,000 tons of shipping were at that port led to the shipment from it of a large quantity of grain and of foreign products from the United States, because there was the tonnage and freight at a reduced rate. The competition of those 62,000 tons did diminish very materially freight at Montreal last summer and in August and September, and every 10 cents saved on a barrel of flour was so much more of the products of Canada left in the Canadian farmer's pockets. And every half-cent reduction in the freight of a bushel of wheat went into the farmer's pockets as did also of cheese. And so with all similar reductions in freights, of bacon, pork and other products. If by the operation of this tariff we attracted last year to that port 62,000 tons of shipping that otherwise would not have been seen within it, I believe that indirectly the whole Dominion, and especially the West, experienced from it a great and decided advantage. But during the present year this advantage will be extended to the lower Provinces, and with our sugar refineries in operation in Halifax and Moncton, what will be the result? There will be a large increase of trade between those Provinces and the Dominion generally, and the West Indies. When our vessels going to the West Indies have a return cargo of sugar and other articles, they will be able to carry away from our ports fish, lumber, and other products at lower rates, which



the benefit of greater employment for our own vessels... If we should pay twenty-five cents for our sugar...

Work for our workmen" yes—directly and indirectly the business of sugar refining gives employment to several thousand people.

Work for our railways. The Montreal stated in the House of Commons that 30,000 were so employed—including fishermen and lumbermen.

Home market for our coal. Every ton of sugar refined in Canada involves the getting and the transport of a ton of coal.

And lastly. And generally a healthy condition of all our industries. Truly, every sensible man in the Dominion will agree with you.

I am, yours faithfully, GEORGE GORDON DUNSTON, Westside, Halifax, N.S., April 19, 1881

NOVA SCOTIA COAL TRADE

Our people look forward to a season more than usual activity in the coal trade. As we announced some weeks ago, large contracts were entered into in Canada last winter by the agents of some of our largest collieries for the coming summer.

THE AMERICAN COAL TRADE.

(New York Mining Record.) The aggregate shipments of anthracite coal for the week ending April 16, were some 400,000 tons, against 600,000 tons for the same week last year.

and this year is an exception. The middle of the month will find everybody settled in their winter quarters and anxious to lay in their winter supplies of coal before going into the country for the summer.

A meeting of the miners and shippers of coal for the western market was held on the 14th inst., and the following figures were agreed upon—

For Buffalo, f.o.b. Grate and egg, \$3.05 gross ton, stove and chestnut \$3.30 gross ton

For Buffalo, the Bridges and Salamanca. On cars, grate and egg, gross ton, \$4.75; on cars, stove and chestnut, gross ton, \$5.00; on cars, No. 4, gross ton, \$3.50

For Erie, water shipments, f.o.b. To take the actual difference in freight between Erie and Buffalo, so as to make Buffalo, plus the freights therefrom, the base.

For shipment to Lake Ontario ports, viz., Oswego, Fair Haven,odus Point and Charlotte, prices to be (50) fifty cents less, gross tons, than Buffalo, f.o.b. prices, with the understanding that for coal shipped through the Welland Canal for western points, the prices to same destination are to be equalized with Buffalo.

For Cleveland, Toledo and Detroit—Prices to be: For grate and egg, \$6; for stove and nut, \$6.25 on cars, gross ton

For Chicago.—Prices to be: For grate and egg, \$7; for stove and nut, \$7.25 on cars, gross ton

For all other points west of Buffalo—Prices to be Buffalo car prices, with schedule freight added

For Rochester.—Prices to be: For grate and egg, \$4.50; stove and nut, \$4.60 per gross ton, on cars

For Syracuse.—Prices to be: For grate and egg, \$4.25; stove and nut, \$4.50 per gross ton, on cars

For all other interior points.—Prices were made by sub-committee July 23, 1880, as per Circular Book No. 2.

For Interior points on Seneca Lake.—Except where already fixed by circular, prices to be the same as for Geneva, and for points on Seneca Lake, to be the same as Cayuga, except to such points as are fixed by circular, and that there be no shipping prices at Watkins or Ithaca.

The following resolutions were adopted, viz.—Resolved, That it is the decision of this meeting that hereafter, and until this action is rescinded, there shall be no bidding for municipal coal, or for coal for public institutions, except upon the basis of current prices established by this Board from month to month.

Resolved, That hereafter, and until otherwise ordered, bids for public and municipal coal shall have added to regular price a rate of cartage and expense for delivery, to be determined by the Local Coal Board, and where there is no local board, the cartage to be not less than twenty-five (25) cents per net ton.

Resolved, That it be understood that all prices, as fixed, be taken and understood as being on the basis of cash, on or before the 15th of the month following the shipment of coal, and in case of any deferred payment, interest at the rate of not less than 6 per cent. per annum, shall in all cases be added

Resolved, That the above prices take effect Monday, April 25, 1881

Adjourned to meet at Tift House, Buffalo, Thursday, May 20, at ten o'clock, a.m.

Pittsburgh, Coal.—Waters unusually swollen within the past week have presented rare facilities for running coal, which have been industriously embraced by the operators.

This high water makes the prosecution of mining, loading and descending entirely practicable on the Monongahela. In this way, the lower markets are pretty well stocked—up nearly to the usual spring supplies, or are likely to be fully so before the freshest subsidies.

It will require but a very few days after the river falls below four feet to effect complete repairs on the dams, every needful preparation having been made by the company for that purpose.

At present, about 600,000 bushels of coal are each daily from the mines and loaded on board the return boats and barges—a process that has been some time going steadily forward, by which fresh shipments are kept in readiness, to depart whenever opportunity offers.

Some changes have taken place in prices, as noted below, but so slight as to indicate satisfactory steadiness in the trade.

pounds on board cars at the yards. —Am. Miner

San Francisco.—The price of foreign cargoes to be shipped or on passage has further declined, and may now be quoted at \$1.75 to \$1.75 for all kinds of Scotch, English and Welsh, while Australian finds buyers at \$3.50 to \$3.75 for early shipments, while near by cargoes would command even better rates.

BRITISH CATTLE AND SHEEP MARKETS

The following is the report for the week ending Thursday, 11th April, 1881

London, Monday, 11th April 1881—Cattle at market, 1,910, sheep at market, 13,780. Best beef, 6½d to 7½d per lb, inferior and secondary, 5d to 6½d per lb.

Best mutton, 8½d to 9½d per lb, inferior and secondary, 6½d to 8d per lb. Cattle—Fresh supplies moderate, demand slow and prices against the sellers.

Sheep—Pens were freely supplied, trade dull. Liverpool, Monday, April 11th, 1881—Cattle at market, 1,588, sheep at market, 3,184.

Best beef, 6d to 8d per lb, mutton, 8d to 10d per lb. Cattle—Supplies larger, prices for both cattle and sheep reduced.

Glasgow, Thursday, 14th April, 1881—Cattle at market, 1,640, sheep at market, 2,397.

Best beef, 7½d per lb, inferior and secondary, 5½d to 7d per lb. Best mutton, 10d to 10½d per lb, inferior and secondary, 8½d to 9½d per lb.

Supplies of fat cattle in Edinburgh were considerably larger this week, while in Glasgow the gross number doubled that of the previous week.

The mild change in the weather, and the generally heavier imports, with lowering prices from all the principal English markets, have caused trade to be much quieter here this week.

In Edinburgh the south country buyers took a considerable proportion, but Wakefield and Leeds markets were unusually dull, and buyers came to Glasgow determined to have them at less money.

It being holiday week in England may partly account for the further depression, at the same time every market, both in Scotland and England, has been much more heavily supplied with fat cattle.

Prices may be, therefore, quoted quite a stone all over lewer, with a dull and unsatisfactory finish.

Supplies of sheep were considerably larger in Edinburgh, and about the same as last week in Glasgow.

The mutton trade continues fairly good, especially for everything of prime quality, while the few days of general weather has likewise tended to lessen the supply.

Lamb, if good quality, and from 52 to 56 lbs., live weight, sell readily and well. Pigs and veal calves have maintained last week's prices.

Foreign supplies this week have been larger, comprising 50 cattle and 12 sheep from Jutland, the first shipment of the season, which made fair prices; 90 cattle from New York, 160 from Boston, both lots being fairly good, and averaged about £23 10s each, or from 8s to 8s 3d per stone, also 100 Canadian cattle from Nova Scotia, somewhat rough, which averaged £17 each.

The supplies of States cattle to the Clyde for the next week are exceedingly heavy, the Lake Champlain having already discharged 280, while the Oriskany is likewise due with 260, this number being more than the weekly requirements of the port demand store stock, with the slightly favourable turn in the weather, has kept more inquired after.

There is a good sale for all classes of store sheep, while Irish cattle offered this week in Edinburgh were also more readily sold.

Best hemo ted beef current top, 9s., secondary, 7s. 6d to 8d, inferior, 6s 9d to 7s per stone. Best mutton, 10½d, secondary, 9d, clipped, 8½d to 9d per lb. Fat lambs, if good quality, from 46s to 56s.

THE BRITISH GRAIN TRADE

Liverpool, April 22.—The leading grain circular says: The grain trade has been quieter. Prices, however, are generally unchanged.

at last week's rates. Plantation Ceylon was easier, except colony which was steady. The foreign supply is very heavy, and prices are rather lower except for the better descriptions.

SCARCITY OF POTATOES

"There can now be little doubt," says the Montreal Gazette, "that our farmers will be able to dispose of their surplus potato crop, as the American demand appears to be steadily increasing."

BEET ROOT SUGAR

In Europe the manufacture of sugar from the sugar beet has been successfully accomplished, both Belgium and France producing more than one-half of the home consumption.

THE DEBT OF FRANCE

France lives in a very princely fashion. Her revenues are larger than those of any other nation; so are her annual expenditures. She also has the largest public debt in the world.

LONDON GROCERY MARKET

London, April 20.—Mining Lane markets still lack animation, but several leading articles show some tendency to improvement.

to more than six and one-half billions of dollars. So long as France enjoys the blessings of peace her people will bear the burden of taxation which the liberal scale of the Government's expenditures imposes upon them without serious inconvenience.

ENGLISH CAPITAL

The quotation is sometimes asked—how much money have British capitalists invested and at interest? The London Bankers' Magazine undertakes to answer the question, and gives an estimate of the total holdings of British money lenders loaned to the British Government, \$3,750,000,000; loaned to the colonies and to foreign countries, \$3,750,000,000; home railways are down for \$3,600,000,000, and foreign companies for \$1,000,000,000; Indian Government and railway stocks foot up \$900,000,000.

A large number of French Canadians returned to Montreal on Saturday from the manufacturing districts of the States, where they have been residing for some years, and instead going into farming in the Province of Quebec.

SPIRIT OF THE COMMERCIAL AND INDUSTRIAL PRESS.

VERY UNLIKELY.

(American Agriculturist) From several points some hints that England is likely to announce her Free Trade policy. Despairing of the success of her endeavours to convince the world that the principle of free interchange of commodities between nations can be fashioned into a formula for the creation of illimitable wealth she is now about to change her tactics, and return to the system under which her infant industries were developed. For good and sufficient reasons this might be wise conduct on the part of England, and then, again, for reasons equally good and sufficient, the change would be exceedingly unwise. It would be wise in relation to her agricultural interests. It would not decrease materially her imports of foreign grain and provisions, because her importations of these commodities are a necessity, and a tariff would only raise the price to be paid for food by her industrial, commercial and privileged classes. But this increase of price would benefit the English farmer, and he could possibly pay his rents from the additional income received. But when you go beyond the products of the soil, it would be hard to say what article of foreign production England could tax without aiming a direct blow at the principal sources of her national wealth. England furnishes comparatively little of the raw material of which her manufactured articles are produced. She draws something from her own sheep husbandry, something from her mines, and a little from other sources; but all over the world English ships are engaged in bringing to England the raw material from which the busy fingers of her artisans are to produce the fabrics that form the main sources of her national wealth. To tax this raw material by the imposition of an import duty would be to preclude the possibility of its being returned in its manufactured form on terms that would enable the English manufacturer to compete at advantage with foreign rivals. The great English nation has always shown too much worldly wisdom to be guilty of any such mistake. The blunders of England are mainly political and diplomatic blunders. In finance she is far seeing as the race most celebrated for its acquittiveness, and where she is guilty of an economic mistake she makes sure that it shall only result in the aggrandizement of one class of her own people at the expense of another class. No "biasted" foreigner shall say that he has profited by English lack of judgment. It is very unlikely that England will adopt a protective system, or deviate, in any respect, from the policy which she has pursued during recent years. It has grown to be a superstition in that country that the repeal of the corn laws was a wise and progressive act. If it was a blunder, Englishmen are not made of such flexible material that they will admit the error for the benefit of a class so lightly considered as the farmers, and we are likely to hear considerably more of the Golden Club before we see a long list of English custom houses, ports of entry, and collectors of duty on imports.

PROSPECTS OF THE WHEAT CROP.

(New York Chronicle.)

The prospects of the wheat crop of the United States for the coming season are involved in some doubt, through the possible operation of events that had little or no relation to the two or three great crops which have been gathered in the seasons last passed. In the first place, the winter of 1880-81 was unusually severe and prolonged, coming on early and hanging on late; and more lately the wheat growing sections of the North-West have suffered from floods beyond all precedent. These circumstances can hardly fail to have an important relation to the yield of wheat for the next season; in some cases improving, while in others diminishing, the prospect; and there is, therefore, a good deal of anxious inquiry, even thus early, regarding the matter. Of the present condition, the accounts coming in are very contradictory, and derived, as they mostly are, from partial and local observations, are not very reliable. Winter wheat is, no doubt, rather backward in growth from the effects of the severe winter and late spring, but seems hardy, and now comes forward rapidly, especially in the northern latitudes. In the middle latitudes, where there was less snow, it was to some extent winter killed. The acreage has been extended on new lands, but the comparatively low prices current last autumn undoubtedly restricted the sowing, more or less, in the older sections where winter wheat is grown. Therefore no very important increase in the acreage can be expected. As regards spring wheat, the whole year, from the gathering of the last crop to the present time, has undoubtedly been unpropitious. It is usual to do the ploughing of lands for spring wheat in the autumn; there is little time for this work in the spring; and as soon as the snow disappears the sowing is made upon the lands ploughed in the previous autumn. The winter came on so suddenly and severely last year that farmers had no time to plough to the extent desired, and the floods this spring have overflowed much land, so that it could not be sowed, or, on subsiding, have left many other

held unfit for cultivation. Still, as population the last two years has rapidly been pushing further west, and new lands are being opened up constantly, we cannot see any present prospect of a total average below that of last season. On the other hand, it would not be safe, in view of the foregoing facts, to count too surely upon a further great increase from yield of wheat next season. It is probable that there are yet pretty full stocks of wheat in the hands of farmers. Prices have not been high enough to stimulate deliveries, and the accumulations of snow, followed by floods, interrupted transportation greatly by rail, as well as over country roads, for many weeks. The lateness of the season has delayed the reopening of the Erie Canal. The probabilities are, therefore, that unless crop prospects shall be as unpromising as to induce terms to hold back the old stock, we shall have very heavy supplies of wheat upon our market from the middle of May to the first of July. But so much will depend upon many conditions yet to be developed that it would be idle to attempt to forecast the course of prices. There is no longer any doubt expressed of the export demand for our wheat, at moderate prices, continuing on a very large scale. At the beginning of the crop year now drawing to a close, it was apprehended that the better yield in Great Britain and the west of Europe would cause a material curtailment of the demands upon us. Such has not proved to be the case. For nine months ending April 1, being three-fourths of the fiscal year ending July 1, the exports of wheat (including flour reduced to wheat) reached the large aggregate of 145,608,000 bushels, against 139,862,000 bushels for the corresponding period of the previous fiscal year, which had greatly exceeded all former years. Thus, in the face of better crops in Great Britain and the West of Europe, our exports of wheat and wheat flour increased. It is true a lower range of prices has prevailed, and the aggregate value for nine months of this year are about 166 million dollars, against 174 million dollars last year; in other words, nearly six million bushels more wheat have been sold for eight million dollars less money. But if this fact has any significance, it is in demonstrating that at moderate prices we can sell our wheat in quantities that a few years since would have been deemed impossible.

THE DECIMAL SYSTEM IN ENGLAND—THE DIFFICULTIES OF ITS INTRODUCTION.

(New York Indicator)

The advisability of adopting the decimal system of coinage, weights and measures has again been under discussion in the English House of Commons, but without any action being taken with a view to its introduction. The subject came up through a resolution offered by Mr. A. Dilke, to the effect that the adoption of the system ought not to be delayed. The motion was lost, and even an amendment which suggested the reference of the matter to a committee to make further inquiry was defeated by a large majority. The plan suggested by Mr Dilke made but little, if any, departure from the plans recommended on previous occasions when the subject has been before Parliament. It contemplated the retention of the pound sterling as the unit in the coinage, the florin as the tenth and the farthing as the 1,000th of the pound, instead of the 900th part as at present. It was admitted that the great difficulty would occur with the copper currency. A penny would become the 250th part of a pound, instead of the 240th. Mr. Gladstone said he never objected to the introduction of the decimal system, per se, but he had always objected to the alteration of the penny, which, he said, formed the basis of nine-tenths of the transactions of the country. Evidently if the decimal system in coinage is ever introduced into England the penny must be the basis, as being the coin of the people. In such an innovation as that proposed, the prejudices and ignorance of the common people are principal factors to be considered, and as little violence as practicable should be done to established customs. New names should be avoided as much as possible. The naming of the two-shilling piece introduced at a recent period into the English coinage as "florin" was a mistake that had much to do with its unpopularity. The same remark is applicable to the more recent introduction into grain measure of the "cental." It is difficult for an American, used to the simplicity of the decimal method, to appreciate the terribly cumbersome system in vogue in England, but let any American merchant try to calculate the cost of say 10 tons 12 hundredweight 3 quarters and 19½ pounds of any commodity, at £11 16s. 10½d per hundredweight, and he will probably gain a faint idea of the mental wear and tear endured by the trading public in Great Britain in the ordinary transactions of business under the present system. No doubt the change in the coinage would be an exceedingly difficult one to make, yet many other countries have accomplished it. France, the United States, Canada, Belgium, Italy, Holland and Russia have all adapted it with more or less completeness. The difficulties should not be insurmountable in Great Britain. The change is capable of being made gradually, and a step in that direction might be made every year. It is, however, in the application of the system to weights and measures that the chief difficulties would arise. There are over sixty different units in use for the measure-

ment of grain in various parts of England. For these the substitution of the cental was proposed. But the almost endless variety of weights and measures applicable to different trades, and in use in different localities, present difficulties to a substitution of a uniform system with which the average British trader does not care to cope. Could the change be made, however, the advantages that would result are admitted to be great. It was stated in the course of the debate that the trade with countries that used the metric system increased more rapidly than with countries that did not use it, that schoolmasters who had been consulted testified that on an average a child was three times as long learning the present system of weights and measures as he would be learning the metric system, the merchants in the London trade had testified that business was not infrequently lost through the inability of foreigners to cope with the difficulties of the present cumbersome system than which there was none more puzzling on the face of the earth. One of the members taking part in the debate said it would be easier to do away with the House of Lords, and to disestablish the Church of England, than to introduce the decimal system! He also pointed out that the change would involve enormous expense and inconvenience, that, in 1869, evidence was given to the effect that no fewer than 50,000,000 separate weights and measures existed in the country; that this number had, no doubt, since been doubled. The cost of replacing all these weights and measures would probably be between £5,000,000 and £10,000,000. That, however, would only be a mere fraction of the total expense. Every machine would have to be altered, as well as the thousands of mechanical contrivances whose construction was based upon the present system of measurement. Immense sums would have to be expended by every dealer in printing and advertising, so as to educate his customers to the new system. Dealers would take advantage of the change, and the poor would undoubtedly be made to suffer by it. From the tenor of the discussion it would seem as if the proposed change was a work of such stupendous magnitude and difficulty as to deter entrance upon it, and that the idea had better be abandoned as hopeless. And yet this plan of decimal gradation in weights and measures is the only rational one, because it is in accordance with the universally adopted decimal notation. If thoroughly carried out, the facilities it would afford in every department of life are scarcely calculable. For one thing, it is not too much to say that one-half the time now spent in learning arithmetic would be saved, to say nothing of the saving of time in the calculations necessary in all branches of business.

TRADE THROUGH CANADA.

(Montreal Shareholder.)

The Harbour Commissioners and the Dominion Government have done a good thing in removing the greater part of the tolls from the St. Lawrence and Welland Canals. The reduction is rather a sweeping one, as our readers will have seen by the daily papers. We stand now a fair chance of competing for the trade of the great West. An English writer has recently said that "Canada can never do the carrying trade of the West because trade always seeks the most direct route." Our English friend is correct (as he always is) in his logic, but entirely astray as to facts. With a knowledge of the facts his argument would read thus: "Canada must always do the carrying trade of the west because trade always seeks the most direct route," and not only the western trade, but the south-western also, as any one who examines a globe map of the world can easily perceive. The "most direct" route from California, Mexico and some of the Gulf States to England is through Canada; much more than the great west and south-west. But although English writers and map makers generally are ignorant of this fact, Canadians are not, and the Harbour Commissioners of this city and the Government of the Dominion have shown by their recent action in the matter of canal tolls that they also are alive to the enormous advantages we possess.

THE COLONIAL TRADE DELEGATES.

(New York Journal of Commerce.)

We are at last in possession of the resolutions, five in number, which were agreed to after conference held at the Westminster, Palace Hotel, London, by the delegates from the various dependencies of the British Crown. We are not aware whether the delegates were all present, but certainly the resolutions will cause a great deal of disappointment to those of our people, if, indeed, there are any such, as may have anticipated any beneficial result from the conference. For our own part, as we intimated more than a month ago, we felt convinced that no such result would ensue, and we are therefore not disappointed. Fortunately the country will not be put to any expense in connection with the late conference, the gentlemen who took part in them having been in England on other business. The first resolution expresses the opinion that hereafter "in all matters of Imperial or International treaties, where Colonial interests are directly or indirectly involved, an endeavour should be made to ascertain the views of the Colonies, and that proper weight be attached to their opinions." The only

objection that strikes us to this resolution is that it implies that the present policy of the Imperial Government is to conclude commercial treaties with foreign countries, whereby Colonial interests are deeply affected, without such consultation. Is there any ground for such an implication? Has the Imperial Government during the last forty years ever refused to listen to the reasonable representations of the Canadian Government? The course taken regarding commercial treaties with the United States on more than one occasion and the readiness extended to establish High Commissions in its negotiations with France and Spain are sufficient evidence that we are in the enjoyment at the present time of all the benefits likely to be derived from the acceptance of the first resolution. We had occasion to refer very recently to a charge made against the Imperial Government nearly thirty years ago by a Nova Scotia statesman on the ground of want of consultation, and to state that, on the occasion of the negotiation of the first reciprocity treaty, not only was the Governor General of Canada appointed an Ambassador Extraordinary, expressly to negotiate the treaty, but his first act was to invite the Maritime Provinces through their Lieutenant Governors to send representatives to Washington with whom he could consult. Now Bunswick sent the late Lieutenant Governor Chandler, while Nova Scotia on the other hand refused to comply with Lord Elgin's request, and was consequently unrepresented. The second resolution expresses the opinion that it is desirable to form an association in London, to be called the British and Colonial Union, for the consideration and furtherance of inter-colonial trade and trade between the Colonies and Great Britain. We confess that we view this proposition with alarm. The resolution was adopted by delegates, fourteen in number, four of whom were taken from London, and two each from Canada, Australasia, India, the West Indies, and the Cape. We would infinitely prefer that all commercial matters in which Canada may be interested should be referred for advice to the Canadian Government, which is now and is likely to be represented in London. As regards India, it is very fully represented already in the Government, there being a Secretary of State for India having a seat in the Cabinet. In the absence of representative institutions, no better representative could be devised. If we are not mistaken, more than one of the Australian Colonies has a representative in London as Canada has. The West India Colonies are numerous, and it might be difficult to get them to act together, but the principal ones have always had persons in London specially charged to look after their affairs. We are not aware whether the South African Colonies are represented in London, and we doubt the possibility just at present of any harmonious action between the Cape and Natal. The third resolution is intended to provide for the future government of the projected association, which is by means of an elected council, two-thirds of which shall be nominated by the commercial bodies of the Colonies and India, the Union appointing the remainder. The nominated members must almost necessarily reside in London, so that the commercial bodies would really be confined in their choice to the members of the Union living in London. It ought to be noted that "in the representation on the council of the several Colonies and India, their staple industries as well as their import and export trades ought to be taken into consideration." The fourth resolution has for its object the appointment of a deputation to wait on the Secretary of State for the Colonies and for India, to urge upon Her Majesty's Government either the enlargement of the powers of the Royal Commission, or the appointment of another "with the view to taking evidence on the subject of the trade and commercial tariffs existing and in force between Great Britain and her Colonies and dependencies." This is the very point that it was expected the conference would deal with, and it would seem that it is to be relegated to a Royal Commission. What the object is of taking evidence as to the existing tariffs we own that we are unable to conceive. Nothing is more easy than to ascertain what the commercial tariffs are at the present time, and the evidence which it is proposed to procure would be simply the opinions of such persons as might offer themselves for examination to a committee sitting in London. The proposition is simply absurd. The fifth resolution is an expression of opinion in favour of a scheme that the English Chambers of Commerce and Boards of Trade have been urging for years, and which is a Minister for Commerce and Agriculture in addition to the President of the Board of Trade, which is the title of the Minister specially charged with commercial questions. Nothing is more improbable than the creation of a new Imperial department, such as is contemplated by the resolution. We are not of opinion that it is desirable in the interest of the colonies that there should be any Imperial interference with the action of our Parliament and Government, but if a case could be made out there would be no difficulty whatever in confiding to the existing board of trade the discharge of any new duties that it might be desirable to impose on it. The resolutions which have emanated from the conference have fully convinced us that this projected association would be likely to interfere in matters which are properly and necessarily under the control of the Parliament of Canada. Even in days long since gone by, when there was necessarily considerable delay in

communicating with the Imperial Government, such an association as is contemplated would not have been created, and still less will it be so now. Government is able to give its orders in cases of emergency, not only in a day, but from hour to hour, and it should be desirable to obtain information from the other dependencies of the empire, the Secretary of State for Colonies is an infinitely better mode of communication than such a "National Union" as is contemplated by self-appointed delegates, who have not committed themselves to any course we feel assured will never be sanctioned by the Parliament of Canada.

THE TELEGRAPH MONOPOLY.

The telegraph monopoly, perhaps known as the Post Office, is proving any proof were needed, that no Government can be trusted. Tory, Conservative, Liberal, or Radical, are all alike when the law gives them, or leads them to believe that it has given them, unlimited powers as traders. The so-called post office having made a bad and imprudent bargain with the telegraph companies is determined to burk invention and earn an evil reputation as to the champion of everlasting stagnation. The impertinent inventors of the telephone have been made aware of this in a court of law, and are now made even more bitterly aware of it in their subsequent negotiations with the Government.

In the first place they are told they must be taxed, and this is a communication they can hardly be astonished at. Nearly every living thing in this country is taxed except vermin—the child in the cradle, the dying man in his bed. The only thing practically exempt is the corpse in its coffin. However sluggish the Government may be, the tax-gatherer is superhumanly active. A Government that once taxed the light of heaven can see no injustice in taxing a telephone wire. In the second place, impertinent inventors are told that their rights must be limited.

Because the Government wanted millions of public money in 1866, the Telephone Company may carry their wires to Styke-Foggs and no further. The cock-a-doodle-do policy is one department of Government necessitates a money grabbing policy in another. If this Government, that Government, any Government had bought the water companies half of the kingdom would have been dying of thirst, and if they had bought the stagecoach interest railways would never have been built, if built, would have been allowed no further than Hampstead or Cambridge. London Punch.

A NEW ILLUMINATING FLUID.

Highly interesting experiments with a newly discovered mineral essence took place a few evenings ago at the laboratory of the eminent Parisian analytical chemist, M. Wurtz. In the presence of several members of the Academie des Sciences. Having filled the lamp with the liquid in question, and ignited the wick, M. Cordig, the discoverer of the essence, tossed the lighted lamp up against the ceiling, besprinkling the bystanders as well as himself with the flaming fluid, which, however, to the astonishment of all present, proved utterly devoid of heat or burning capacity. He then soaked his pocket handkerchief in the essence, and set it on fire; the essence burnt itself out, but the handkerchief remained unharmed, as did his hat after a subjection to a similar trial. Then M. Wurtz, Damas and Friedel plunged their hands into a pan filled with the burning liquid, withdrawing them with fingers all aight, like so many thick jets of gas. They experienced no sensation of heat whatever upon the skin surface thus apparently in a state of active combustion. Other experiments followed of an equally wonderful nature, conclusively demonstrating that the "Kordig Essence" is capable of producing light without heat. All that is at present known of its special physical characteristics seems to be that it is a thin and colourless oil, evaporating with great rapidity. Its discoverer proposes to adapt it to general domestic use for lighting purposes, its chief recommendation being absolute harmlessness, for it is altogether incapable of exploding, and may be poured while burning upon the most delicate textile fabrics without the least risk of igniting the substance. London Telegraph.

At the annual meeting on Monday of the stockholders of the Bank of New Brunswick, the old board of directors were re-elected. The bank declared a dividend of four per cent. from the 1st of April, at which time the profits amounted to \$341,893.

A device for warming bedrooms, offices, etc., by gas, has been brought out by Messrs. Billing & Co., High Holborn, London, in the form of a new portable gas fire, intended to take the place of the ordinary coal fire baskets, but is made of a different material, so that it is said a really good effect is obtained with a small consumption of gas. Each fire is supplied complete with asbestos fuel, elbow, connector, or, nose piece, etc., and being portable the fire is easily adjusted to any grate. They are made in two sizes, the smaller which sells for \$2, consuming 12 feet of gas per hour, and the largest size, \$3, requiring a consumption of 16 feet of gas per hour. This description of fire is both cleanly and economical.



TORONTO PRICES CURRENT.

Table of current prices for various commodities including Groceries, Hardware, and Drugs.

Table of current prices for various commodities including Paints, Hides and Skins, Leather, Produce, and Provisions.

WEEKLY REVIEW.

Toronto April 4th, 1891

The weather during the past week has been delightful and business generally has been active. Navigation has not yet thoroughly opened, and business to some extent is retarded in consequence.

Wheat—The market has been very quiet the demand being restricted to filling of actual orders. The wheat is being held with a bid to arrive for round lots.

to conduct a business there are another class of qualifications which open a very wide field for study and observation. A man must be acquainted with the goods he buys and sells.

Table titled 'THE REVENUE' showing comparative statements of the revenue of Canada for the months of April, 1880, and April, 1891.

A company has been formed at Belleville for the purchase and management of a driving park. A recent investigation discloses that Croton Lake, the source of New York city's water supply, receives the refuse of barn yards, pig pens and slaughter houses.

Advertisement for 'THE WOOL HOUSE. WINANS & CO., 13 Church Street, Toronto, Manufacturers of Woolen Goods.'

Advertisement for 'CASTORINE OIL MACHINE' and 'ASTORINE' products, manufactured by the 'TANAPCO OIL CO. TORONTO.'

The statement of assignees of the Consolidated Bank for April, shows the liabilities have decreased \$1,500 since the previous month.

SCIENTIFIC AND PRACTICAL.

DR SIEMENS' GAS AND COKE LAMP.

At the Royal Dublin Society, recently, Dr Siemens made a communication on his new gas and coke lamp. The author pointed out the objections to the common plan of heating rooms by means of coal in an open grate. This system is, perhaps, the best economical that could be employed, as a very large portion of the fuel is distilled up the chimney. It has also the objection of most seriously vitiating the atmosphere of our cities. Already the vitiation of the atmosphere of London has become a most serious difficulty. Dr Siemens' proposal is to burn coke with the acid of gas, thus the smoke difficulty is at once overcome. He substitutes for the bars at the bottom of the ordinary grate a plate of iron attached to a copper plate at the back. To the copper plate is attached an arrangement for conveying heated air to the front of the grate, where it impinges upon a row of gas jets. This arrangement is highly efficacious, and has the effect of withdrawing useless heat from the back of the grate and making the front correspondingly hot. The author found that with a moderate expenditure of gas an excellent smokeless fire is maintained at a cost slightly exceeding that of the common coal fire, but if much gas be consumed the fire becomes costly. He pointed out that the true solution of the problem of domestic heating is in the direction indicated by Dr Siemens, but that we must obtain gas specially manufactured for heating purposes. Such gas could be procured and supplied to the public at a cost much less than that of illuminating gas. A company in Berlin has proposed to supply a heating gas at about 7d per 1,000 feet. With such gas and Anthracite as the solid fuel, Dr Siemens' grate would be almost perfect.

THE MANUFACTURE OF SODA FROM SALT.

This is a topic which has engaged attention in Godolphin to some extent in former years, but nothing definite or tangible has ever been done, so far as we have been able to learn. A recent number of the Lumbermen's Gazette, published in May City, furnishes some interesting statistics as to the magnitude and importance of the industry, and suggests the inquiry, can such a manufactory not be established here and made a paying concern? We believe there is no such establishment in either Canada or the United States, which seems a strange fact when the huge proportions of the trade in the various sodas is considered. Soda, or more correctly, carbonate of sodium, occupies the chief place among the leading chemical manufactures, from its own importance, and on account of its influence in other great chemical industries, such as glass making, soap making, bleaching, etc. Its chief source of supply is in its manufacture from common salt. The process was invented by Leblanc, and was first made known in 1794. It is regarded as one of the most valuable discoveries in the whole range of scientific manufactures. The process now used is substantially the same as Leblanc's, and it has become one of the most important chemical manufactures in the world. The object of the soda process is to separate the sodium of the salt, and unite it with oxygen to form caustic soda, or, what is more commonly done, to unite the sodium with both oxygen and carbonic acid, to form carbonate of sodium. A Pennsylvania company, near Pittsburgh, manufacture soda from the mineral cryolite, which is a double fluoride of sodium and aluminum. In addition to what is found there, they import from 8,000 to 10,000 tons a year. Half a million dollars is invested in the works and they employ 500 men. The various manufactures from cryolite have a market value of over \$2,000,000 a year. Dr. Farigues, Michigan State Salt Inspector, in advocating the erection of works in the Saginaw Valley, gives figures showing the imports into the United States from 1871 to 1878, of bicarbonate of soda, sal soda, and soda ash, every pound of which he says is made from salt. The imports of bicarbonate in 1878 were 3,902,614 pounds, representing \$96,344; in 1871 the imports of carbonate, including sal soda and soda ash, were 171,548,933, and the value \$2,628,963, but in 1878 this had increased to 233,343,440 pounds, and \$3,385,569. The total imports of the carbonate for the eight years were 1,874,147,482 pounds, valued at \$29,090,298. The importance of the trade in Canada is shown by the Trade and Navigation Returns for the fiscal year ending June 30, 1880. In that year there were entered for home consumption, 2,032,068 pounds of bicarbonate of soda, valued at \$41,292. A duty of 20 per cent. on this paid \$8,258. The imports of nitrate of soda, soda ash, soda caustic, sal soda, and silicate of soda, on which there is no duty, amounted in the same year to 14,537,891 pounds, valued at \$277,439. These articles are all made from common salt, and could be manufactured to better advantage here than in the United States, on account of the superior purity and strength of our brine. At present this immense supply, both for the Dominion and the States, is drawn mainly from English markets, but the question might fairly be asked, why cannot Canada supply at least its own demand and, possibly, compete for the American market? That the question is not an empty one, is shown by the

consideration it has received in past years, and we think such an industry might fairly claim and receive the protective tariff equal to other manufactures. A consideration and discussion of the matter would prove interesting to the public and we should be glad to add such in any way possible. Will some of our citizens or salt manufacturers speak on the matter, *—Lumbermen's Gazette.*

FIGHTING OF MINES BY ELECTRICITY.

Our views on this subject, expressed in the Journal, as to the lighting of the roads and working places in which by electricity, appear likely to be realized at a much earlier period than we anticipated. The system is about to be tried on an extensive scale by one of our largest Scotch colliery owners, and the result, we need scarcely say, is looked forward to with a great deal of interest, especially by those connected with the coal trade. Its successful application will affect several trades, for no safety lamps, wicks, oil, and several other materials will be required; but at the same time it is not to be supposed that the success of the electric light in our mines must necessarily lead to the entire prevention of mining explosions. Such could only be even partially effected with respect to mines where no blasting was allowed, but where powder was used there would always be the same danger of the flash coming in contact with the accumulated gas and exploding it. But lamps, there can be no question, have led to many serious disasters, either from being defective, open, or being surrounded with the fine particles of coal dust, which it has been found is capable of igniting. Safety lamps, too, are frequently opened by the miners for several purposes, but this source of danger would be done away with by the adoption of the electric light. And then there is the danger arising from the recklessness of many miners, who, undeterred by past calamities, will indulge in smoking in their working places, in spite of the heavy penalty which they have to pay if discovered. We point out these things to show that too much should not be expected of the electric light in the event of its being successful in doing away with lamps in our mines. If no other influences are used we shall, in all probability, hear of comparatively few explosions on the same scale we have had to record for many years past, whilst the advantages to the miners will be considerable. In coal mines in particular a man will be able to see the straight line in which to work the point of least resistance, and in many instances will be able to bring down 50 per cent. more coal than he did when he had to depend upon the dim light of the safety lamp, whilst the miner will also be able to do his work with much greater rapidity and cleanliness, so that there will be a marked increase in the production of coal in a given time. Coal will thus be brought to the surface at a much lower rate than at present, whilst the position of the miner will be improved by the increased get. Such will be the benefits resulting from the successful application of the electric light in our coal mines. But in connection with it there are also dangers that will have to be avoided—that is, to our confidence that it is a specific against everything in the shape of danger that may arise from almost any known cause. It has been said that many miners provided with a safety lamp consider that they are armed against every possible danger known in mining operations, so that it is quite likely they will come to the conclusion that the electric light having superseded the safety lamp, they can with it dare almost anything. But electricity will not prevent explosive gas from accumulating in a mine, so that the lighting of a match or the spark from a tobacco pipe will still be as dangerous as ever, so that the strictest discipline should continue to be maintained in all our mines, so as to prevent breaches of the rules that could in any way lead to accident. It injury caused by negligence or recklessness can be so designated. Then there should be no neglect of the ventilation in consequence of the introduction of a new element capable of giving increased security to the miners, but one that cannot be looked upon as a safeguard against all the incidents that occur in a mine and lead to accidents of a more or less serious character. Where blasting is carried on and gas is given off there will be same danger as formerly, so that the ventilation should be maintained to its highest point. Even in mines where little or no gas is given off, the ventilation should be kept up so that the working places should be kept in a healthy condition. Subterranean works can only be made really healthy by diluting the injurious gases in a sufficient mass of atmospheric air, the active and continuous current of which draws them into the open air. Besides carbonated hydrogen or fire-damp there are other gases in mines, which if not diluted with a strong stream of pure air from above cause many dangerous maladies, with which workmen are often attacked after passing a certain time in an atmosphere charged with them. In mines, too, there are escapes of gases including carbonic acid, proto-carbonated hydrogen, either pure or mixed, miasma, and in lesser quantities sulphuretted hydrogen, carbonic oxide, sulphurous acid, mercurial or arsenical vapours in the mines of those metals; and all of these require to be rendered even comparatively non-injurious by a constant supply of fresh air from the surface. In thus noticing the introduction and probable success of the electric light for mining purposes, we

also wish to point out that too much must not be expected from it, and that it would be the highest degree reprehensible and dangerous for the managers of mines to relax in the slightest degree the thorough ventilation of the working and other places, and seeing that the special and other rules were carried out with the greatest strictness. By such means only can safety be assured to those engaged in the mining operations, even with the electric light.

A PUZZLE FOR THE DOCTORS.

From the Louisville Courier Journal. A most extraordinary natural accident and one for the discussion of physicians came to light a few days ago, in which a needle taken into the foot of a lady nine years ago works out to the thigh of her third child, a boy of one year. The lady in question is the wife of Mr. Harry Isaac, the cigar maker, who lives on Market street, near Walnut. At the time of the accident Mrs. Isaac was unmarried, and was then Miss Fantine Cullena. The needle was encountered in the carpet and penetrated her foot to the full length. A physician was called in immediately, but the needle could not be found, although it was known to be in the foot. She said she felt great pain, and for four months was unable to leave her bed. During that period three physicians made frequent attempts to extract the needle, and the knife was used extensively, however, without success. Miss Cullena was quite fresh before the accident, but fell off greatly from her long confinement. At length she was able to get about with the aid of crutches, but she continued to suffer from the needle. The pain decreased gradually from the time she was able to get about, and she regained her former health. Finally she felt the needle only at periods, when there was a change in the weather. The movement of the needle seemed to be upward, and the point was not stationary, but moved with the needle. About five years ago she was married to Mr. Harry Isaac. Three children are the fruits of their union, the youngest of which is a boy named Arthur, who is about a year old. The pain which troubled the mother left her even before the birth of her child, and the total disappearance of the pain she was wont to feel was a subject of remarkable pleasure to her. On Monday a week ago her baby, who had since its birth exhibited a kindly disposition, was very restless and cried incessantly all night. The cause of the child's ailment was not discovered until the following morning, when, in giving it a bath, the mother discovered something black protruding through the skin of the child's thigh. She caught hold of it, and was frightened when she found the thing of a pointed substance. She, however, used a little force, and soon extracted the dark object. Imagine her surprise when she found it was a needle, black and corroded. The eye broke off in her hand while examining it. The recollection of the needle, which had caused her much pain, came vividly before the mother, and she felt keenly for the child. The remembrance of her relief from pain also forced itself on the mother, and the connection of the two served as a clue as to how the needle came to be in the child's thigh. The mother says it would be almost impossible for the child to have taken up the needle without her finding it out, as the child would have made it known in piteous cries as it did when the needle worked out.

A SUBDIVISION OF THE ELECTRIC LIGHT.

[London Times, April 12.] A very ingenious and simple method of subdividing the electric light has just been effected by Mr. J. Bunting Rowena, of St. Clements House, Lamata street. It effects the subdivision thoroughly, and the system may be familiarly represented by a tree with its trunk or stem, from which radiate the main limbs, which again bear branches, from which in turn shoot the twigs. Taking the producing power, which in the present instance was a bichromate battery and a half-inch coil, the conductors, positive and negative, were led from the two poles, each to an accumulating box containing divided apparatus, which is said to be capable of effecting eighteen divisions of the main current, although only one wire was used in the experiment, that being sufficient to illustrate the principle. This single wire was carried from each of the two accumulating boxes to a dividing box, and from this box again eight pairs of wires could have been led to eight other boxes for a further subdivision of the current, but five pairs were considered sufficient. These five pairs of wires were led to five other boxes, one pair to each, where the current was further subdivided. From these boxes it was stated that no fewer than twenty-eight circuits could have been formed had the battery power been sufficient, but as it was not wire forming nine circuits only were used. On these nine circuits twenty-seven vacuum tubes represented so many lights—three on each circuit—which were all supported from the one battery. The circuits were detached one by one without interfering with the lights on the remainder. The details of the invention are of an exceedingly simple character. So far as the experiment went it satisfactorily demonstrated that the electric current could be divided, subdivided, and again subdivided so as to render the light available for the smallest apartment.

RAILWAY MATTERS.

CLIMATIC CONDITIONS AFFECTING RAILWAYS AND SETTLEMENT.

While the experiences of the past winter all over the continent of North America show it to have been rather an exceptional season, it is none the less gratifying to find that Manitoba and the Canadian North-West have been as free as usual from interrupted communication. They have suffered it is true, by the frequent suspensions of railway traffic in Wisconsin and Illinois, in one case eight days having elapsed without any mail from the older provinces being received at Winnipeg. A deprivation which was keenly felt by business men. The extent of the inconvenience may be judged when we say that on the raising of this (the first) serious snow blockade south of St. Paul no less than 162 sacks of mail matter for Manitoba came to hand in a single batch. The period during which the most formidable interruptions took place was in the months of February and April, and varied in length from eight days to one or two. In no case was the railway between Winnipeg and the boundary blocked; and only once or twice was there delay to trains between the boundary and Glyndon, the point where the Northern Pacific crosses at right angles the line of the St. Paul, Minneapolis & Manitoba Company. There was more frequent trouble between Glyndon and St. Paul, but the most serious obstruction of all was invariably between St. Paul and Chicago about forty-five miles north of Chicago. Drifts were in some places deeper than the height of the cars, and in others even the telegraph poles were covered completely. The loss on freights and in clearing the tracks, as well as by the locking up of an immense quantity of rolling stock, has been something enormous, as all it was possible for the railway authorities to do was to clear the main line, many an unfortunate train of freight cars being left snowed up for weeks on the sidings. In Iowa, Nebraska, Wisconsin and Illinois, the expense of operating the roads since Christmas has been unprecedented; although bad 'blocks,' inflicting not only serious loss upon the railway companies, but hardship and privation among the settlers, were not previously unknown. It should be well understood that the northern portions of Minnesota and Dakota, the United States territory contiguous to the Canadian possessions, have been generally free from disaster, like the favoured region north of the boundary line, but the experience of settlers in the northern districts has been most pitiable. In Iowa, many of the people are accustomed to depend for fuel upon the soft coal of the locality as laid down for them by the railways. The roads being everywhere blocked, the supply naturally gave out, to the extreme inconvenience and danger of all concerned. West of Fort Dodge the farmers offered \$1 per bushel for corn to burn, while hundreds of bushels lay un-picked in their own fields, covered with snow that lay in drifts as high as the corn stalks. The same distress prevailed in southern Dakota. Near Brita, a small town on the Milwaukee and St. Paul railway, the farmers had to burn their household furniture in order to keep their families alive, and even cabinet organs were not exempted from the holocaust. In other localities in Dakota, the people were obliged to burn their houses, two or three families would move into a single dwelling, and use up the abandoned houses for fuel. In any village where there were lumber yards, the farmers came in and cleared out every board, in most cases undertaking to pay when able to do so. The dealers effected no opposition, knowing it would be useless in face of the controlling emergency. The possible recurrence of the interruption by snow of the railway traffic of the North-Western States furnishes yet another urgent reason for the early completion of the Canada Pacific road, as with the difference of climatic conditions existing, it is not likely to frequently happen that both routes will be simultaneously obstructed by snow. Throughout the prairie region on Canadian territory, there is reason to believe that the railways are reasonably safe from trouble of that kind. The snow is always so fine and dry that the wind keeps the track clear, provided the road beds are graded a foot or two above the level of the surface of the country, and if due care be taken to cut down all out-lying bushes and weeds that might serve as the nucleus of a drift to the intending settler. It is all important to feel assured that climatic conditions and past experience of settlement in the Canadian North-West justify the positive belief that a really inconvenient snowfall is not within the probability, but that an almost absolute certainty of uninterrupted railway operation throughout the year may be safely depended on. *—Monetary Times.*

The pooling arrangement of the Central Vermont and South Eastern Railways has been perfected and signed by the President of each road. It was a retrospective effect coming in operation from the 1st of April.

The town of Dartmouth agreed to vote \$1,000 per annum for twenty years to any government or company that would build a railway of eight miles, connecting Dartmouth water-side with the Intercolonial.

The aggregate traffic receipts of the Canada Central Railway for the fourteen

weeks ending the 14th of April was \$125,000, against \$71,000 for the corresponding period last year. The railway operated now as in 1877-78.

New York is to be included in the states in which railway enterprises are active, no less than 62 corporations having been organized during the past year, a number in the same period of the history of the state. Most of the projects, however, are for comparatively short lines.

The little seaside roads near New York did a wonderful business last year. The New York & Manhattan Road carried no less than 1,227,000 passengers, the Brooklyn, Bath and Coney Island Road, 700,702, and the New York & Sea Beach Road, 400,000. Although charging low fares they all made money.

According to the report of the New York State Engineer, the steam railroads in that state represent an investment of \$905,507,000, but their dividends during the last year amounted to only \$14,000,000 or 2 per cent; while the horse roads, with an investment of \$12,000,000, paid in dividends \$2,460,000, or 20 per cent.

The report of the State Engineer of New York shows that the capital stock of the railways of that State amounts to \$437,000,000. The dividends paid in 1880 were \$18,070,000, an average of only about 4 per cent. Most new railroad companies were incorporated in that year, and in previous twelve months in the history of the State.

The traffic receipts of the Great Western Railway of Canada for the week ending April 27th, 1881, were—

Table with 2 columns: Item and Amount. Passengers \$85,700; Freight and live stock 1,200,000; Mails and sundries 100,000; Total \$1,385,700; Corresponding week last year \$1,200,000; Increase \$185,700.

The Chesapeake & Ohio is taking rapid strides toward the destiny its promoters had in view. In a short time it will have rail connection with the west and will enter the field as a trunk line to the seaboard. It has secured all traffic managers and will make a strong fight for through business. That it is capable of development into one of the leading avenues of trade is indisputable.

Under the new railroad assessment bill the taxable value of railroad property in Tennessee will be increased from \$10,000,000 to \$50,000,000. It probably is not claimed that the actual value of property in general has increased more than three fold in Tennessee within a few years, but the legislature seems to think that 'watering' railway property for purposes of assessment solely is a good thing.

An agreement between the Central Vermont and South-Eastern railways was signed at St. Albans by the president of each company on April 27. It takes effect from April 1st. The immediate effect will be the abolition of local scalpers, necessitated by the opposition which formerly prevailed, and saving to the company of large sums of money spent in competition for business. It is said that a reduction will be made in the rates to the public.

Railway consolidations are not always an unmixt evil, at least as the stockholders of the Georgia railroad thought when their shares advanced in a few days from 130 to 150 on account of the lease of the road to the Georgia Central interest—an increase in value of \$24,000 on the \$1,200,000 of capital stock, and it is claimed now that the stock is worth 175. A somewhat similar move in the case of the New Haven & Northampton road sent the stock from 37 to 108.

Mexico is undergoing a wonderful transformation at the hands of American enterprise and capital. It is estimated that in the incredibly short space of seven months \$68,000,000 has been invested in railways and mining enterprises from the United States, and it is said that the Spanish organs and some of the Mexican journals continue to utter warnings against the influx of Americans. This is a strangely shortsighted policy, and events will shortly prove its unwisdom.

A Grand Trunk meeting was held in London on Thursday. Sir Henry Tyle, Chairman, considered that the carefully prepared statistics of the company showed conclusively its satisfactory position. The report was unanimously adopted. The Board of Directors, supported by the proprietors, came to the resolution that so long as the Great Western is bound by the agreement which it proposes to make with the Wabash and St. Louis and Pacific it is better for the Grand Trunk, in its own interests, to decline to consider an arrangement for fusion with the Great Western.

A convention of the railroad commissioners of the fifteen states having such officers is proposed by the commissioners of Alabama and Kentucky for the purpose of devising a statute for railway regulation applicable to all the states, and to consider other matters. Such a convention ought to be held at least every year. There is no class of men who need to understand all the intricacies of the railway problem more fully than state railway commissioners, and yet from the method of their selection many of them are painfully ignorant of the whole subject. A comparison of views and facts ought to be of great advantage in promoting intelligent and uniform action.



MINING NEWS.

LAKE SUPERIOR MINES OF LAKE SUPERIOR

The operations have not been... At the Silver Lake... The principal operation has been... The shaft is down about 70 feet... The work will be done with energy.

MINING VENTURES FAIL.

Back Hall, in the mining department... The Denver Tribune gives some of the reasons why so many so-called mining enterprises fail... The London office than to run the mine...

MINERAL WEALTH OF NOVA SCOTIA

Nov Scotia is one of the most desirable countries in the world for mining operations... The mineral wealth of Nova Scotia is abundant... The country has been gutted to quite a large extent...

were finally abandoned altogether... At New Brunswick... The history of German men... The history of German men... The history of German men...

AMONG THE GOLD FIELDS OF NOVA SCOTIA

Keena Henry A. Foster, Esq. B. Esq. and Wm. J. Johnson left Bangor on Friday, March 25th... The gold fields of Nova Scotia... The party passed some time in Halifax...

MINING, PAST AND PRESENT

(Yale Inland Sentinel.) Within the last few weeks quite a number of "old time" miners have put in an appearance at Yale... The mining business here or vicinity, unless attracted further up the Cariboo road...

South of the Ouelina River... A queer place was this mining camp of German men... The history of German men... The history of German men...

THE DEEPEST COAL PIT IN BRITAIN

After six years of patient toil, involving a deeper descent into the bowels of the earth than has been reached by any similar effort... The Ashton Moss Colliery Company have, within the past few days, achieved the object of their desire...

DEEP MINING

Professor C. E. Avery has given this subject considerable attention... The question is often asked why silver mines usually grow richer as they go deeper... Facts are worth more than theories...

THE DEEPEST COAL PIT IN BRITAIN

After six years of patient toil, involving a deeper descent into the bowels of the earth than has been reached by any similar effort... The Ashton Moss Colliery Company have, within the past few days, achieved the object of their desire...

about 250 yards... In comparison with other pits, the Ashton Moss Pit, as already stated is the deepest in England... The workings and borings have penetrated to a depth of 1,050 yards...

Though the presence of gold in pyrites has long been known... The cost of extracting has, until lately, rendered the operation unprofitable... An important discovery has been made which solves the difficulty...

That there are several other crops of coal at Cariboo, at a distance of three or four miles from the town of Pictou... The coal lies beneath the surface in a yet undiscovered...

The North Shore Mines of March 23 reports that in the Duncan mine at the 7th level, they have struck native silver... The lead appears to be stronger than that found at the shaft at this depth...

The customs revenue of St. John, N.B. in April amounted to \$118,010, compared with \$36,529 in the same month last year.

The public debt of the United States on April 1, 1881, was \$1,873,763,093, less cash in the Treasury...

The annual report of the managers of the American Steamship Company showed a deficiency for the year 1880 of \$17,510 15...

The Pittsburgh Commercial Gazette for April 14th says "The Western Nail Association held its annual meeting at the rooms on Fourth avenue yesterday...

MONTREAL PRICES CURRENT.

Table of Montreal prices for Groceries, Syrups, Molasses, Fruits, Spices, and Liquors. Includes items like Congoa, Java, Sugar, and various oils.

Table of various goods including Beans, Flour, and other commodities. Lists items like 'Beans, Broad', 'Flour, Superfine', and 'Rice' with their respective prices.

Table of Drugs and Chemicals, Window Glass, and other specialized goods. Includes items like 'Alumina', 'Sulphuric Acid', and 'Window Glass'.

Table of Raw Furs, Leather, and Boots and Shoes. Lists items like 'Bear, cub', 'Horse Hide', and 'Boots, Men's'.

Weekly Review section containing market analysis and news. Includes sections for 'Weekly Review', 'Market Review', and 'Local News'.

Advertisement for Napanee Blanket Mills. Features the text 'NAPANEE BLANKET MILLS' and 'Special to the Trade: Constantly on hand WHITE BLANKETS, SHANTY BLANKETS, HORSE BLANKETS, ETC. ETC., ETC.' along with contact information for Arthur Toomey.



ART ASSOCIATION OF CANADA

The annual meeting of the above association was held Thursday evening in its rooms Victoria Chambers, the President, Mr. J. C. Justice, Ritobio in the chair.

The following report was read by the Secretary: The President and Executive Council of the Art Association of Canada have the honor to present their report upon the progress of the society during the past year.

At the annual meeting of the association held on the 15th of May, 1900, the art school established here had been in working order for one month only, under temporary arrangements for tuition and with pin-board walls.

During the past six months the work of the school has been steadily carried on, classes being held every morning and every alternate evening, except for a brief interval at Christmas and classes for study during the life being held on two afternoons each week.

In addition to the classes under the care of Mr. Brynner and Mrs. Cox a special class of design was formed, conducted by Mr. Walter Chaberton and Mr. John W. H. Watts, both Associates of the Royal Canadian Academy, whose services, kindly and gratuitously rendered, have been employed with great advantage and with every prospect of more extended interest in the object sought to be attained.

Recognizing the immense importance to art students of some practical teaching in the subjects of the anatomy of the human form and anatomy your Executive took steps to call in the assistance of those in the city best qualified to impart knowledge of these subjects, and, thanks to the kindly interest shown by members of the medical profession and others, have been enabled to carry out two courses of lectures, commencing throughout the session upon "Anatomy in relation to Art," conducted by the following gentlemen:—Dr. H. P. Wright, Dr. B. Small, Dr. Powell, Dr. Prieval, Dr. Rogers and Dr. Hill, and the other upon "Structural Anatomy," conducted by the Rev. Dr. Kemp and Mr. James Fiebert. It is felt that the very hearty thanks of the association are due to these gentlemen for the generous and painstaking way in which their most valuable services have been devoted to the furthering of the objects in view.

The number of pupils taught during the season has been sixty-four, a number which while affording satisfactory evidence of the importance of such an institution in our midst, and of the appreciation which has followed the efforts of the association to supply a very urgent need, will, it is confidently believed, be largely increased when the school resumes its work next winter.

With regard to the financial position of the association, your executive have to report that the Treasurer's books, audited by Messrs Herbert O'Meara and G. H. Barrett, show as follows:—

Table with financial data: Total expenditure for the year, Total receipts for the year, Balance in hand at commencement, Balance in hand.

Sketches from Life—President's prize, Mr. A. Fiebert

Drawing from the Cast-1st prize given by Mr. Alan Gibson, 1st Vice-President—Miss M. Johnson, 2nd prize, given by Col. Dennis, 2nd Vice-President, Mr. F. Checkley.

Designing—1st prize, given by Mr. Jas. Goodwin, Mr. Mont. Hargreaves, 2nd prize, given by Misses J. H. Watts and W. Chaberton—Miss E. H. McLaughlin.

Your Executive have to report that, in accordance with the terms of a motion carried at the last annual meeting, a committee, then nominated, did consider the question of the title and title of the association, and also the several provisions of the constitution and by-laws with a view to their alteration, if deemed advisable.

Your Executive have to report that in accordance with a motion carried at the last annual meeting, a petition was duly prepared, bearing also the endorsement of the Mayor and Corporation of this city, whereby it was sought to obtain for our Ottawa Art School that pecuniary assistance from the Government of the Province of Ontario, which has been accorded by it to other similar institutions in Western Ontario; that notwithstanding the fact that reason was given for the confident expectation that such aid would be afforded, information has been received within the past few days only, that it is not proposed to grant such assistance.

Your Executive, however, feel that this decision can only be due to lack of full appreciation of the nature of the work done in the school, and its value as an educator in every sense deemed desirable by the Ontario Government; they, therefore, do not abandon the hope that a reconsideration of the matter may result more favourable.

Your Executive have to report that the kindness of His Excellency the Governor-General has placed at the disposal of the school, temporarily, a valuable collection of rare etchings, besides water colour drawings, which have been utilized for purposes of study. They have also to report the receipt of a further donation of \$50 from Mr. Allen Ulmshour and \$10 from Mr. Thomas Scott.

ESQUIMALT GRAVING DOCK

The contractors for the graving dock at Esquimalt are making rapid and satisfactory progress. They have just commenced excavating for the pier, and in the course of a few days rock excavation for the caisson berth will be started. The tunnel for pumping out and filling the dock will be nine feet below the present level. At Millstream the contractors are opening up an extensive brickyard. Nearly 3,000,000 bricks will be required in the construction of the dock. The clay is of a superior quality and will make a first-class brick. The yard is situated near to Muller's tannery, right on the water's edge, and an incline is being constructed to convey the bricks from the kilns to the scows, which will be towed to the dock site by the contractors' steamer Lottie Water, which will be hauled from Big Tacles Lake to the brick yard, will be carried by the steamer to the dock for the purpose of making concrete. The manufacture of bricks will afford employment to upwards of 20 men, for winter accommodation the contractors are now erecting a boarding house. At present there are about 60 white men employed in the construction of the dock, and the site of the work, next to the railway, is the busiest hive of the province.

ELECTRIC LIGHTING OF LONDON

One of the largest and most complete experiments yet attempted in the application of electricity to street lighting will begin in the city of London to-night. The preparations have been going on for some months, and if the performance is as all equal to the promises some of the chief thoroughfares will be seen under the blaze of such an illumination as has never shone on them before. Our experience of the public use of the electric light in London has hitherto been very partial. The Jablochkoff lamps, which were tried some time since on the Holborn Viaduct, and which now make the footpath on the river edge of the Thames embankment and the whole of Waterloo bridge the best lighted thoroughfares in London, are kept in only a part of the

night, and have a kind of gaslight background. In and about Palace yard, where the Brush system is adopted, the gas lamps still have a considerable share in the brilliant effect produced. But in the parts of the city where up to the present experiment the electric light is to stand alone. It is not to burn only for a few hours in the evening, but all night, and as soon as it is found that the arrangements are complete the gas will be left unlighted. This is hardly the only condition under which the utility of the new light can be fairly tested. As long as it is considered needed, or even desirable, to keep the gas in readiness that it may be taken back upon the failure of the electrical apparatus, the electric light will not be practically available for general use. The first necessity of any system of public illumination is that it shall be trustworthy. If by any mischance all your lights go out, it is better to trust to kerosene methods, which, though they may never give much light, will never leave you entirely in the dark. We believe that the present systems of electric lighting have surmounted this difficulty, but the proof has to be publicly given by a prolonged test such as is now to be applied. The machinery is as complete as it can be made. No coal has been spared. The lofty erections at various corners, which remind the citizens of the distance of a goal of a railway, are as firmly placed and as elaborately constructed as though they were meant to last for a generation. They will carry the vast lamps, of many thousand candle power, which the Siemens system combines with lamps of lower elevation. The space opposite the Mansion House, Guildhall Yard, and King Street, the Poultry, Cheapside, up to Aldgate Street, King William Street, Abchurch Lane and London Bridge will be thus lighted. The Brush system will take Blackfriars Bridge, New Bridge Street, Ludgate Circus, and Ludgate Hill, St. Pauls Churchyard, and Cheapside down to King Street. The district lying between the other two and the river, which was originally appropriated to the Jablochkoff Company, has been given up by them, and at the end of next month will be lighted by the Lontin lamps, which were first introduced in this country by Mr. Hollingshead, opposite the Gaiety Theatre, a few years ago.

Should either of the systems now set up in the city accomplish all that is expected of it the streets will present a very brilliant spectacle at night. So long as the shops are open there will be some contrast between the gas light inside and the electric light outside, and the one will look yellow and the other blue according as the beholder goes in or comes out. The gas light looks yellow to the eye that has been adjusted to the electric light, while that in its turn looks blue and cold after gas. But the one thing which will strike everybody, unless the system breaks down completely, will be the completeness of the lighting in the streets. We have never yet accomplished more than the illumination of the pavement and the roadway, we are now permitted streets full of light. The house fronts and the public buildings will be visible as they rarely are even by day. The great lamps which are to shine down on the Mansion House, the Bank, and the Exchange will bring out the architectural features of those structures, and of the handsome buildings by which they are surrounded, with striking effect. It will almost be needless to visit the city at night in order to see it. As dwellers in central London know, the veil which covers it by day is drawn back before midnight, and till the kitchen fire are lighted in the morning the air of London is probably clearer than that of any part of the kingdom. Mist of any kind is the rare exception in Cheapside or Fleet Street in the night. In the light of early morning in the mouths when the sun is up earlier than the cooks and the house-maids, London is a new city. In this clear night atmosphere when the smoke has cleared away, the effect of a complete illumination of the streets will be most striking. It will bring out now and unexpected beauties in a city which probably contains as many fine buildings as can anywhere be found within a similar area. At an earlier period of the evening the convenience of business and traffic must be immense. Light means security, and Londoners will probably feel that more light is worth paying for in that sense alone. The question of cost is, however, not the one on which it is likely that the electric light will break down. If it is really found that the streets can be flooded with light at night without dazzling and blinding those who are about in them, the advantages of such an illumination will be so great that it will be as impossible to return to the existing gas lamps as it has been to go back from gas to oil.—Daily News, March 31

It is understood that two new Clyde built steamers specially fitted up for the fruit trade and carrying large refrigerators will run next season from October to the end of April, between the ports of Annapolis, Halifax, and London.

The first raft of the season left here on Thursday last, being Mr. James Findlay's timber, which was brought down from Chalk River, per Canada Central Railway, and rafted up here. It was composed of 680 pieces of white pine and 649 pieces of red pine.

LARGE EXTINCT REPTILES IN A BELGIAN COAL MINE.

A very remarkable discovery of fossil remains of the Iguanodon was lately made in the coal mine of Bernisart, not far from Peruwels and Conde, near the Belgian-French frontier. According to the communications made by Messrs. Dupont, Gosselin, and Von Dehon, the coal measures are found there 101 metres below surface under a cover of cretaceous strata belonging to the Turonian section. The coal measures have, however, no even surface, they are, on the contrary, furrowed out by valleys of unknown depth and of over 200 metres width, and in one of these subterranean valleys the Iguanodon remains were discovered at 322 metres from the surface, or 221

metres from the Turonian embedded in clay. The age of this clay which fills the old valleys of the coal measures is computed to be that of the Wealden clay, or of the fault formation of England, as the remains of a fossil tree, *Ficus*, were likewise found. M. Dupont's opinion is that this particular valley is only a branch of the great valley of the Holoine which was filled up during the cretaceous period. The valley was once traversed by a stream with plenty of fish, and surrounded by high forests, under which turtles and small lizards found ample food. Such a haunt must also have been particularly well suited for these voracious *Saurians*, which occasionally may have perished in the floods of clayish mud which now and then swept through the valley, and in which we now find them preserved. These large reptiles, which were from 30 feet to 40 feet in length, are therefore not content paranoically with the deposition of our coal measures, they are of a far more recent age, and it is only through the singular concentration of these subterranean valleys that we find their remains side by side with remains of coal. Their real period was that of the Wealden clay.

SWIFTNESS OF BIRDS ON THE WING.

Professor Newton considered that were possible satellites revolving around the earth their arrival could hardly be more surely calculated by an astronomer. Full weather or fair, hot or cold, the puffing repair to some of their stations punctually on a given day, as if their movements were regulated by clock-work. The swiftness of flight which characterizes most birds enables them to cover a vast distance in a brief space of time. The common black swifft can fly 27 1/2 miles an hour, a speed which, if it could be maintained for less than half a day would carry the bird from its winter to its summer quarters. The large purple swifft of America is capable of even greater feats on the wing. The chimney swallow—ninety miles per hour being about the limit of its power, but the passenger pigeon of the United States can accomplish a journey of 1,000 miles between sunrise and sunset. It is also true, as the ingenious Herr Paley has attempted to show, that migrants during long flights may be directed by an experience partly inherited and partly acquired by the individual bird. They often follow the coast line of the continent, and invariably take on their passage over the Mediterranean one of the three routes. But this they will not explain how they plot themselves across broad oceans, and it is invaluable by the fact, familiar to every ornithologist that the old and young birds do not journey in company. Invariably the young broods travel together, then come, after another interval, the parents, and finally the rear is brought up by the weakly, infirm, malingering and broken-winged. This is the rule in autumn. The return journey is accomplished in the reversed order. The distance travelled seems, moreover, to have no relation to the traveller. The Swedish blue throat performs its maternal functions among the Alps, and enjoys its winter holidays among the peagross of the Scudon, while the tiny, ruby throated hummingbird proceeds annually from Mexico to Newfoundland and back again, though one would imagine that so delicate a little fairy would be more at home among the acclimated agaves of the Tierra Caliente than among the fire and fogs of the north.—The Standard

It is understood that two new Clyde built steamers specially fitted up for the fruit trade and carrying large refrigerators will run next season from October to the end of April, between the ports of Annapolis, Halifax, and London.

Advertisement for SIMONDS' SAWS, featuring an image of a saw blade and text: 'SIMONDS' SAWS ST. CATHARINES, ONT. Sole Manufacturers of the genuine HANLAN, IMPROVED DIAMOND, IMPROVED CRAMPTON, and the NEW IMPROVED CHAMPION CROSS-CUT SAWS. We also make all other kinds of Cross-Cut Saws. Hand Saws from the cheapest to the very best. THE LARGEST SAW WORKS IN CANADA'

ing be notified by the Chief Engineer to close up his office and proceed to Ottawa, has not in his resignation to the Minister of Railways. Much regret is expressed at no provision being made by the Government for Mr. Black's child account, who was discharged on Saturday.

Advertisement for DIRECT TRADE BETWEEN Canada & the Brazils, featuring an image of a steamship and text: 'DIRECT TRADE BETWEEN Canada & the Brazils. Subsidized by the Canadian & Brazilian Governments. Montreal & Halifax (Summer and Winter Ports.) TO PERNAMBUCO, BAHIA and RIO JANEIRO. Calling at ST. THOMAS, West Indies. NEW STEAMSHIP SERVICE PASSENGER AND FREIGHT. Exceptional advantages to Traders. EXPORT AND IMPORT. For all information, address F. J. MACKAY, General Agent, Canada and Brazil J. S. Co., Ottawa.'

Advertisement for JAMES WRIGHT & CO. featuring an image of a building and text: 'JAMES WRIGHT & CO. CHURCH, BANK, HOUSE. STORE AND OFFICE FITTINGS. Art furniture and Island floors, etc. SEND FOR FULL CATALOGUE. 11 TO 17 HERMINE ST., MONTREAL.'

Advertisement for Mail Contract, featuring an image of a train and text: 'MAIL CONTRACT. TENDERS, addressed to the Postmaster General, will be received at Ottawa until noon on FRIDAY, 20th MAY, 1891, for the conveyance of Her Majesty's Mails, on a proposed contract for four years, six times per week each way, between Billings Bridge and Ottawa, from the 1st July next. Conveyance to be made on foot or otherwise, via the usually travelled road. The mails to leave Ottawa daily (Sunday excepted) at 11:00 A.M. and to arrive at Billings Bridge at 11:45 A.M. To leave Billings Bridge at 12:15, noon, and to arrive at Ottawa at 1:00 P.M. Printed notices containing further information as to conditions of proposed contract may be seen, and blank forms of tender may be obtained, at the Post Office of Billings Bridge, Ottawa, and at the office of the subscriber. T. P. FRENCH, Post Office Inspector's Office, Ottawa, April 12th, 1891.'

Advertisement for R. H. Smith & Co. featuring an image of a saw blade and text: 'R. H. Smith & Co. (Successors to J. FLIND) Sole Manufacturers in the Dominion of Canada of the 'SIMONDS' SAWS ST. CATHARINES, ONT. Sole Manufacturers of the genuine HANLAN, IMPROVED DIAMOND, IMPROVED CRAMPTON, and the NEW IMPROVED CHAMPION CROSS-CUT SAWS. We also make all other kinds of Cross-Cut Saws. Hand Saws from the cheapest to the very best. THE LARGEST SAW WORKS IN CANADA'





INSURANCE MATTERS.

INSURANCE DEPOSITS

In the Insurance Act of 1871 there is a provision as well as home ones, doing business in Canada are compelled to deposit a certain amount of money or other securities with the Canadian authorities. The ostensible object of these deposits is to furnish security to the policyholders in the event of the failure of the company...

COMBUSTIBILITY OF LARGE CITIES.

The interests of insurance companies are in ascertaining to as near a certainty as may be the actual risks they are assuming against accidents from fire, and of course in so doing their province is not to prevent their occurrence...

wornwood are the result of years of use, and unless replaced by new must afford the harbour for the... cannot be excluded from our buildings, but must be counted on for years to come...

QUEER COMMON CARRIER LAWS

Judge Chate, in the United States Court, has rendered a decision in the suit of certain claimants for damages against the owners of the burned steamer Seawaska, that, if it be sound, ought to call attention to the existing state of the law limiting the liability of common carriers...

Boatline permits are still given by some of the companies. We heard of one recently granted by a staunch conservative company, allowing two bottles of benzine to be held in a druggist's stock...

The condition and permanency of an insurance company depends as much on its management as on the assets. A good company may be quickly ruined by dishonest or incapable management...

Dr. O'Reilly, late the Inspector of Insurance for Ontario, has been promoted to the position of Assistant, or Associate, Inspector of Asylums and Prisons...

On 13th inst. the Ontario Mutual Life held its eleventh annual meeting. It was well attended, and all present had a good time generally, rejoicing over the prosperous state of things exhibited in the statement of last year's business.

The Queen Insurance Company is changing its Toronto agency, and in a manner that causes unfavourable remark and comment. Mr. Shaw is well known in Toronto as a straightforward and careful man.

POSTAL TIME TABLE.



POST OFFICE, OTTAWA.

ARRIVAL AND DEPARTURE OF MAILS.

Table with columns for Mail, Class, and Delivery. Lists various mail routes and their respective delivery times.

Registered matter must be posted half an hour previously. Office hours from 8 a.m. to 4 p.m. For Savings Bank and Money Order business, 9 a.m. to 4 p.m.

Notice of the subject of parting with litigation but friendly terms Mr. Graham, late accountant with Messrs Nelson & Sons, Toronto, succeeds to the agency vacated by Mr. Shaw.

There is practically no such thing as a fire proof building. Brick comes nearest to being a fire proof material than any other substance. Iron is treacherous and almost worthless in many places where it is commonly used.

A fire policy should be issued or withheld upon the man as much as on his property. In some hands no property is safe. In some hands it may almost be said no property will burn.

We are glad to learn of the prosperity of the Sovereign Fire Insurance Company of Toronto, as evidenced in the fact that they have paid a dividend of 6 per cent on paid up capital.

We learn with pleasure that Mr. Hendry, manager of the Ontario Mutual Life Assurance Company, was, on the occasion of the annual meeting, held 13th inst., presented with a valuable silver service by the general agents of the company.

Massachusetts has passed a law requiring all companies doing business in that State after January 1, 1881, to issue a uniform policy, one of the requirements of which reads as follows: The amount of said loss or damage to be estimated according to the actual value of the insured property at the time when such loss or damage happens.

In California they are seeking to limit imprisonment for life to the expectation of life of the culprit as determined by the table of mortality in use by life insurance companies. By this mode, if a criminal sentenced to imprisonment for life should live up to the period of expectation, he would be liberated.

The premium in fire insurance is not based upon the sum written in the policy, but upon the chance of loss involved in writing that sum. As a rule losses are partial on the sum insured. If they were always total, companies would have to demand a much larger rate of premium than they now do.

POSTAL TIME-TABLES.

POST OFFICE, MONTREAL.

MONTRÉAL, QUÉBEC, SHERBROOKE, ST. JOHN'S, VANCOUVER, VICTORIA, and other provinces.

QUÉBEC & EASTERN PROVINCES.

Table listing mail routes to Quebec, Three Rivers, Sherbrooke, and other Eastern Provinces, including arrival and departure times.

LOCAL MAILS.

Table listing local mail routes within Montreal and surrounding areas, including arrival and departure times.

UNITED STATES.

Table listing mail routes to the United States, including Boston and New England States.

GREAT BRITAIN, ETC.

Table listing mail routes to Great Britain and other international destinations.

WEST INDIES.

Table listing mail routes to the West Indies, including Havana and other islands.

Postal Car Bags open till 8.45 a.m. and 9.15 p.m. The Street Boxes are visited at 9.15 a.m., 12.30, 5.30 and 7.30 p.m.

Registered Letters should be posted 15 minutes before the hour of closing ordinary mails, and 30 minutes before closing of bag-mail.

The case of the London Mutual Fire Insurance Company against Mr. Doyle, manager of the Grange Mutual Insurance Company, has been decided in favour of defendant.

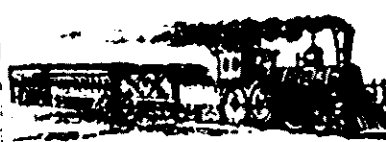
The Review (London) is urging upon the authorities the necessity of increasing the means for the suppression of fires, as it apprehends the occurrence of large fires in the city, and which it deprecates.

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RAILWAY TIME-TABLES.



Canada Central Railway.

CHANGE OF TIME

On and after MONDAY, 21st JUNE, trains will run as follows:

Table listing train schedules for the Canada Central Railway, including routes to Toronto, Brockville, and other stations.

ST. LAWRENCE & OTTAWA RAILWAY.

CHANGE OF TIME

On and after THURSDAY, 10th JUNE, 1880, trains will run as follows:

Table listing train schedules for the St. Lawrence & Ottawa Railway, including routes to Montreal, Prescott, and other stations.

Q. M. O. & O. RAILWAY.

CHANGE OF TIME.

On and after WEDNESDAY, June 24th 1880, trains will run as follows:

Table listing train schedules for the Q.M.O. & O. Railway, including routes to Montreal, Ottawa, and other stations.

Local trains between Hull and Aylmer. Trains leave Mills and Station seven minutes later.

General Office, 13 Place d'Armes Square. Ticket Office, 13 Place d'Armes and 202 St. James St., Montreal, and opposite the St. Louis Hotel, Quebec.

INTERCOLONIAL RAILWAY.

SUMMER ARRANGEMENTS, commencing 14th June, 1880.

Through Express Passenger Trains run daily (except Sundays) as follows:

Table listing summer train schedules for the Intercolonial Railway, including routes to Halifax and other stations.

This train connects at Chandler's Curve with Grand Trunk train leaving Montreal at 10 p.m. The trains to Halifax and St. John run through to their destination on Sunday.

The Pullman car leaving Montreal on Monday, Wednesday and Friday, runs through to Halifax, and that leaving on Tuesday, Thursday and Saturday, to St. John.

The train leaving Halifax at 6 p.m. and St. John at 10.25 p.m., which reach Montreal at 6.30 a.m. by connecting at Chandler's Curve with the Grand Trunk train at 8.50 p.m., remains at Campbellton over Sunday. For information in regard to passenger fares, tickets, rates of freight, train arrangements, etc., apply to CAPT. MACCAIG, Sparks St., Ottawa. Chief Superintendent.

DOMINION TRADE REGISTER AND INDUSTRIAL DIRECTORY.

AGRICULTURAL IMPLEMENTS

A. M. WHITING MANUFACTURING CO. Cedarvale, Ont. - Manufacturers of scythes, forks, hoes, etc.

WELLAND VALLEY MANUFACTURING CO. Lock No. 2 St. Catharines, Ont. - Canada - Manufacturers of axes, scythes, forks, hoes, rakes and cleo tools.

ANILINE DYES

I. MITCHELL & CO. Montreal - Agents for K. Ohler, Offenbach O. M. Germany

BRASS WORKS

H. N. TAYLOR & CO. Montreal - Brass finishers and founders, beer pump manufacturers

COTTON BROKERS

M. WRIGHT, Dundas, Ont. - Sole agent in Canada for Glasgow & Montreal, cotton brokers, Nashville, Tenn.

COTTON MILLS

DUNDAS COTTON MILLS CO., Dundas, Ont. - Any domestic, denim, tickings, yarns, etc.

HAMILTON COTTON MILLS CO., Hamilton - Denims, tickings and yarns

JOHN MACKAY, Dundas, Ont. - Manufacturer of every description of cotton warps and yarns.

EDGE TOOLS

B. T. WILSON, Dundas, Ont. - Manufacturer of axes, picks, mattocks, grub hoes and railway contractors' supplies.

ENGINES AND BOILERS

C. MORRISON, Hamilton - Engines, boilers, steam hammers, etc.

THOMAS WILSON, Dundas, Ont. - Manufacturer of stationary and portable steam engines, boilers and machinery of every description - cotton mill calendars, hoisting steam presses and propeller wheels, all sizes.

FILES

THOS. GRAHAM, Toronto - Manufacturer and recutter of files and rasps.

FREDERICK BAUSCH, Cote St. Paul, Montreal - Manufacturer of every description of hand made files and rasps

FILE & SPRING CO., Cote St. Paul, Montreal - All kinds of files and rasps. Files recut. Sole manufacturers of Shaldings' patent concealed spring

OUTRAM & SON, Dominion File Works, Montreal - Manufacturers of every description of files and rasps.

FURNITURE

OHAWA CABINET CO., Ottawa, Ont. - Furniture Manufacturers, Toronto branch, 97 Yonge St.; Montreal branch, 447 and 449 Notre Dame

AMERICAN BRACKET CO., Hamilton, Ont. - Manufacturers of all kinds of fancy furniture, brackets, etc.

TRIN & CO., 11 St. Bonaventure St., Montreal - Manufacturers of office desks and revolving bookcases.

JAMES WRIGHT & CO., 11 to 17 Hermeine St., Montreal - Chairs, bank, house, store and office fittings, art furniture and inland boats, etc.

GLASSWARE

HAMILTON GLASS CO., Hamilton - Manufacturers of flat and green glassware.

GLOVE MANUFACTURERS

W. H. STORRY & SON, Acton, Ont. - Manufacturers of fine gloves and mitts in every variety and style

HAMMERS

HENRY J. WARREN, Cote St. Paul, Montreal - Manufacturers of every description of hammers, sledges, hatchets, contractors' tools, etc.

NUBS, SPOKES AND BENT GOODS

F. W. HORE & SON, Hamilton, Ont. - Manufacturers of hubs, spokes, elm shafts, poles, sleigh and cutter stuff, etc.

INKS

F. F. DALLEY & CO., Hamilton, Ont. - Manufacturers of ink, blacking, harness oils, perfumery, etc.

IRON WORKS

CANADA SCREW CO., Dundas - Manufacturers of iron and brass screws, bolts and rivets.

COWAN & CO., Galt - Manufacturers of every description of wood working machinery.

DOMINION BOLT CO., 67 St. Peter St., Montreal - Manufacturers of every description of bolts, hot pressed nuts, railway spikes, bridge, boiler and iron rivets. Works in Toronto.

H. R. IVES & CO., Montreal - Hardware manufacturers and founders in piping and ornamental iron work a specialty.

HAMILTON BRIDGE & TOOL CO., Hamilton - Iron railway and highway bridges and iron working machinery.

McKECHIN & BRITTON, Dundas - Machine tools and wood working machinery.

THE OHAWA MALLEABLE IRON CO., Ottawa, Ont. - Manufacturers of malleable iron; also patent screw wrenches.

OLMSTED & SON, Hamilton, Ont. - Manufacturers of fountains, fencs, creations, vases and stationary wagon skolas, etc.

KNIFE WORKS

THE WHITMAN & BARNES MANUFACTURING CO., St. Catharines, Ont. - Manufacturers of mowing and reaping machine knives, sections, guard plates, cutting apparatus complete, spring keys and cutters, etc.

KNITTING MILLS

N. LANNARD & SONS, Dundas - Manufacturers of plain and fancy hosiery.

LASTS, DIES, ETC.

CHAS. CHILDS, Montreal - Manufacturer of boot and shoe lasts, dies for cutting sole leather, upper leather, envelopes, boxes, cuffs, and paper collars.

LEATHER BELTING

DOMINION BELT AND HOSE CO., Toronto - Ask tanned belting, lace leather, etc.

JOHN & SADLER, Montreal - Manufacturers of every description of leather belting.

ORGANS AND PIANOS

BOLTON & SMITH, 167 Monastala St., Montreal - Tuning and repairing attended to.

DANIEL BRILL & CO., Toronto - Manufacturers of the "Excelsior" organ.

DOMINION ORGAN AND PIANO CO., Downsaville, Ont. - Manufacturers of Pianos and Cabinet Organs. See advertisement in another column

R. W. WARREN & SON, Toronto - Manufacturers of church organs.

PAPER MANUFACTURERS

CANADA PAPER CO. (Limited), 24, 26 & 28 St. Paul St., Montreal - Manufacturers and importers of all kinds of papers. Mills at Windsor, Sherbrooke and Fortneuf.

DOMINION PAPER CO., 87 St. Peter St., Montreal - Manufacturers of manilla, book and news print, cardboard muddles and colored papers

JOHN FISHER & SONS, Dundas - Manufacturers of printing and wrapping papers

LINCOLN PAPER MILLS CO., Merriton - Manufacturers of every variety of paper, paper, bags and floor sacks.

W. M. TANNER & BROS., Georgetown - Manufacturers of book and fine papers

SAW MANUFACTURERS

R. H. SMITH & CO., St. Catharines - Manufacturers of all kinds of saws, planing tools, straw knives etc. Sole manufacturers for the Dominion of Canada of the celebrated "Samson's Saw"

SHURLEY & DEWICK, H. Galt, Ont. - Manufacturers of circular and cross cut saws, planing tools, etc.

SCALES

CANADA SCALE WORKS, Jas. G. White & Co., Toronto - Manufacturers of all kinds of standard scales - Factory, 102 Adelaide St. East.

SPICES, ETC.

R. D. VAN DE CAER & SON, Toronto - Manufacturers and Importers of coffee, spices, cream tartar, mustard, etc.

STEREOTYPES, ENGRAVERS, ETC

F. DIVER & CO., Toronto - Electrotypers and stereotypers. Designs and engravers on wood.

STOVES

WM. CLENDENNING, Montreal - Stoves, ranges, furnaces, railways and machinery castings.

TELEPHONES

HOLT TELEPHONE CO., Toronto - Telephone outfit \$25 to \$250 per pair; wire 1/2 to 5c. per rod; works two miles.

TRICHS

BUTTER & CHEESE TRICHS - Robert Donaldson, Montreal, manufacturer of pump augers, butter, cheese, flour and sugar trichs.

WIRE WORKS

B. GREENING & CO., Hamilton, Ont. - Manufacturers of wire rope, cloth and general wire works.

MAJOR & GIBB, 606 Craig St., Montreal - Manufacturers and Importers of wire cloth and wire goods and dealers in railway and mill supplies.

TIMOTHY GREENING & SONS, Dundas, Ont. - Manufacturers of the strongest description of steel wire cloth, mail kiln floors, and general wire weavers.

WOODEN GOODS

C. T. BRANDON & CO., Toronto - Have special facilities and machinery for the manufacture of all kinds of wooden articles. Correspondence solicited.

J. R. McLAREN, Jr., 63 College St., Montreal - Manufacturers of Sharpe's patent safety oil cabinets, also, refrigerators, children's carts, wagons, sleighs, and general wood-ware

WOOLLEN MANUFACTURERS

J. ROUTH & CO., Cobourg - Woollen Manufacturers

JOHN WARDLAW, Galt, Ont. - Manufacturer of Scotch hosiery, wheeling and knitting yarns.

WOOLS AND COTTON WARPS

WINANS & CO., Toronto - Dealers in wools and cotton warps.

PETROLEUM

CANADIAN MARKETS

(Petrolia Advertiser)

The market for crude continues dull. Very little demand during the week. Prices are \$1.65. Refined is quoted at 18 1/2 to 19. Drilling operations are very slack.

CRUDE OIL MARKET

The market here for crude oil, by the carload, is from \$1.70 to \$1.75 per barrel. This price has been paid this week for the crude oil certificates of the Petrolia Crude Oil and Tanking Company, this being the speculative pipeline, and the price at which these certificates can be bought from producers regulates the market. The price of American crude oil in the various producing districts of Oil City, Parker, Titusville and Bradford, by the latest quotations, is 85c. to 90c. per barrel in tanks at the wells for United Pipe Line crude oil certificates - this price has to be added the pipage charges of 20c. per barrel for pumping on board the cars. When a producer has his own pipeline he obtains from 10c. to 20c. per barrel more for his oil than the price at the wells, but he does not get the advantage of a certificate in case he wishes to hold his oil for a rise and get money advanced on it.

REFINED OIL MARKET

Petrolia (Ont) \$0.19 per gall. @ 60 days.

London 0.20 " " " "

Toronto 0.21 " " " "

Ottawa 0.21 " " " "

Montreal (P) 0.21 " " " "

Quebec 0.21 " " " "

Halifax and St. John's 0.24 " " " "

The above are wholesale prices per Imperial gallon at which refined oil is sold by the car load, the price per single barrel is generally from 1c. to 2c. above these figures. The latest refined oil quotations in New York market are as follows - Cargo lots for export, 11c. burning test by the Saybold tester, 8c. Baffled oil for the New York city trade, in lots of 50 to 100 barrels, 10c. flash-test by the T-gilabue pyrometer, 9 1/2c. refined oil of 150° burning test, 13c. to 17c., according to brand. This is the kind of American oil usually purchased for the Canadian market, and is coming into general use in the United States. Cases of refined oil for export, 11c. burning test, cargo lots, 11 1/2c. to 12 1/2c. according to brand.

PETROLEUM PRODUCTS

Lubricating \$2.00 @ \$10.00 per bbl.

Tar 0.85 @ 0.97 1/2

Kerosene 0.12 @ 0.15 per gall.

Oil - 25° - 30° grave 0.22 @ 0.23

Paraffine Candles 0.18 @ 0.20 per lb.

Wax (Ref'd) 0.05 @ 0.10

The shipment of timber over the Grand Junction has commenced.

A meeting of G. T. Railway brakemen was held at Toronto on Monday to discuss their grievances. Mr. Cooper, division superintendent, was present and expressed his regret that the men would not accept the ten cents a day increase offered by the company, which he said meant \$50,000 added to the working expenses of the road. Mr. J. B. Richardson was appointed a delegate to go to Montreal Monday on behalf of the men who demand an increase of fifteen cents or \$1.40 instead of \$1.25. After listening to all Mr. Cooper had to say the men resolved to strike at midnight on Wednesday if their demands were not acceded to. They will take the trains to their destination and then quit.

THE MONEY MARKET.

TORONTO STOCK REPORT.

Table with columns: BANKS, Capital sub-scribed, Capital paid up, Rest, Dividend last 6 months, Closing Prices May 6, Sellers, Buyers. Includes entries for Canadian Bank of Commerce, Dominion Bank, Federal Bank, etc.

Table with columns: DEBENTURES, Ac, INTEREST PAYABLE, WHERE PAYABLE. Includes entries for Dominion Gov't stock, 5 per cent, County (Ontario), City of Toronto, etc.

MONTRREAL STOCK REPORT.

Table with columns: NAME, Shares, Capital sub-scribed, Capital paid up, Rest, Dividend last 6 months, Closing Prices May 4, Sellers, Buyers. Includes entries for British North America, Canadian Bank of Commerce, etc.

TRANSMITTING POWER OF BELTS

Perhaps no matter is more difficult of determination than the transmitting power of a belt. Under ordinary conditions it is computed that a single leather belt, running 1,000 feet per minute, will transmit one horse power for each inch of its width, but although this may be taken as approximately correct, and as applicable to ordinary requirements, it is by no means accurate as a proposition. Such matters as the kind, quality and condition of the belt, whether it is tight or loose; whether it is running vertically, horizontally, open crossed, or edge up on pulleys upon vertical shafts; the size, distance apart, and position of the pulleys, their faces, whether of wood, metal or covered, all must be considered and allowed for before more than approximate correctness in this matter can be arrived at. The distance between driven pulleys is not, of course, a matter to be arbitrarily determined, as location surroundings and convenience have all to be considered; but the following general rule may be laid down as a basis. Where narrow belts are to run over small pulleys, a distance of fifteen feet is a good average; for larger belts working on larger pulleys, a distance of twenty five to thirty five feet apart. Too great a distance should not be attempted as a wide or heavy belt will sag heavily, draw hard upon the shaft, create friction in the bearings, and in addition will have an unnecessary motion, which ultimately will destroy both belt and machinery. Horizontal, inclined and long belts give better results than vertical and short ones; and those which have the driving side below than otherwise. Belts which run loosely will last, or wear, much longer than those drawn tightly; tightness is an evidence of overwork and disproportion. Belts which run perpendicularly should be kept tightly strained and be made of well stretched leather, as their weight tends to decrease their adhesion to the lower pulley. For wet or moist situations only the finest and firmest leather belting should be employed. Rubber belts on smooth iron pulleys will transmit much more power than leather belts, with the same degree of tension, and as they may be made of any width, length or thickness, and, if the pulleys are in line, will always run straight, their employment, under some conditions, may be more advantageous than leather belts, but as they cannot be used as cross-belts or through sockets shifting-belts, or in situations where any rubbing contact is possible, they will never supersede leather belts. - Milling World.

A steamer is aground in the Suez Canal which impedes navigation. The steamers Seyda and Netaf, from Liverpool on Saturday, had on board 1,000 emigrants, bound for New York. They include many Swedes. Four vessels filled with emigrants will sail this week. The Princess of Wales steamer, as a rule, in black, and is particularly partial to velvet and very high ruffs about the neck of her costumes. The latter is very becoming, as her neck is somewhat too long for beauty. What the Princess deprives herself of in colour she makes up in the tulle of her two young daughters, who are rainbows in the London fog with their bright tinted dresses and fair-complexions.

PROSPECTUS

For the Enterprise

Merriton Cotton Mills

Liability of Shareholders to the amount of shares held by them.

CAPITAL - - - \$150,000. In 1,500 Shares of \$100 each

REFERENCES: J. MORRIS, ESQ., T. R. MERRITT, ESQ., ST. CATHARINES

KING & DOLAN.

It is proposed by the present owners to increase the Merriton Cotton Mills by adding seven thousand five hundred spindles to the existing three thousand and two hundred spindles, for the manufacture of such kinds plain and coloured goods as are now used in the country, to thirty bag looms now in operation and to increase the capacity for making batting and wadding from 100,000 lbs. per annum as at present, to 200,000 lbs. per annum. These mills, which may be considered the pioneer cotton mills of Canada, having been successfully run since 1857, are situated in the Village of Merriton, on the banks of the Welland Canal, and in close proximity to the Great Western and Welland Railways. The water privilege, which there is a perpetual lease at a rental of \$100 per year, is equal to two hundred horse power, and the supply of water being drawn from the Lake Erie level, the canal, for which a channel is now being made, to be finished in the summer of 1891 will be uninterrupted, save for ten days each spring when the canal is closed prior to the opening of navigation. The recent legislation of the Parliament of Canada, by which additional duties were imposed upon cotton goods coming into the country, has had the effect of very largely increasing the demand upon the existing Canadian cotton mills, and it is believed there is an excellent opening now for additional manufacturing of such goods as are already being made, as well as for the production of manufactures in daily use not yet made in the country.

The mill property consists of about four acres of land with, in addition to the main mill building, dye house, wadding mill, store houses, office, stabling, etc. The main mill building is built of wood, and it is intended to remove it and erect the new and enlarged building (of stone) on a portion of the same ground, and on the site of the present wadding mill, which it is intended to remove to the opposite side of the waste weir. The new and enlarged building could then be kept in operation along with the present main mill, while the proposed new building was being erected and fitted up.

The existing machinery is of good description, is in good running order, well kept and the whole property, building, machinery and site, is valued at \$200,000. The production for the year 1879, denim which the mill was worked for ten months only, was 130,450 lbs. of all kinds of goods, and the proposed enlargement would increase the capacity of producing 850,000 lbs. per year. The result of the year's operations is as follows: - Gross profit, \$10,925.15, equal to 8 1/2c. per % of the out turn, at the same rate \$10,000 lb. would yield a gross profit of about \$37,000, to provide for interest, insurance, repairs, expenses of management, etc., etc. This is on the assumption that no great profit would be earned in the future than during the year named; but as a certain portion of the product of the new machinery would be coloured fabrics, which yield a much better return than unbleached goods, a considerable increase on the above figures may be safely estimated.

The economy in working the mill entirely by water power is very great, and constant use of fuel, labour, and wear and tear of engines, etc., would represent an annual saving of at least \$18,000. The situation of the mill affords exceptional good facilities for obtaining all necessary supplies, and distributing the manufactured goods. Cotton can be laid down in the States in a comparatively short time, and a boat for freight, etc., not exceeding half a cent per pound. The municipality of Merriton has agreed to exempt the whole property (present and prospective) from taxes for twenty-one years to come, and a by-law to that effect will be secured before the erection of the building proceeded with.

There is an abundant supply of hired labour to be had in the village at moderate rates. The terms of payment of the subscription are at such times as the progress of the building and machinery will warrant, and not more than twenty per cent. on each call will be made.

Total sales for 1890, \$25,154.22. The market price of the shares of companies now in operation is worth quoting as example: - Dundas Cotton Co. 100 Montreal Cotton Co. 100 Canada Cotton Co. 125 Hudson Cotton Co. 100 Lybster Cotton Co. 100

THE DOMINION BOLT CO.



87 St. Peter St. Montreal WORKS IN TORONTO

Machine-Forded Nuts, Hot-Pressed Nut Carriage Bolts, best, Plough Bolts, Machine Bolts, Coach Screws, Bolt Ends, R. R. Track Bolts, Sleigh Shoe Bolts, Boiler Rivets, Binder Rivets, Roof Bolts, R. R. Spikes, Black Bolt Rivets, Bolt Rivets, Spring Bolts, Norway Carriage Bolts, Tire Bolts, High Rivets, Stone Bolts and the style of packages, is

SUPERIOR TO THE AVERAGE, And equal to the best Foreign Bolts, Nuts and Screws.

THOMAS WILSON, Dundas, Ont.

Manufacturers of STATIONARY and PORTABLE

Steam Engines,

BOILERS and MACHINERY of every description.

COTTON MILL CALENDERS, JONERY STEAM PRESSES and PROPELLER WHEELS, ALL SIZES



THE DRY GOODS TRADE.

NEW YORK ADVICES.

The woolen goods market shows increased steadiness and in some directions there is an improved inquiry, but the general features have not changed materially since our last report. In the way of new business there is a light weight and spring clothing woolens continues somewhat irregular but there have been some cases made liberal sales and the aggregate distribution has been of fair proportions. The number of clothiers in the market has increased and they seem inclined to be more liberal in placing their orders for fall weights. Heavy clothing woolens rule quiet with the demand confined mainly to moderate sized orders for the most popular styles of fancy cassimeres. Woolen goods aside from clothing description are without any special attraction but prices of all kinds are very steadily maintained and quotations show few changes. Medium all wool and fancy cassimeres have been comparatively in active request and a considerable amount of these goods has been distributed, many leading makes being largely sold ahead. Waxed coatings have received a fair degree of attention. Cheviot coatings continue very popular and the best makes are well sold up. Satinets show rather less activity but there is a fair inquiry for the best mixtures and plain goods. Kentucky jeans and doerings have been somewhat neglected and the principal movement has been in execution of previous orders. Overcoatings in all styles and qualities of rough faced and fancy backed effects have had a good distribution both in the way of new business and in the completion of former orders. Flannels rule quiet but prices are steadily maintained. Blankets move slowly both from jobbers and agents' hands. The most important feature in the carpet market during the past week was the auction sale, on the 26th inst., of about 7,000 pieces of tapestry carpeting manufactured by Stephen Sanford, of Amsterdam, N. Y. The sale was by order of their agents, W. I. Shaw & Co., of this city. There was a large attendance of both local and out of town jobbers and dealers. The bidding was spirited and the entire lot was quickly distributed. Best makes "Double Extra" tapestry sold for 10 to 12 cents, "Crest" tapestry brought fair prices considering the state of the market. The general market rules quiet but a few jobbers report a very satisfactory trade. Prices are not notably changed.

In prints the package movement has been of moderate volume but as agents generally are in very satisfactory position as regards stocks values are sustained and prices rule steady on all leading styles and makes. On a few of the less attractive styles agents have occasionally offered inducements to package buyers, in the way of discount. A majority of the mills have so far curtailed their production so as to preclude any important accumulation of light and fancy work, and consequently no violent fluctuations in values are to be looked for during the present season. With jobbers trade has shown some improvement and a very fair piece distribution has been effected. Some of the larger houses have also completed a considerable package business in certain "off styles" of light fancies and dark prints. Shirtings have been in fair steady request and taken in moderate assortment to a considerable total. Ordinary styles of fancy prints have had a limited inquiry, but side hand prints and the most desirable fancy styles have moved quite freely. Staple prints, light robes, patchworks, mourning, furniture cretonnes, etc., have been in moderate demand, and the sales aggregate a business of fair proportions. In wide prints and printed lawns, jobbers have effected a very fair movement, but the package demand has been chiefly for small duplicate parcels of leading makes. The print cloth market has shown less activity during the past week, and prices are a trifle lower. Quotations are as follows: 6x16s at 3 1/2 offered to 3 1/2 plus a small percentage asked, and 6x20s at 3 1/2 to 5-16c. Sales at Fall River and Providence for the week ending April 23 aggregated 96,000 pieces at the following prices: 4,000 pieces, 6x16s (accoude), 3 1/2 plus one-half of one per cent; 8,000 pieces extra 6x16s, 3 1/2 plus one-half of one per cent; 40,000 do, 3 1/2-16c; 12,000 do, 3 1/2; 7,000 pieces 6x20c, 3 1/2; 1,000 do, 3 1/2-16c; and 20,000 do, irregular counts.

For heavy standard and fine brown cottons and extra wide sheetings the demand has been of good proportions, and, with many of the best makes closely sold up, prices are very steadily maintained. Light weight and low grade brown cottons have been in less request and the movement rather slow. In bleached shirting and sheetings, the principal demand has been for fine and medium fine shirtings and wide sheetings, of which goods a considerable distribution has been effected. The best makes are in limited stock and firm in price. Low grade goods and less popular makes are quiet, with prices somewhat unsettled. With jobbers business in both bleached and brown cottons has been fairly active and generally of a steadier character. There have been fewer changes in quotations during the past week, but in some cases a little further cutting has been done by jobbers, as will be observed by examining our price list.

COLON THE GREAT INTEREST. It will surprise the public to see how strong the cotton interest has grown during the last two or three years as an element of general commerce. Rapidly as other interests have advanced the gains in cotton have not been less. The gains for cotton than for gold or provisions, and for the year 1889 the value of cotton exported was 20,000,000 greater than the value of wheat exported. This advance in the cotton market since 1881 has been the result of the present year 1889. The relative gain of cotton in 1889 is more than 20,000,000. The latest official reports of exports are for seven months ending January 31st 1889, which embrace much of the crop grown in 1888, and shows equally favourably with those for the calendar year 1888. The crop of 1889 will, it is now shown, exceed 2,000,000 bales, and the export aggregate will be 25,000,000 or 4,000,000 bales greater than the crop of 1879. The consumption of cotton on the continent is increasing, probably with greater rapidity now than for some years past, in consequence of the substitution of cotton for both silk and wool in the manufacture of dress goods. The changes in this respect are the subject of constant attention and comment in the textile journals of France and Belgium, and the importations from Europe, now coming in a flood, of fancy and fashionable goods, show a remarkable proportion of cotton—much greater than in former years. There is therefore no statement probable in the demand for American cotton in Europe, and whatever the crop, or the surplus beyond the demand for our own manufactures, it is likely to be all taken at a reasonably remunerative price. The commercial statistics of current exports of cotton fully sustain the proportions of increase shown in the official figures. It is indisputable that cotton is, for the time at least, the ascendant interest of the country. It is as conspicuously prominent in manufactures, also, as it is in commerce, and it fully justifies the spirit shown in developing and representing it in the coming exposition at Atlanta, Georgia. The export values of \$217,652,000 attained in 1889 are likely to be increased to \$250,000,000 in 1891, and the domestic manufacture will be nearly 2,000,000 bales, valued at 10 cents the pound, and 450 pounds to the bale—at \$90,000,000. Any efforts at improvement which effect even a small percentage of increase on these quantities become subjects of high national importance. —Textile Record.

Among the wares which farmers in the south of Europe bring to market are bunches of mulberry leaves. They are purchased by people who keep silk worms, and who have not the means on their own ground for feeding them. The leaves are sold by weight in the market, and to select what will nourish the worms best is a task of some difficulty. The farmer wants to sell the heaviest, but the purchaser knows that as the trees grow older the leaf gets smaller, and that it is the small leaf which contains most food. Those who do not buy in the markets hire mulberry trees in nurseries and plantations for the season—a good tree giving from thirty to sixty pounds of leaves. The price of a tree varies according to the local demand for it, but eight francs would not be considered too much for one yielding thirty pounds of leaves. When the leaves are carried home from market the rearing of the silk worm commences. It is a work requiring the greatest care and delicacy, and there are various ways of setting about it. In spite of improved methods, many of the silk cultivators of the south still maintain the most primitive. They have the eggs of last year's grey moths preserved in phials hermetically sealed. These have been immersed in earthen pots, kept at a low temperature to avoid premature hatching. To hatch the eggs, they are taken out, and one or two ounces of them being poured into a silk bag it is worn on the chest for some days. At night it is put under a pillow, or wrapped in fine linen, the eggs are placed on a bed kept at the average heat of the human body. After the worms are hatched they are lifted into flat baskets and covered with mulberry leaves, which they devour greedily. The feeding goes on for a week or it may be a fortnight, the worms not seeking to escape from the baskets where they are supplied. At the end of that time they stop feeding, crawl unceasingly among the chopped leaves, and the cultivator knows they are beginning to spin. At that stage small bushes are given to them—broom bushes, heath, or clean bean stalks. These are arranged in rows, with air and space between each, and look like so many miniature hedges. Inside and around them the cocoon is spun. By-and-by, with the worms inside the cocoons are carried out to a cauldron in the cultivator's garden and thrown into hot water. The silk then loosens itself, and may be reeled off, and the dead bodies of the worms are given to the birds, who appreciate them as if they were seed. The silk thread may then go to the market, and from that to the factory. The silk worm is not, however, a native of Southern Europe, though in Spain, France, Italy, Greece and Turkey its cultivation is pursued with different degrees of success. China is the true home of the worm; and it was at Constantinople that two Persian monks, coming from the country of the Seres, first introduced it during the reign of Justinian. It is to this fact probably owing that all the later silk worms of Europe must be traced. It was from the monastery that with the introduction of the mulberry, Europe could be made as productive as China. Becoming independent of Oriental supplies, silk was sent out from the Black Empire by way of Venice for 200 years. The Chinese, however, still maintain their ancient custom in the cultivation of the insect. They allow no stranger into the secret of their trade, and to England alone they sold in 1850, 200,000 pounds of silk. The black or "moths," as they are called, come into the market covered with caps made of a single cocoon, and it is one of many processes in connection with the culture and exportation of silk by the Chinese which in Europe is neither practised nor understood. The industry was carried in the eleventh century to Sicily by Roger I, and, as he had selected some Athenian weavers, silk was not only grown but manufactured with all the art of the period. From Sicily the industry readily passed into Italy, France and Spain, thence to the Venetians and the Genoese had already been importing worms and mulberries on their own account. A curious circumstance in connection with it was that the noble Venetian families thought they might engage in the trade without loss of dignity (glass and drugs shared the distinction with silk. Louis XI probably deserves the credit of introducing silk into France, Tours became a rising town under his patronage. Francis I promoted the industry in the neighbourhood of Lyons and Avignon. Henry IV personally interested himself in the subject and the naturalization of the insect as far north as Orleans. He was anxious to have it introduced at Paris, and at Fontainebleau mulberry trees were planted in great numbers. At the same time, he offered titles of nobility to such Parisians as had sufficient enterprise to establish silk factories. Later on, Louis XIV is found offering a reward of three livres to the cultivator of every mulberry tree which should be in a thriving condition three years after it had been planted. The consequence was that Provence, Languedoc, Dauphiné, Lyonnais, Gascony and Saintonge became mulberry plantations. A bold attempt was made by James I to render silk culture popular in England. It had long been known that silk worms fed in English houses had come through the work of spinning and reeling as they were in a southern climate. It seemed, therefore, to King James that nothing was required but mulberry trees, so he sent out circular letters to the county authorities of England, inviting those who could to buy sprigs in London at three farthings apiece and to plant them without delay. For a time there was much excitement at the prospect of silk being made indigenous. Not very long before a summary law had been passed for the benefit of a too luxurious middle-class, providing "that whosoever shall wear silk in or upon his or her hat, bonnet, or girdle, scabbard, hose, shoes, or spur-leather, shall be imprisoned during three months, and forfeit ten pounds," magistrates of corporations and all who ranked above them being excepted from the operation of the statute. But the failure of the first effort made the King turn his attention to Virginia as a more suitable field than England. In 1718, when every scheme on which joint-stock subscriptions could be raised was made the most of, one for the cultivation of silk was put forth. A company leased Chelsea Park for 122 years and planted 2,000 mulberry trees. Nothing came of it. Seven years later, a scheme which promised to be more remunerative was set on foot for the cultivation of silk in the south of Ireland. The climate of County Cork, it was thought, would suit both the plant and the worm, and the cheapness of labour would put the cultivators on terms of equality with cultivators in the south of France. The undertaking was supported by many who hoped to improve the condition of a peasantry even then understood to be very badly off. Eighty acres were selected near Michelstown, and 400,000 white mulberry trees were planted. They grew admirably, and nothing, at first, seemed wanting to the success of the experiment. But it was soon found that, if labour was cheap and the climate suitable, the incurable awkwardness of the Irish labourers unfitted them for the task of rearing the worms and reeling the silk. The company had to transfer its capital and appliances to Malta, where there was some hereditary taste for the work among the poorest classes. If the silk worm cannot be cultivated in England it has been proved that at least in some of the colonies the conditions are favourable to its growth. Colonial Governments have not been blind to the fact. To encourage the industry the Government of New Zealand offered a percentage on all cocoons prepared for export, but as yet the offer has been attended by no result. Victoria, in its vine districts, has already begun to cultivate the silk worm, and its cocoons are favourably known. That there is room for competition may be judged from the value of the silk imports into England for any recent year. Taking 1877 as, on the whole, a fair average year, it appears that there were imports in "knots" and waste to the amount of £327,156; of thrown silk, £168,508; of raw silk, £4,452,045, while silks in various stages of manufacture were valued at £12,831,822. In some seasons these imports are of higher value by several millions. In its raw state, the silk is divided at

SILK

TEAS

The quality and qualities of teas are very numerous though they may be properly grouped into the two well known classes of green and black. The production of each is computed by the United States per annum is about as follows: —

- Black Tea: Oolong—Formosa, Amoy, Fook how and Nlog-syong; English Breakfast—Congo, Soucheong, Tarry Soucheong and Assam.
- Green Tea: Japan—Coloured and uncoloured, or black and red; Other Green—Gunpowder, Young Hyson, Old Hyson and Imperial.

CHICORY IN COFFEE

Coffee has, we are told, long been extensively adulterated with chicory. Roasted carrot, potatoe, parsnip, beet, acorns, spent tan-bark, spent logwood, mahogany saw-dust and baked horse-dung, are some of the other substances that have been identified in the ground coffee of London. Chicory, as already remarked, has established itself as a regular ingredient of package coffee, and such coffees not infrequently contain little else besides chicory and roasted grain or vegetable of some sort. In 1850 Messrs. Duckworth, of Liverpool, are said to have taken out a patent for moulding chicory in the shape of the coffee berry. English law at that time put no restriction on the sale of chicory. The use of chicory is supported by the fact that many persons prefer a mixture of coffee and chicory to pure coffee. The writer has personal knowledge of two cases where ladies, having drunk coffee that greatly pleased them in first-class restaurants, and having asked how such coffee could be procured, were supplied with recipes in which a certain preparation of chicory was directed to be used. In fact, such mixtures are supplied to order by the best grocers of our large cities. It is asserted that chicory is universally an ingredient of the finely flavoured coffee that one finds in the cafes of Paris, Vienna and other European capitals, and there are gentlemen in New England, who, having cultivated chicory and used it in their coffee, freely express their preference for the mixture. In these bases, however, the chicory is kept duly subordinate to coffee, and good coffee at that, while in the "package coffee" peas, rye and chicory have largely the upper hand, and the coffee is small in quantity and that little of the poorest. The demand for chicory has become so great that it is not only a staple product of agriculture in most European countries, and cultivated to some extent in this, but has become itself to be the subject of extensive falsification with all the adulterations which are employed in the cheapening of coffee.

WOOD FOR GUNPOWDER

The conditions prescribed by the British Government in the manufacture of gunpowder for the public service provide, among other things, that the wood—dogwood—for the charcoal shall be of the utmost cleanliness, any traces of bark adhering to it constituting an impurity causing its immediate condemnation, and the wood must also be cut in the spring of the year. If the latter operation is performed when the sap is rising, the bark is easily removed, and the wood is left perfectly clean; but wood cut later in the year or winter is quite as good, only in this case the removal of the bark is a much more difficult matter. The process of separation involves the boiling of the wood, or, if this is impracticable, the whole of the bark must be shaved off with a knife. The objection chiefly characterizing both the boiled and shaved, for gunpowder manufacture, is that they do not keep so well when stacked as the spring cut wood, going to decay much faster.

COFFEE—ITS USES AND MEDICAL QUALITIES

Dr. Beck of Leipzig says The nervousness and perturbation of our times are chiefly attributable to tea and coffee. He says that the digestive organs of confirmed coffee drinkers are in a state of chronic derangement, which results on the brain producing fretful and hysterical moods. Ladies addicted to strong coffee have a characteristic temper, which may be described as a mania for acting the persecuted saint, etc. I cannot agree with Dr. Beck that nervousness and perviousness of the present time are to be attributed to the use of coffee. If people are more nervous or in worse humour now than formerly, we may find other causes arising from the customs and habits of society much more likely to produce such a state of things than the use of this particular article of diet. I have no intention of jangling out many changes and peculiarities in the habits of the age to show some other more prominent reasons for people being in bad humour besides the use of coffee. My object is to defend coffee from a slander aimed at one of our best friends—a friend more likely to relieve the morbid state of things complained of than to produce it. Who that has experienced the good effects of coffee can sit quietly and hear it abused? especially by an estimable physician who has written learned books on the nervous system. The nerves of every honest friend of coffee tremble with the shock of an attack from such a quarter. Let us examine the effects of coffee on the economy. Taken in moderation it is a mental and bodily stimulant of a most agreeable nature; and, followed by no harmful reaction, it produces contentment of mind, allays hunger and bodily weakness, and increases the incentive and capacity for work, makes man forget his misfortunes, and enables those who use it to remain a long time without food or sleep, to endure unusual fatigue, and preserve their cheerfulness and contentment. Jundani says "An infusion made with ten ounces of coffee enabled me to live without other food for five consecutive days, without lessening my ordinary occupations, and to use more and more prolonged muscular exercise than I was accustomed to without any other physical injury than a slight degree of fatigue and a little loss of flesh." The mental exhilaration, physical activity and wakefulness it causes, explain the fondness for it which has been shown by so many men of science, poets, scholars, and others devoted to thinking. It has indeed been called "the intellectual beverage." It supported the old age of Voltaire, and enabled Fontenelle to pass his hundred years. The action of coffee is directed chiefly to the nervous system. It produces a warming, cordial impression on the stomach, quickly followed by a diffused, agreeable nervous excitement, which extends itself to the cerebral functions, giving rise to increased vigour of imagination and intellect, without any subsequent confusion or stupor, such as are characteristic of narcotic. Coffee contains essential principles of nutrition far exceeding in importance its exhilarating properties, and is one of the most desirable articles for sustaining the system in certain prostrating diseases; as compared with the nutrition to be derived from the best of coffees, coffee has decidedly the advantage, and to be preferred in many instances. Liebig says: "We shall never know how men were first led to the use of coffee, but that we may consider the article so remarkable for its action on the brain and the substance of the organs of motion, and as an element of food for organs as yet unknown, which are destined to convert the blood into nervous substance, and thus recruit the energy and the nervous moving and thinking faculties." The medicinal effects of coffee are very great. In intermittent fever I have used it with the happiest effect in cutting short the attack, and, if properly managed, is better in many cases than the sulphate of quinine. In that low state of intermission, as found on the banks of the Mississippi river and other malarial districts, accompanied with enlarged spleen and enlarged liver, when judiciously administered it is one of the surest remedies. In these cases it should be given in decoction made with four ounces of well roasted and ground coffee, boiled in a quart (16 ounces) of water in a covered vessel, down to half a pint (4 ounces), and two tablespoonfuls given hot every two hours, commencing six hours before the expected attack, and keeping the patient well covered in bed. It has been found that in typhus fever coffee increases the elimination of urea, and so far purifies the blood with its increasing the destructive metamorphosis of urea, and that it lessens coma and low delirium. In yellow fever, from a long experience, I consider coffee as my chief reliance, after other necessary remedies have been administered, it restrains transudation, and thus becomes a counter-irritant of force, in that state in which the nervous system tends to collapse, because the blood has become impure; it sustains the nervous power until the separation and reorganization of the blood are accomplished, and has the advantage over other stimulants in inducing no injurious secondary effects. In epidemic asthma its utility is well established, whooping cough, stupor, lethargy, etc. In the hysterical attacks of some females, for which the physician can form no diagnosis or cause for the peculiar and eccentric symptoms manifested; a screaming, crying, striking, kicking pa-

that with no colicative answer for the medical adviser, at the same time with an evident tendency to act the persecutor, giving for a cup of well made, strong, black coffee, she becomes quiet, revives, smiles, looks bright, as if she had swallowed a panacea that had suddenly delivered her from the clutches of the Imps of Satan and wadded her from all the miseries of a condemned and tortured spirit to the Elysian fields of Health. We have used it as a remedy in croup, diphtheria, nephritis, chronic diarrhoea, etc. In poisoning from opium it is well known as the best remedy, and always on hand. Hayne says "That in a case of violent spasmodic disease, attended with short breath, palpitation of heart, and a pulse so much increased in frequency that it could scarcely be counted, immediate relief was found from a cup of coffee, after the most powerful antispasmodic had been used in vain for several hours." etc. After a hearty meal a cup of coffee will relieve that sense of oppression so apt to be experienced, and enable the stomach to perform its offices with comparative facility. In fact, coffee carries healing on its wings. It is opposed to malaria, to all noxious vapours, as a disinfectant it has wonderful powers, as an instantaneous deodorizer it has no equal, for the sick room, the fetid odours arising from cutaneous exhalations are immediately neutralized by simply passing a chafing dish with burning coffee grains through the room. It may be urged that an article possessing such powers and capacity for such energetic action must be injurious as an article of diet of habitual employment and not without deleterious properties, but I have never noticed any corresponding nervous derangement after its effects have disappeared, as is seen in narcotics and other stimulants. The action imparted to the nerves is natural and healthy, and I must positively deny that the habitual use of the article is injurious. Habitual coffee drinkers generally enjoy good health and live to a good old age. Some of the oldest persons I have ever known have used it from earliest infancy without feeling any depressing reaction, such as is produced by alcoholic stimulants. In Porto Rico, our finest part of excellent, at the tenderest age, have been known to forget the delicious draught from the maternal fountain by the substitution of a decoction of coffee, which soon becomes the daily beverage.

EGGS AS FOOD

Omnivorous man feeds indifferently on a good variety of animal products, and, among others, the eggs of birds, reptiles, and fishes contribute somewhat largely to his sustenance. Let us first take a glance at those of birds, which are the most important, and then notice some others. It is a curious study to pass in review the number, size, form, weight, and colour of eggs, according to the different species of birds, and the inferences we may draw in natural history from those oologic characters in classifying the birds. According to the number of eggs they lay, birds may primarily be grouped into two great classes. Those which are destined to furnish food for man, as the Gallinaceae tribes, lay the greatest number of eggs, and when we find that in domestication the ostrich has laid as many as seventy-two to eighty-four eggs, we have reason to think it may shortly be ranked among regular domestic poultry. The eggs of all the domestic poultry are edible, but it is only those of the hen in which there is any extensive commerce. The eggs of the goose, duck, and turkey, when not employed for setting, are usually locally consumed. There is no egg of a bird which is not good for food, or which could not be eaten by any hungry man. The weight of an ordinary fowl's egg is one and a half to two ounces, whilst that of the duck is two to three ounces; of the sea gull and turkey, three ounces to four ounces, and of the goose, four ounces to six ounces. One reason why the eggs of wild birds are so highly esteemed is owing to the flavour acquired by the food consumed. Another is that the proportion of yolk in wild birds' eggs is considerably larger than in those of domesticated ones, and this adds to the proportionate nutritive quality. The consumption of poultry and eggs is so large here as almost to exceed belief. Besides our foreign supplies the home production is considerable. The Midland Railway brings up 130 tons of eggs, and the Great Eastern over 5,000 tons of poultry and game, annually. But this is a mere fleabite in the course of the year. It is no uncommon thing in the early spring months for the Aylesbury Railway to carry two or three tons weight of ducklings and eggs in one night to London, and nearly £20,000 per annum is returned for ducks to the neighbourhood of Aylesbury alone. Ireland produces nearly 500,000,000 eggs, and the Continent supplies us with about 785,000,000; and if to this is added the annual production of Great Britain, the enormous consumption may be approximately estimated. In 1850 we only imported 105 millions of eggs from abroad, in 1870 this had risen to 470 millions, and in 1878 to 784 millions, of the aggregate value of £7,512,000, and probably as many more eggs are consumed of home production. Eggs, therefore, form no unimportant item in the Englishman's bill of fare. On eggs and milk, indeed, man may not only live, but prosper exceedingly. But the price of a new laid egg runs up to 3d. and 2½d in the metropolis, and even then they are difficult to obtain. High as this price is, it is not, however, so dear as the price

of eggs in the city of Lima, which fetch a dollar a dozen or 6d a piece. The already large and increasing consumption of eggs in England and France shows a growing appreciation of this form of food compared with any other. A part out of the vast consumption of eggs in this country we may refer to the annual reports of our hospitals. In one of these it is stated that 500 dozens are required and made use of in the year, and taking into consideration the allowance of four eggs a day to some of the patients, the published statement does not cause so great amazement as at first sight it creates. Moreover, it goes to prove how important a part is played by our hens in keeping up and restoring strength to those who are suffering through some of the many ills to which flesh and bone are heir. Of course, such an item as that mentioned is something more than an atom of the annual expenditure, in fact it causes a very serious amount. Eggs during the winter months are so extravagantly dear that people with large incomes have almost done without them, but their regular use in places devoted to the care and nurture of the sick seems to signify that no suitable substitute has yet been found. In France eggs are sorted and sized by passing them through a ring. The average sized ones must enter a ring 4 centimetres in diameter, the small ones a ring 3 centimetres 8 millimetres in diameter. The legalized charges in the public markets of Paris are—for mileage, or examining the eggs, 6d. the 1,000, testing their size by the ring, 1½d the 1,000. After repeated trials, it has been decided in Paris that 20 eggs count as a kilogramme, or 2½ lbs. In America there has long been an agitation for selling eggs by weight, and in Massachusetts a law has been passed to that effect. In a dark cellar in Paris, under one of the markets devoted to the sale of dairy produce, by the light of a candle, the troublesome operation of examining eggs is carried on, for not a single egg enters into consumption in Paris without having been thus examined. It is to be regretted that similar official scrutiny is not carried on in London. The fowls which lay large eggs, averaging about seven to a pound, are La Flèche, Houdans, Crevin, and black Spanish. Those laying medium eggs, averaging eight or nine to the pound, are Leghorns, Cochins, Bramas, Poland, Borkings, Game, and Sultan. The Hamburgs lay smaller eggs, eight or ten to the pound. The egg trade of the United States is now exceedingly large. The aggregate transactions of the City of New York alone are said to amount to £1,600,000 in value. In Cincinnati and other cities the sale is proportionately large, and the total sales of eggs in the States have been estimated to reach £12,000,000 in value annually. Large as is, however, the production, the imports of eggs reach 8,000,000 to 6,000,000 dozen a year, chiefly from Canada. Over 20,000 car-loads of live and dressed poultry are carried into New York city yearly, and 23,300,000 dozen of eggs go to the same market. According to the best estimates, the United States produces nine thousand millions of eggs annually. This is a nice little item for the consideration of those who call chicken business—egg raising—a small thing. The American farmer, however, has been shrewd enough to discover that eggs pay better than birds, and he has turned attention to their production and preparation in large quantities for distant markets. The price paid by collectors seems good. In Minnesota, the spot where fowls sold at 6s 3d a dozen, eggs made 6s a dozen; while at Lexington, with fowl at 7½d each, eggs made as much as 1d each, and never lower than 4d a dozen. They are packed in mill-board partitions, an egg in each square cell, thirty-six in each layer, resting on cardboard sheets, one above the other, and the whole contained in a handy size packing case. The counting is thus made easy, and few eggs are broken. Another way is to pack seventy dozen in a wooden barrel in rats. These are treated as fresh meat, chilled and kept for months in cooled chambers; collected at about 3d a dozen in the Middle States, and thus preserved, they are sold in New York at from 11d to 1s a dozen when eggs are scarce, the oats making the cost price a 50% to the packer. They come over 1,500 miles, and one dealer was known in 1874 to have cleared £3,500 by sales on a 10% of price. The abolition of slavery has affected the value of eggs, the free black keeping round their little houses a good stock of hens, but even now prices are sometimes remarkably high. In January, 1874, eggs sold at 20d a dozen in New York, though before the month was out they fell to 6d. The perishable nature of eggs has naturally detracted from their value as a standard article of diet. The peculiar excellence of eggs depends upon their freshness. But lately the process of crystallising has been resorted to, and by this process the natural egg is converted into a vitreous substance of a delicate amber tint, in which form it is reduced seven-eighths in bulk compared with case eggs, and retains its properties for years unimpaired in any climate. This is, indeed, an achievement of science and mechanical ingenuity, and has a most important bearing on the question of cheaper food, by preventing waste, equalising prices throughout the year, and regulating consumption. In this form eggs may be transported without injury either to the equator or the poles, and at any time can be restored to their original condition simply by adding the water which has been artificially

taken away. The chief American egg-crystallising companies are in St. Louis and New York. No salts or other extraneous matters are introduced in the process of crystallising, the product being simply a consolidated mixture of the yolk and albumen. Condensed eggs to the value of £100 are annually imported into America. Immense quantities of eggs are preserved in the spring of the year by luting. Thus treated they are good for every purpose except boiling. A similar desiccating process is carried on in Germany. Herr von Effner's preserved eggs are put up much like other preserved articles of diet, in securely closed tins, and so protected from hygienic variations in the atmosphere. They are prepared in three forms, the first containing the principles of the entire egg, while the others include those of either the white or the yolk only. When required for use it is only necessary to restore the water that has been eliminated. By moistening the flour till it has acquired the consistency of an ordinary egg is beaten up ready for the frying pan in the preparation of omelettes. The dried yolk forms an agreeable adjunct to soups, or may be mixed with powdered biscuit, in which form it is particularly recommended by the inventor as a material out of which a palatable, wholesome, invigorating, and highly nutritious cake can be quickly made for soldiers or travellers on the march. In the counties of Hants and Dorset, pickled eggs constitute a very prominent feature in farm houses and store rooms, inasmuch that they would be considered by the industrious housewife but indifferently furnished without them. The mode in which the good dames pickle them is simply this: At the season of the year when their stock of eggs is plentiful, they cause some four or six dozen to be boiled in a capacious saucepan until they become quite hard. They then, after removing the shells, lay them carefully in large mouthed jars, and pour over them scalded vinegar well seasoned with whole pepper, allspice, some pieces of ginger, and a few cloves of garlic. When cold, they are bunged down close, and in a month are fit for use. Where eggs are plentiful, the above pickle is by no means expensive, and, as an astringent accompaniment to cold meat, it cannot be overvalued for pliancy.—Journal of Applied Science

WHAT IS THE LEGAL FENCE?

The Indianapolis Journal has taken pains to gather information as to the laws regarding the fencing of railroads in sister States. In Massachusetts the legal fence is four feet high. A sufficient barrier only is demanded, whether the equivalent be furnished by streams, ditches, live growths, or constructions in wood, stone, or other material. Vermont and Connecticut legal fence is five and a half feet high, with provisions essentially as above. In Maine and New Hampshire the legal fence is four feet high; Rhode Island, stone or wood fences must be four and a half feet high; hedges and ditches are elaborately described. New York—The town meetings prescribe what shall be deemed a legal fence in each town. Assessors and commissioners of highways perform the duties of fence viewers. Four and a half feet is the usual height prescribed. Pennsylvania—Towns and counties secure special legislation for fencing railway lines, and to prevent running of the stock at large. New Jersey—Fences are to be four feet two inches high, of wood, brick, or stone, and four and a half feet if of other materials. Delaware—Four feet, with a ditch within two feet, is a lawful fence. Wood or stone fences, or hedge, four and a half feet high. Maryland, Virginia, North Carolina, Georgia, Florida, Alabama, Arkansas, Tennessee—Legal fences five feet high. West Virginia—Legal fences four and a half feet high. South Carolina—Fences must be six feet high, of wood or hedge, or ditches equivalent as barriers. Missouri—Hedge five feet, fence four and one-half feet. Kentucky—All sound or strong fences five feet high, so close that stock cannot creep through; it is the definition of the legal fence. Ohio—A fence, of whatever material, constructed in all respects such as good husbandmen ought to keep. Statute of 1865. Illinois—Fences four and one-half feet high, of whatever material the fence viewers shall deem sufficient. Michigan—Fences four and one-half feet high of rails, timber, boards, stone, or other things deemed equivalent thereto in the judgment of fence viewers. Wisconsin—Fences four and one-half feet high, etc. By act of April, 1878, barbed wire fence is defined as a legal fence. Minnesota—Fences four and one-half feet high, etc. Barbed fence defined by the act of 1871. Iowa—Four and one-half feet high, or fifty-four inches. Barbed wire fence prescribed as legal fence, 1878. Texas—Five feet high. Barbed wire defined as legal fence. Kansas—Worm fences four and one-half feet; turf, four feet with ditches; wire fence, four and one-half feet apart. Nebraska—The legal fence is described as—such a fence as good husbandmen generally keep. California—The legal fence is described with great particularity. Wire, post and rail, brush, picket ditch and

and hedges were formerly used, but these three separate strands of the wire fence, inches from the ground the strands to be one foot apart. Colorado, Arizona, Montana, and Idaho—Four and one-half feet high. New Mexico, Idaho, and Washington—Four feet high. In Washington Territory barbed wire fences must carry a top rail of wood. Indiana—Any structure in the nature of a fence, such as good husbandmen generally keep.

GAS ENGINES

A paper on this subject was read by Mr. Charles Giddon at the last meeting of the Society of Engineers. The author pointed out that the use of gas as a motive power was still in its infancy, which was not a matter for surprise, seeing that its introduction for public purposes dated only from the commencement of the present century. As early as the year 1791 a patent was taken out in England for producing an inflammable vapour force by exploding spirits of tar or turpentine in closed vessels. Between that date and the year 1880 various other inventions were patented for obtaining motive power by the explosion of various mixtures, gaseous and solid; but all the descriptions appeared to be somewhat obscure as to the nature of the explosive compounds to be used, and the means for obtaining them. Carburetted hydrogen, a constituent of coal gas, was mentioned by some, but it appeared that the idea of using coal gas, as manufactured for lighting purposes, for working engines, was first practically applied in the Lenoir gas engine, patented in 1860, and first introduced to this country at the exhibition of 1862, where it attracted much attention. The general principles of the Lenoir engine were described, and it was pointed out that, among other defects of the engine, was the damage done to the working parts by the sudden and violent nature of the explosion, as also the necessity of the use of electricity for the explosion of the charges of gas and air with which it was worked. The latter objection had, however, now been overcome in the more modern engines by the employment of gas jets for the same purpose. The author described the Otto and Langen gas engine, the chief improvement in which is, however, due to the compression before ignition of the charges of mixed gas and air, by means of which it was found that a much larger proportion of air can be employed than would form an explosive mixture at ordinary atmospheric pressure, and therefore thus obtained is gradual and continuous, instead of sudden, resulting in an economy of gas and more regular working. Advantage has been taken of this discovery in several of the more recently designed gas engines. The general principles of the Otto were described, and its consumption of gas stated to be at the rate of about 21 cubic feet per horse power per hour, as compared with from 40 to 70 cubic feet with engines of previous make. On account of the heat generated by the explosions in gas engines it was found necessary to surround the cylinders with water, and that advantage had been taken of this in a gas engine called the Eclipse, in which the water instead of being allowed to escape when heated, was stored in a separate chamber where it generated steam, which was used, together with the gas, to assist in working the engine. Attention was also drawn to the Blachop gas engine, which is meritorious chiefly on account of the small size in which it is made, and which range from one-half man or one-eighth horse power upwards. This engine, although not comparatively economical in its consumption of gas, was recommended on account of its simplicity and small size, as available for purposes to which it would otherwise be impossible to apply mechanical power. As to gas engines which have been made between the cost of working steam and gas engines, the author observed that the practice had generally been made to take the total cost of working in each case, including labour, and that, when this was done, the comparisons were invariably in favour of gas engines, but he pointed out that such estimates were liable to be misleading. As a gas engine requires little or no attention, the results of the comparisons depend mainly upon the amount estimated for labour for the steam engine with which the comparison is made. With a small steam engine it would in most cases be unfair to estimate the whole time of one attendant, while as the size increased, the proportional cost of attendance would diminish. In instances were given where estimates had been made showing steam engines to be from twice to seven times more expensive in working than gas engines, but although such estimates had doubtless been made with every care, they only served to show that it was impossible to frame such comparisons so as to be generally true. By comparing the costs of the gaseous and solid fuels, it was shown that gas must necessarily, both theoretically and practically, be more expensive than solid fuel. When, however, the labour, wear and tear and first cost were also considered, the conclusion arrived at by the author was that for engines of small sizes gas would always be the most economical. Even with larger engines, if the same economy could not always be maintained, circumstances would in many cases render gas engines the most advantageous and convenient, particularly when only the intermittent use of an engine was required.—London Engineer and Engineering Times



GEOLOGICAL MUSEUM

work by the staff of the Geological Survey... as rapidly as the rooms can be fitted up...

THE STONE FLOOR

which is reached by the main entrance from Sussex street... the fittings throughout being iron...

THE FIRST FLOOR

its divisions corresponds pretty well with that of the ground floor... the main hallway a portion of the space will be devoted to a chart room...

THE SECOND STORY

is identical with the first. Two rooms in the front portion are set aside for Mr. White and Mr. Weston...

THE BASEMENT

will contain, in the George street section, two large apartments fitted with plain but substantial box shelving...

THE CARETAKER APARTMENTS

are situated in a solid stone building detached from the main building... the ground floor it has a dining room, 14 by 14 feet...

CHAOS

it comes again to the first idea that comes to the mind of the spectator who wanders through the building just now...

touch of the master hands, which will set one time to their proper resting places in the cabinets... The specimens are about ten thousand in number...

THE GENERAL WORK

in altering the building has been carried out by Mr. Askwith, the contractor, under the supervision of Mr. Daniel Smith... it is pleasant to hear from these gentlemen speak highly of the manner in which the other has performed his work...

ART ASSOCIATION

A meeting was held in the profane building on Tuesday afternoon to aid in promoting the success of the exhibition of the Royal Canadian Academy of Arts... The Mayor occupied the chair, and the following resolutions were passed unanimously...

ETHNOGRAPHICAL INSTITUTION

At half past one o'clock on Friday afternoon His Excellency received a deputation in the Canadian delegation of the Ethnographical Institution... Prof. Campbell and D'Arcy, of Montreal, and Benjamin Sulte, of Ottawa...

LIME IN AGRICULTURE

All writers on agricultural subjects seem to agree that the use of lime on clayey soil is of great benefit... Carbonate of lime possesses neither of these properties, applied then to cold clay soils it coagulates the air and heat to penetrate more readily...

THE EARL OF SHAFTESBURY

A few years ago the attacks made upon religion by some men of science led to the foundation of a society to investigate all philosophical or scientific questions... The Earl of Shaftesbury, K. O., ON SCIENCE AND RELIGION.

of lime is weak, and on those very light soils the use of lime is unhelpful... But as the action of lime rapidly transforms the nutritive capital of the land its success cannot be permanent unless it is supplemented by direct fertilizers...

THE EARL OF SHAFTESBURY

This is the fourth diploma of Protector delivered by the institution, others having been received by the King of Portugal, the King of Roumania and the Khedive of Egypt... The institution which has thus signified its existence in Canada is a great scientific corporation under the immediate protection of the French Government...

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soon it has been again in general circulation... Complacent against Mr. Knapp's practice was made to the authorities at Washington by a Boston bank, but the Assistant Secretary of the Treasury was fully supplemented by direct fertilizers...

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TOBACCO SMOKE

In further research on this subject Dr. LeBon finds that cellulose, the new alkaloid existing in tobacco smoke (with other aromatic principles, and prussic acid, as well as nicotine), is a liquid of agreeable and very penetrating odor, and as poisonous as nicotine...

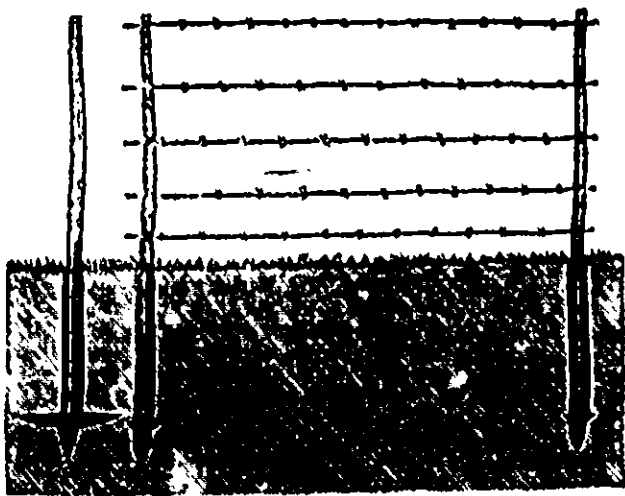
THE ABSORPTION AND SCATTERING OF HEAT BY LEAVES

In order to rightly understand the rate of heat in the growth of plants, it is important to know what part of the heat rays which strikes the leaves is absorbed by them, what part is thrown back and scattered, and what part passes through them to lower organs... 1. All leaves scatter a part of the heat they receive vertically to their surface...

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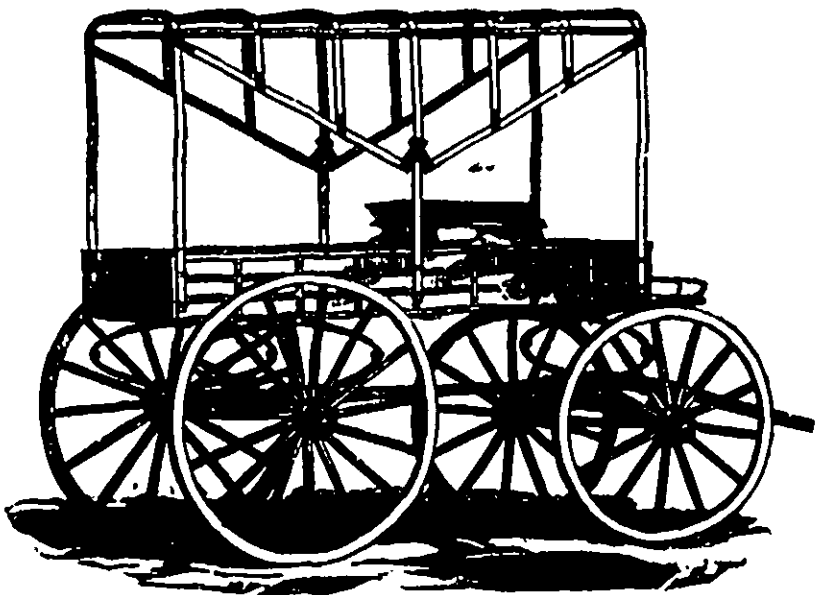
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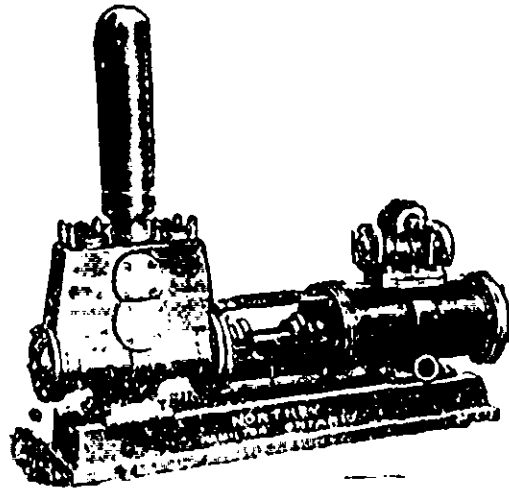
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2nd.—The two strands of No. 12 Wire are twisted together just enough to allow for the contraction and expansion of the metal, caused by heat and cold, and not so much as to injure the structure of the steel.

3rd.—The Barbs on our Wire are four-pointed, thus always presenting a Barb laterally or at a right angle, which is a great advantage over the Two-Pointed Wires, as cattle are unable to get against the fence to break it or push it down.

4th.—The Barbs are fastened to the Wire at intervals of 7 inches, in a manner entirely different from any other, being secured, locked around and between both wires, so that they cannot slip or move toward each other, and they also prevent the untwisting of the cable should either wire get broken.

5th.—The machinery by which the Barbs are put on is so perfect that the Cable Wire are not injured or weakened by the process, as is the case with other Four-Pointed Barb Wires.

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