







... has a less number of ... in the United States, and while ... the United States ...

Mr. Hugh Macdonald, late of the firm of ... Mackay & Co., is making strenuous efforts to establish a cotton print factory in Toronto.

A company has been formed with a capital of \$200,000 for the purpose of manufacturing grape sugar and syrups. Among the shareholders are Messrs. Straker, of Buffalo, Hon. T. M. Oibbe, of Ottawa, ex-Ald. McCree, Hult, Lees and Blackstock of this city.

ONTARIO EXPERIMENTAL FARM

The advance report of Professor Brown, Superintendent of the Ontario Experimental Farm, for the present year has just been made public. It is of considerable interest on account of the results which have been obtained from a number of experiments carried on in that institution for the purpose of testing the comparative values of various methods of feeding cattle with a view to the ultimate profit of the stock-raiser.

A steady, frosty winter is better than an open one in feeding cattle. An average two or three year old steer will gain one-third of a pound more per day to their weight upon prepared hay and roots than upon the same materials unprepared.

can be sold at less than 4 cents per pound (live weight) ... the Cotswold and Leicester grades can be made up to 200 pounds, the Oxford Down 180 pounds, and the Southdown (grades) 160 pounds each (live weight).

Several of these conclusions are of the utmost importance to Canadian stock-raisers, and the first one is particularly deserving of attention. Referring to this subject more fully in another place, the Professor says: "I beg to make particular note of the character of the weather during winter 1880-81 as a great deal of the success or non-success of animal fattening depends on regularity in this as in any other thing."

"Supposing all fatted were placed in the chemical analysis of any kind of food, and it stood as an invariable fact that the fattening animal made most progress in a given time upon that which contains the most fat and flesh-forming materials in the form of albuminoids and carbohydrates, it would result that corn, oats and peas made beef best in the order given respectively. Corn possesses a larger percentage of fatty acid materials, in comparison with oats and peas, peas being considerably less than oats, corn also has one-fourth more starch than either of the others, though less sugar; oats being four times heavier in sugar than corn or peas. Corn is characterized for its albuminoids, and oats for its carbohydrates. The water in each of these foods is practically alike, and the only real table difference not yet referred to is the possession by peas of fully one-half more of what are called flesh-formers as against corn and oats.

"The interesting and practical point therefore is, does experience, in most cases, agree with the chemical facts, especially in regard to the fattening of cattle, and what, so far, has been the test of the Ontario Experimental Farm treatment? To-day (25th June) we closed an experiment specially arranged with these grains, having been very carefully carried out for 75 days. The animals were, but not extra samples of three-year old Shorthorn and Hereford grade steers, one of each in each of the three batches. We had three animals in each of the classes all throughout, but owing to several causes it was considered best to confine the experiment to the six that stood nearest each other in every respect, such as size, quality and apparent disposition. They were allowed to 'settle down' by receiving one week's food similar to their subsequent treatment respectively, all being tied up in a cool open shed away from other cattle. As the experiment began on the 12th of April, warm weather was soon experienced, so that during the latter part of the term the thermometer was often at 80 deg. and 85 deg. in the shade, this told heavily against the average daily increase per head in comparison with winter practice, but of course it told equally for corn, oats and peas. All grain was roughly ground, being neither fine nor very rough; turps pulp, and hay long.

FOOD CONSUMED DURING 75 DAYS, BY ONE ANIMAL.

Table with 4 columns: Food, Weight at Start, Weight at Finish, Total Increase. Rows include Turps, Hay, Corn, Peas, and Green fodder.

RESULT IN INCREASED WEIGHT.

Table with 4 columns: Food, Weight at Start, Weight at Finish, Daily Increase. Rows include Corn, Oats, Peas, and Mean.

"Corn and oats, therefore, gave a similar daily increase per head, while peas showed one-half pound more daily. What may be the cause of this? It was not by reason of larger animals at the start, nor greater amount of food, nor any difference whatever in condition, so far as human skill was concerned, and consequently it must be sought for in the properties of the food. I am not prepared to handle this part of the subject at present, but would again simply draw the attention of the reader to the facts already noted, and particularly to the much greater proportion of flesh-forming materials existing in peas, which means the making of more muscle and lean as against the lighter oil and fatty matters.

COST OF PRODUCTION.

"Without reference, meantime, to the crediting of any items so as to make a proper balance sheet as exhibited in other parts of the report, it will suffice to note the actual cost of producing the several increased weights. The price of each of the grains will be held at one-half cent per pound, which they are in the Canadian market, on an average, at present.

Table with 2 columns: Grain, Price per pound. Rows include Corn, Oats, and Peas.

"This is no less than 21 per cent in favour of peas, which is equivalent to \$4.50 per head of increased profit during one winter's feeding, or \$4,500 in a stable of 1,000 head.

INLAND REVENUE.

Table with 2 columns: Source of Revenue, Amount. Rows include Spirit, Malt liquor, Malt, Tobacco, Petroleum inspection, Manufactures in bond, Beer duty, and Other receipts.

PUBLIC WORKS IN CANADA.

The following is the programme of the approaching official visit of Sir Hector Langevin, Minister of Public Works, to different places in the Province of Ontario: Thursday, August 18th, leave Ottawa, 10:30 p.m. Friday, 19th, arrive Kingston, 4:47 a.m.; leave Kingston, 4:25 p.m.; arrive Toronto, 1:15 p.m. Saturday, 20th, Toronto. Sunday, 21st, Toronto. Monday, 22nd, leave Toronto, 7:30 a.m. (via Guelph); arrive Southampton, 4:10 p.m. Tuesday, 23rd, leave Southampton, carriage, (5 miles) to Fort Elgin. Wednesday, 24th, leave Fort Elgin, carriage, (25 miles) to Kincardine. Thursday, 25th, leave Kincardine, carriage or boat, (25 miles) to Goderich. Friday, 26th, leave Goderich, 9:30 a.m.; arrive Sarala, 3:30 p.m.; leave Sarala, 6:30 p.m. (via Port Huron); arrive Windsor, 9:30 p.m. Saturday, 27th, leave Windsor, 6:45 a.m. (via Detroit); arrive Amherstburg, 1:35 p.m. Sunday, 28th, leave Amherstburg, 6:30 a.m.; arrive St. Thomas, 8:20 a.m. Monday, 29th, leave St. Thomas, 12:58 p.m.; arrive London, 1:40 p.m. Tuesday, 30th, leave London, 8:30 a.m.; arrive Stratford, 9:30 a.m. Wednesday, 31st, leave Stratford, 2:30 p.m. arrive Berlin, 3:37 p.m. Thursday, September 1st, leave Berlin, 10:30 a.m.; arrive Toronto, 1:05 p.m. (noon). Friday, 2nd, leave Toronto, 7:35 a.m.; arrive Port Hope, 10:05 a.m.; leave Port Hope, 9:52 p.m. Saturday, 3rd, arrive Ottawa, 6:15 a.m.

THE FISHERIES.

A supplementary statement of the annual report of the Minister of Marine and Fisheries for the year 1880 has just been issued, and contains some interesting information. The expenditure and receipts for the several Provinces during the year ending June 30th, 1880, were as follows:

Table with 3 columns: Province, Expenditure, Receipts. Rows include Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island, British Columbia, and Manitoba.

THE IRON AND STEEL INSTITUTE.

A meeting of the London members of the Iron and Steel Institute was convened on Monday last to consider what measures should be adopted in view of the forthcoming autumn meeting to be held in London. The meeting thus held was, however, after a short session, adjourned to yesterday, when the chair was occupied by Sir Henry Bessemer, and several important members were present. It was determined that the autumn meeting of the Institute should commence on Tuesday, the 11th of October, and besides the usual reading of papers it was suggested that a conversation should be held—probably at the South Kensington Museum—on one evening, while the annual dinner of the Institute would occupy another. Visits to the works of the London, Brighton and South Coast Railway at Brighton, to Dr. Siemens' telegraph works, to Woolwich Arsenal, and to the Government small arms factories at Enfield, were amongst the excursions which it was proposed to make, and it was hoped that arrangements might be organized to enable the members to visit the Victoria Docks one afternoon, and see them lit up by the electric light afterwards. An executive committee was nominated to settle upon the programme, and a subscription list was opened, which was liberally responded to by those members present as a commencement.—Engineering, July 15.

ANIMAL VACCINATION.

London, 10th.—Prof. Pasteur's address before the International Medical Congress on Animal Vaccination created considerable sensation. He stated that France loses every year, by splenic fever, sheep to the value of 20,000,000 francs. He said that fifty sheep were placed at his disposal, of which twenty-five were vaccinated. A fortnight afterward the fifty sheep were inoculated with the most virulent anthracoid microbe. Twenty-five vaccinated sheep resisted infection; twenty-five unvaccinated died of splenic fever. Since that time the Professor's energies have been taxed to meet the demands of farmers for vaccine. In twenty-five days there were vaccinated in the departments surrounding Paris, more than 20,000 sheep, and a large number of cattle and horses. The Professor said: "If I were not pressed for time I could bring to your notice two other kinds of virus, attended by similar means. These experiments will be made public by-and-by."

THE CASH SYSTEM IN GREAT BRITAIN.

When the old order changeth, giving place to the new, wise men recognize the force of the change, and arrange their affairs accordingly. It is perhaps good, or at any rate pleasant, to adhere to old fashions and customs, but not when they cease to pay. As soon as they result, commercially speaking, in a loss, they ought to be abandoned, so, if it is not well to be out of harmony with the spirit of the times. This is a fact which cannot be too thoroughly appreciated by the retail traders of this country. Their vocation has lately undergone a material change—one might almost say a revolution. They cannot now do business on precisely the old lines—at least not with success; and those who continue to be wedded to a system which is now old fashioned and obsolete, who expect to make a fortune in trade after the manner of their forefathers, and who refuse to recognize the altered situation, will sooner or later find an avenging Nemesis at their heels, whose monitions will be of an extremely disagreeable character. Traders depend upon the public, and must, therefore, study public opinion, and be in harmony with it. They may just as well run their heads against a brick wall as try to oppose public opinion, and the wise man is he who humours it, pampers it, and makes money out of it.

One fact has become clearly evident of late: public opinion has emphatically pronounced against long credit, high prices, and big profits. Public opinion is, so to speak, yearning to pay cash, and in this respect certainly it must have its desires gratified. We have been advocating for a long time past the adoption of the cash system to the utmost extent practicable, and we are glad to know that many of our readers in different parts of the country have adopted this system with advantageous results. The main idea is, of course, to show that the retail trader, if customers pay him cash, can supply goods on terms as favourable as, if not more favourable than, any large organization managed on co-operative or any other principles; and the extensive dissemination of such knowledge will do much good to the trading classes generally. The British public is so easily tickled. We are all familiar with Carlyle's elegant description of the population of these islands—"mostly fools"—and occasionally in dealings with our fellow creatures this description is worth remembrance. Let the British public pay cash by all means give them every facility for doing so, and show them that they are remarkably wise in this aspiration. The man who pays cash certainly ought not to pay so much as the man who does not pay cash, and perhaps never pays at all, and this is a distinction which traders must make known to their customers. Many grocers now issue a price list in which the difference in prices for cash and for credit is clearly set forth in adjoining columns, and this plan, we believe, has been almost invariably found to work satisfactorily. When customers are able to calculate upon a specific saving of several shillings in their weekly grocery bill by paying ready money, they have a strong inducement to pay cash, and such inducement will generally be sufficient. We are confident that in the long run the system will be found to work well. Grocers have at present such extraordinary competition to meet that they cannot make too vigorous efforts to utterly crush the ancient credit system, and raise in its place the simpler ideal of cash down! They are not likely to have a more favourable opportunity than the present for achieving this much to be desired consummation. The public, as before remarked, are now in the mood to pay cash. Our readers must do their part. They must distinctly establish cash prices, they must show their customers that these prices are unquestionably beneficial to them, and help them to save money. This being done, the rest is easy. Traders will thus accomplish a very salutary reform, and their customers will owe them an immense debt of gratitude for having done so.—London Grocer.

Wm. R. Dickerson, one of the oldest lawyers in Philadelphia, was respected and fairly successful before he went into the great Waittaker will forever. Now he is broken down, penniless, and a convict.

The North German Gazette is publishing a series of articles levelled against the fallacies of Free Trade. It says that wherever the principles of Free Trade have been applied they have ruined the agriculturists, degraded the workingmen to mere machines, and converted the country which accepted them into a tributary of Manchester.

A meeting of the shareholders of the Consolidated Bank was held in Montreal, when a resolution was carried to accept the offer of Mr. George Simpson, broker, of \$260,000, or rather more than 13 per cent, for the balance of the assets. The meeting was a long and animated one, and strong opposition was raised on behalf of the poorer shareholders to the sale of the estate. Mr. Simpson will pay the amount in cash and accept the full liability now devolving upon the liquidators.

The filling up of the vacancy in the English Court of Appeal, caused by the death of the late Lord Justice James has created an unlooked-for difficulty. The Government proposed to appoint Sir George Jessel, a Lord Justice of Appeal, but the latter seems indisposed to accept the offer except on the condition of being raised to the peerage, and, as the Master of the Rolls is a Jew, it is feared that the House of Lords might decline to admit him into their midst. No Jew has ever sat in the House of Lords, and it is no doubt true that strong objections would be made in that House against the precedent which would thus be created.

The Bank of England returns for the week ending Wednesday the 27th July, when compared with those of the previous week, show the following results: Notes issued, £40,966,150—decrease, £193,775; rest, £3,348,080—decrease, £2,638; public deposits, £4,571,166—decrease, £80,420; other deposits, £28,320,418—decrease, £148,403; seven day and other bills, £228,707—decrease, £30,143; Government securities, £15,885,333—no change; other securities, £20,103,573—decrease, £186,432; reserve of notes, £13,999,048—decrease, £68,378; stock of bullion and coin, £28,256,550—decrease, £340,130; active circulation, £28,967,105—decrease, £264,180; total reserve, £15,030,445—decrease, £75,986.

The following statistics of New York canal business for the month of July, recently made public, when compared with those of July, 1880, show a startling contrast:

Table with 2 columns: Year, Amount of tolls collected. Rows include July 1881, July 1880, and Decrease.

An action brought by Shanks & Son, engineers, carrying on business at Londonhill street, to recover of the Right Hon. Lord Henry Lennox the price of a lawn mowing machine, was heard on Wednesday by Mr. Com. Missioner Kerr in the City of London Court. The case came before the Court on a previous occasion, when the return to the summons was "Not served." Mr. Scarlett now said that since that time he had made inquiries at the Carlton Club, and learned that His Lordship was out of town, but had sent for his letters and had received them since the leaving of the summons. His Lordship's secretary had subsequently written to say he knew nothing of the account, but that it should be attended to on his return to town. His Honour held that that was sufficient evidence of service, and in the absence of His Lordship gave immediate judgment against him with costs.

SPRIT OF THE COMMERCIAL AND INDUSTRIAL PRESS.

OUR STOCK RAISING INTERESTS

(Shareholder)

Among the many methods of harvesting the great natural wealth of our North-West Territories, stock breeding promises to become one of the most important. The facilities which the level luxuriant plains and the hilly regions, as well as the favourable climatic conditions of the North-West afford for embarking extensively in the business of cattle raising, are equalled by few and surpassed by none of the other pre-eminently agricultural countries of the world.

FAIR TRADE, NOT FREE TRADE.

(Philadelphia North American.)

The agitation against the Free Trade theory which has been going on in England for some time past in an informal and irregular way is beginning to take definite shape. It will presently be transferred to the arena of Parliamentary debate, and is thus likely to become a political question, as practical as it is important.

general adoption, and upon this its promoters continually calculated. As it has happened, their calculations have been disappointed. The anticipated abandonment by other nations of the protective principle has not taken place, and that a great deal will take place seems more improbable than it does to-day.

THE IMPENDING ECONOMIC REVOLUTION.

(Chicago Journal of Commerce)

The last number of The American Protectionist has a very able and sensible editorial on the subject of the strong Protectionist sentiment now alleged to be in process of development in England. It takes for its text a late article in the London Times antagonizing a Protectionist article in the Quarterly Review.

pay higher rent for the benefit of the landlord, that the land question in England tends to take the course which Mr Gladstone anticipates at the present time.

FREE TRADE IN ENGLAND.

London, July 16.—The change in sentiment in England in relation to the theory or system of Free Trade is none the less interesting because it is exceedingly and curiously sudden.

The first serious blow that this principle received was in the losses which it brought upon the sugar refiners of England, particularly those whose establishments are in or near Bristol.

The agitation has made headway with astonishing rapidity, indicating clearly enough that a great deal that has been said in the past by many about the universal advantages of Free Trade was simply the cant of political economy, which was not understood, for there is no other way of accounting for this ready desertion of a sound trade maxim.

If one will take the trouble to talk with merchants and manufacturers here, he will find the utmost unconsciousness prevailing on this subject. Many are outspoken in their belief that it is absolutely necessary that Great Britain should impose retaliatory duties, while those who do not desire such a change in system are usually willing to admit that there is a large number who have substantially abandoned Free Trade.

In what I have said I have stated a few of the reasons which make me think that in no remote future the trade policy of the United Kingdom may undergo a decided revision.—N. Y. Times.

THE ORIGINAL BENCHER AND PROTECTION.

The following is an extract from a thanksgiving sermon preached to a congregation of farmers over sixty years ago by Rev. Lyman Beecher: "Protection to and encouragement of our manufactures are essential to national prosperity."

factory consists in the transfer of the land to agriculture, by applying to the landowner a near and steady market, and by diminishing the competition of exported produce in the market.

THE TOBACCO MONOPOLY OF THE PHILIPPINE ISLANDS.

The Madrid correspondent of the London Times says: "One of the most bold and progressive acts of the present Government is the abolition of the tobacco monopoly in the Philippine Islands, the text of the decree providing which will be published in the Official Gazette on Sunday."

The London Daily News correspondent says: "The Spanish Government has decided to abolish the state monopoly of tobacco in the Philippine Archipelago, of which Manila is the capital. About one hundred years ago the Castilian Viceroys decreed that tobacco should be cultivated by the natives in great quantities, handing over the stipulated amount to the Government and the rest being destroyed."

"The Government expects that the reform will attract enough foreign capital and enterprise to stimulate the prosperity of the colony, so admirably situated near the China seas and the lush road between America, China and Australia, and inhabited by eight millions of most docile natives and Chinese."

Nearly all the persons miraculously cured by prayer at Flak Cottage, the hospital of the Rev. George O. Harbo in Kentucky, have since died, and these misdeeds have closed the concern.

A decidedly unpleasant impression has been made in Switzerland by the information that the Government of France propose to build a fort at Annemasse, on the neutral territory of Savoy, where as the Swiss contend, France is barred by treaty from erecting any fortifications whatever.



TORONTO PRICES CURRENT.

Table of Toronto prices for Groceries, Oils, Paints, Wool, Hides and Skins, Leather, Produce, and Hardware.

Table of weekly review prices for various commodities including Flour, Grain, and other goods.

WEEKLY REVIEW.

Tuesday Aug 10th, 1904

Business is generally reported quiet. The harvest throughout Ontario promises to be very good. The dry roads trade has been exceedingly good during the past season and even at the present time there is quite a waiting up demand for staple cottons and fancy dry goods.

The Ultramontaine Spanish papers are abusing King Alfonso for his friendliness to the Jews. In the recent very hot weather a ton of lead daily kept the temperature of the House of Commons down to 75°.

THE WOOL HOUSE. WINANS & CO., 114 Church Street, Toronto. S. Lennard & Sons. HAMILTON COTTON COMPANY. Wm. WILKIE. Osborne Sewing Machines. THOMAS WILSON. Steam Engines. Montreal & Halifax. F. J. MACKAY.

RAILWAY MATTERS.

ANOTHER MANITOBA RAILWAY ENTERPRISE.

The notice in our advertising columns calling a general meeting of the Provisional Directors of the Winnipeg South-Eastern Railway Company brings this project to the front again. The meeting is to be convened for the purpose of opening stock books and making the necessary arrangements for proceeding with the immediate construction of the road.

Here, then, we have another railway enterprise maturing in this city, and our readers having any knowledge of the projected route will see that this road, making the proposed connection with American roads at the boundary, will give Manitoba another important outlet.

This South-Eastern road of ours, it will be recollected, secured its charter from the Local Legislature last year; and various adverse rumours concerning it have been circulated, the idea seemed to have gained some footing that the line never would be built by the promoters—that they would sell the charter, or that the bill under which they came into existence as a corporation would be disallowed.

As to selling the charter, that, we are given to understand, is about one of the things farthest from the intentions of the promoters. They have made arrangements to secure sufficient capital to build the road, and are to go on with its construction in good faith. It has been insinuated, but without any foundation, that they have been in negotiation with the directors of the South-Western, with the view of clearing the track for that company—getting out of the way—so as to enable them to secure an eastern outlet at Duluth.

The boast has, we know, been made that the C. P. R. Company have sufficient influence at Ottawa to secure the disallowance of this measure. We have not the slightest idea that the influence of the great railway corporation that are building our national line—powerful as that influence is—can be successfully exerted to kill this bill.

In so far as it is to some extent a competitor with the C. P. R., it is not to be expected that the latter corporation will feel particularly pleased with the South-Eastern. A local line in this direction, free from their control, must expect their opposition. But the charter held by the South-Eastern was given them because the people of Manitoba felt that it was in their interest that the road was to be built; and, as they had the power to grant the charter, we do not imagine that their action will be overruled.

The provincial crop of railways certainly looks remarkably promising. Our great trunk line, the C. P. R., with its ramifications, the Winnipeg & South-Western, Winnipeg & South-Eastern, Portage & North-Western—that other stupendous project, the Winnipeg & Hudson's Bay line—and we do not know how many others of less pretensions—all form a network of railways, the completion of which ought to furnish abundance of communication for many years to come.

Of the roads enumerated, it is noticeable that four will probably prove great trunk lines, giving us connection with the seaboard. The Canada Pacific is to run via the north shore of Lake Superior to Montreal; and the South-Eastern via Duluth, the south shore of Lake Superior and the Sault, also to Montreal. The South-Western will, it is confidently expected, find a connection to the east with the Northern Pacific and its combinations (under control of King Villard) to the ocean; while the Hudson Bay line looks northward to find a lonely outlet at York Factory.

Enterprises of this magnitude radiating from Winnipeg make it plain that the city is feeling the effects of a railway boom as well as a building boom, and

under their combined efforts everybody is having a very pleasant time.—Herald.

ENGLISH RAILWAYS—SOME OF THEIR PECULIARITIES.

The following is from an interview in the Boston Herald with Mr. D. M. Yeomans, who is an American, although now president of the Thames & Channel Steamship Company.

"Are the English railways generally well managed, Mr. Yeomans?"

"They are, and I think with much greater economy than American railways. In point of great speed most of their express passenger trains make wonderful records. For express trains, the rule in England is great speed and long distances between stopping places. The Great Northern Railway, which is the finest passenger railway in England, runs its express train through from London to Edinburgh, a distance of 400 miles, with only three stops, and makes the distance in 8 hours and 45 minutes. The first 108 miles is run without stop in 2 hours and 5 minutes. Now the average consumption of coal on one of these fast trains does not exceed 30 pounds to the mile, and for the section of 108 miles no water is taken in on the way, and only 2,800 gallons consumed on the way. When I gave some of your railway men these facts they would scarcely credit it—they said it could not be done."

"They have a system of scooping up water on some of the roads while in motion, have they not?"

"Yes, they do it on the Northwestern, but not on the Northern railway."

"What is the weight of these express trains, and how many passengers will they carry?"

"The average weight of these express trains—having about 18 coaches—is about 200 tons, exclusive of the engines. The average weight of the passenger coaches is in the neighbourhood of 12 tons. There are five compartments in each coach, and there are three classes of coaches. In the first class coach, which is finely fitted up, six persons are accommodated in a compartment, or 30 in all. In the second and third class coaches, each compartment accommodates 10 persons, or 60 to a car. You can see from this that, for the dead weight carried for each passenger, the English coaches are ahead of our American cars. The average length of the English railway coaches is 30 feet, and the entrances are on each side, one to each compartment. Railway travel in Great Britain in the higher classes of cars is much cheaper than in America."

"The cost of a first class ticket from London to Edinburgh is £5 or \$15, or about 43 cents a mile. The third class fare in England is about equal to first class fare in the United States."

"How are the coaches coupled?"

"Differently from American cars. They are secured or fastened together by screws—right and left screws—and these are tightened up until the buffers press strongly against one another. There are two buffers on each end of a coach, one on each side. These, while they press strongly against those on the coaches in front or behind, have yet spring enough to allow the coaches to easily turn curves, etc., but they do away with all sudden jolts in the stopping or starting of trains. By this method, however, the train is made practically one carriage. But this system of coupling has its disadvantages. A screw may be defective and break at any time. This is one of the reasons why the board of trade has insisted upon the railroads using automatic brakes, which, the moment a train would break in two, for example, would open and put the brakes on the train."

"Americans, who think their system of railway cars the best, wonder that some live Englishmen does not introduce them into England on the railways there. But they have been introduced and proved a dead failure. That is, the people would not have them. Some three years ago the Midland Railway put on American cars. People came to the station, looked at the cars, but wouldn't go in them. They went to their own coaches on the other roads and left the Yankee cars empty. Of course the Midland had to take them off its line."

"Some of the English railways own over 60,000 railway wagons. They are smaller than American freight cars, and will weigh from six to eight tons each, and will carry eight tons of freight. These wagons are almost invariably run on four wheels. No trucks are used. The passenger coaches have four and six wheels, but the American bogie trucks have been introduced on some of the roads, and are rapidly going into use on passenger coaches."

"What is the speed of accommodation trains?"

"About 30 miles an hour is the average speed of these trains. I may tell you that the English trains are run with much less noise than in this country, and less smoke and clatters. The Pennsylvania Central is run more like an English railway than any I have seen in this country."

"The largest junction in England is known as Clapham Junction. It is on the Surrey side of the river, in the southern part of London. Two railways—the Brighton and Southwestern—own the tracks of this junction, but the government, through the board of trade, allowed other companies to run their trains over it. This was done to prevent the multiplication of unnecessary

railway lines in the city, and it also saved the companies allowed the privilege a large outlay for land in London is very expensive. The roads which utilize Clapham Junction, in addition to those who own it, are: The North-western, the Midland, Chatham & Dover, and the Great Western. These are run over the tracks at this junction from trains a day about every day in the week, Sundays included."

"This seems enormous. Why, it is a train about every 3 minutes in the 24 hours."

"That is true, and would seem to be almost impossible of accomplishment. Some of your railway men thought it could not be done, but it is done. The regulation of the running of railway trains in England has been reduced to a very perfect system. Their signal system is a very complete one. Nearly every railway has adopted the absolute block system, which is so arranged that any one train cannot pass a signal station until the one ahead of it has passed the next signal station. The block stations are about half a mile apart. The latest and best railway signal adopted in England is what is known as the Sykes signal. It is operated by electricity, and is highly approved of by the board of trade."

"Complaints are made by Americans that there is no system of checking baggage in England as in this country?"

"I know it. People are apt to complain when they find things different abroad from what they are at home, but in this instance, I think, the complaint is not altogether just. It is true that it might seem a hardship to those who, in this country, when the cars arrive at a station, having surrendered their checks, take no further trouble about their baggage. In England, instead of waiting in the coach for the delivery of the baggage, the passenger simply stands outside and points out his baggage when it is put out. The guards are often so expert that they can tell the baggage belonging to each person, or, at least, what baggage van it is in. The passengers themselves ascertain this fact, and thus are in a position to readily find it and point it out to the coachman when they reach their destination. I may tell you, however, that the American system of checking baggage was tried on the London, Chatham & Dover railway, and proved a failure. It may be that the railway employees did not care to have the system work, but whatever the cause was, the result is as I tell you. Barring the slight personal attention needed to identify baggage, I will say that I think the traveller on English railways can get his baggage at the end of his journey in less time after the train arrives than he can in America by the check system, and, I may add, baggage is very rarely lost on an English railway."

"What do you think of the operation of the English railway system?"

"As a whole, I think the English railways are operated more economically than our American railways. The English seem to have many things better systematized than the Americans."

The Grand Trunk and Central Vermont Railways have reduced the rates on first-class freight from Bushy to Chicago from 75c to 55c per hundred pounds; second-class from 60c to 45c; third-class from 40c to 25c; fourth-class and special from 40c to 15c.

Another American custom, baggage checking, is likely soon to be adopted in England. The London and North-western Railway sent an emissary specially to report on our system. It is asserted that 25,000 pieces of baggage were lost or stolen in England last year.

Engine 398, John Welsh engineer, Frank Howard fireman, on July 4th, made the unequalled run from Elmira to Adrian, distance 61 miles, and made two stops, in 64 minutes, but with a modesty unusual among locomotive engineers John says, "No credit to me; I had the steam."—Herald.

The traffic returns of the Great Western Railway of Canada for the week ending 29th July, 1881, are as follows:—

Table with 2 columns: Item, Amount. Passengers 39,275; Freight and live stock 33,541; Mails and sundries 3,208; Total 76,024; Corresponding week last year 65,273; Increase 10,751.

The assessment of the several railroads in the State of Indiana by the State Board of Equalization has been finished. The board worked hard to complete its task in as short time as possible, and seems to have succeeded. The total assessments of the several roads in the State amount to \$2,279,418, while in 1880 the total was \$38,442,941, making an increase in the assessments the present year of \$4,830,477, or an increase of nearly 12 1/2 per cent. over 1880. There was in 1880 an increase of \$423,015 over 1879. The main lines were generally increased from 5 to 10 per cent., and the rolling stock in proportion to additional rolling stock purchased.

The Buffalo, Pittsburgh & Western company have just put in operation an original idea in this section, and that is to take with their working train sleeping, dining and cooking cars. They can board and sleep their labourers for \$14 a month. This is a great saving of labour to the company, who can utilize time and shift from point to point while the men are eating or sleeping. When the gangs contained fifty men the company usually had to make arrangements for their board at the larger towns, and at

some distance from their work, requiring considerable time for their transportation to their place of labour. This is now obviated, and the labourers are better satisfied with the convenience afforded them as well.—Titusville, Pa., World.

It is said that a new position, that of travelling engineer, has been created on the Eastern road, and that it is filled by an old and capable engineer. His duty is to travel on the road and keep an eye on the engineers and firemen and see that they are attending to their duties, and make reports to the main office. He comes and goes as he will, and sometimes turn up in the most unexpected manner, and if an engineer or fireman happens to be running a little too fast for the car, or has been careless with his engine, it is not soothing to his feelings to have this new official pop out of some place in full view and calmly inspect him. Such a person has been at work upon the Erie for some time, and it is said to keep the men up to their work. He has been over the Central line during the past week acquainting himself with the time, road and train.—Ez.

Some of the narrow gauge roads in the Pennsylvania oil regions pay dividends at a rate that ought to satisfy their owners. Their sworn reports to the State officers for 1880 show the following figures: The Olean, Bradford & Warren, on a capital stock of \$150,000, paid during the year thirteen dividends, twelve at 2 per cent and one at 5 per cent, making a total of \$15,000. The company had a surplus on hand at the end of the year of \$1,866,778. The Kendall & Eldred railroad, on a capital stock of \$150,000, paid twelve dividends at 3 per cent, four at 4 per cent, and one at 10 per cent, making a total of \$105,000. Besides those dividends the company built a plank road costing them \$1,176,659, which earned \$2,700 above expenses in about six months. At the end of the year this company had a surplus on hand of \$2,553,150. The Bradford, Bordell & Smithfield road traverses an unbroken wilderness its entire length of twenty-five miles.

Montreal, Aug. 3.—In an interview the Montreal correspondent had to-day with Assistant General Manager Wainwright, of the Grand Trunk railway, on the subject of the new double track between this city and Toronto, he said that there was no general plan yet decided on further than that the company was at present engaged in laying down permanent sidings on an extensive scale at all the principal points on the line where the greatest amount of traffic centres, such as Montreal and Point St. Charles, Belleville, Trenton, Scarborough and Port Hope. These sidings are to be permanent, and are designed to form part of the double track hereafter. The work at all these places will be carried out this summer, and when completed will be an enormous relief to the traffic, which is now greatly retarded for the want of an additional track. Operations on other points of the line will be entered on next summer, and the work of completing the double track finished at as early a period as possible. In the meantime Mr. Wainwright anticipates a great improvement to the traffic from the work now in progress. Mr. Hannaford, the chief engineer, is at present in Chicago.

The Canada Southern will soon have an independent outlet from St. Thomas to Toronto. Only twelve miles remain to be completed of the Credit Valley road, which runs from St. Thomas to Toronto. It is expected to have the road completed and ready for business about September 1. It is contemplated to extend the line at once from Toronto to Montreal. This will give the Canada Southern a direct line from both Chicago and Toledo to Toronto and Montreal, and will enable it to compete on business for Toronto and Montreal with the Great Western and Grand Trunk Railway. It is not the Canada Southern which is building this road, but a syndicate of capitalists interested in the St. Paul, Minneapolis & Manitoba Railway. But there can be little doubt that the syndicate is backed by Vanderbilt, and that the new road will be run exclusively in the interest of the Canada Southern. The reason, no doubt, that the Manitoba syndicate is building it is that Vanderbilt did not care to show his hand when the new road was commenced, because at that time he was working in harmony with the Grand Trunk and Great Western roads. But he evidently knew then that the peace would not last, and that the time would soon come when he needed an independent outlet to Toronto and Montreal for the Canada Southern to keep the other two Canada lines in check.—St. Paul Press.

The tremendous consumption of railway material in the United States this season finds no better indicator than in the statistics of our exports and imports of railroad bars or rails. For the month of May, 1881, the latest month compiled, 70,354,116 lbs. of steel bars and rails were imported, against 26,635,911 for the month of May, 1880. For the eleven months ending May 31, 1881, the imports of this commodity aggregated 360,288,449 lbs. against 112,451,577 for the corresponding period of 1880. The imports of iron bars and rails also show a very large increase, though not in as great a ratio. Our export figures are equally significant. No steel rails were exported during May, and for the eleven months ending May 31, 1881, the exports show a great falling off, only 102,107 lbs. going abroad against 702,040 during the eleven months of 1880. Iron rails show

a large decrease for the month, but an increase for the eleven months. Exports of cars of all classes exhibit a falling off, but car wheels and locomotives are sent away in rather larger numbers than last year. All of which indicate a strong demand at home for railway supplies. Our manufacturers have been benefited, by the way, in the fact that the exports of iron and steel rails, car wheels and car wheels have increased in quantity the increase of value being more than counterbalanced. For the eleven months ending May 31, 1881, the value of the above commodities totaled \$1,524,577, against \$1,120,000 for the corresponding period of the previous year. With a cessation of the home demand, if it ever comes, we will be enabled to look for a very large foreign trade in railway supplies.—Railway Review.

The bill establishing a railroad commission in New York, which passed the Assembly of that State, did not reach final action in the Senate. It was evidently drafted with purpose to see that it might be left over, as the objections to its passage were generally speaking, of a trivial character. To an outsider it would appear that a mistake was made in opposing a commission in that State, especially as the bill proposed provided for a commission of inquisitorial power only. A commission of arbitrary, dictatorial powers is quite another thing and is to be advocated. Where abuses in railway management do actually exist they should be remedied, but rather than submit them to harsh edicts of a commission with arbitrary powers it would be better to have them dispensed by the "natural public opinion" which Charles Francis Adams referred to when he described the Massachusetts Commission as a "scattered ray of public opinion" which he brought to a focus and brought to bear upon a given point. The workings of a well constituted railroad commission, vested with power only to investigate, report and offer suggestions, are as beneficial and important to the railroads as to the people. Several of our railroad commissions have done a vast amount of good service for the road interest even in the passive way of furnishing reports and statistics, for the facts and figures thus collated have familiarized the people with the condition and influence of the greatest of corporate interests, and educated them up beyond the influence of the demagogical misrepresentations of anti-monopoly politicians.—Railway Review.

In the House of Lords, recently Mr. DeLaware called attention to the Parliamentary return ending 31st December, 1880, relative to railway continuous brakes, and asked whether Her Majesty's Government proposed to take any steps to enforce the regulations of the Board of Trade. The return made in December showed a very unsatisfactory state of things. Out of sixty-one English companies, only ten had used brakes that fully satisfied the requirements of the Board of Trade. Out of eight Scotch companies, only five used them, and of twenty-one Irish companies, not one used any very effective brake at all. The noble Earl admitted that several of the companies used a brake which they supposed would satisfy the Board of Trade, but only seven out of the ninety companies in this country were actually carrying out the requirements of the board. Lord St. Aldely said some of the railways had wholly, and others partially, adopted the requirements of the Board of Trade, and others were using a sectional brake. The Board of Trade had been in communication with the London & North-Western, and negotiations were going on among several chairmen of the largest companies to bring about united action. They had appointed a committee of engineers who were in turn discussing the question of interchange of carriages and rolling stock, which was absolutely necessary for the proper working of the scheme. He hoped that everything that was required would be accomplished without further legislation. Lord Colville of Culross, complained that the noble Earl had hardly stated the fact as regards the Great Northern Company, as 90 per cent of their rolling had been fitted with continuous brakes. At a meeting of twelve engineers it was considered that the simple brake was more effective than the automatic one, and the London & North-Western had discarded the chain brake and resorted again to the simple brake. Lord Houghton thought the progress that had been made was satisfactory, and it would be unwise if the Board of Trade enforced their powers. Lord Norton pointed out that the Board of Trade had carefully refrained from intimating any particular brake which would have stopped invention and improvement. Consequently the Westinghouse brake had been introduced upon three or four times. Neither the Board of Trade or Parliament could say what brake should be adopted. All that could be done was to point out the matter to the public, and leave the railway companies to find out the most effective brake. The subject then dropped.

The English authorities are about to place standard thermometers at several towns. These instruments are made of brass, blackened to resist the weather, and the cistern is wholly of metal. The tube is of strong glass, the scale enameled, and the certificate of the Kew Observatory giving the index error is framed and glassed beside them.



SCIENTIFIC AND PRACTICAL.

EXPERIMENTS MADE TO DETERMINE CERTAIN PHYSICAL PROPERTIES OF CAST IRON

The following paper, by Mr Charles Mackintosh Staveley, was read at the June meeting of the Iron and Steel Institute.

It has long prevailed that cast iron in passing from the liquid to the solid state expands after it has been cast in a mould and before it contracts, and it has been frequently stated that the excellent impression obtained by iron founders from that intricate and complicated pattern is principally due to this cause.

The objects of the Iron and Steel Institute is to disseminate facts and to remove errors that may have been generally accepted as truths.

The paper of Mr. Wrightson, that was recently read and discussed before the Institute had reference to the expansion of molten cast iron in cooling, and the reasons why a lump of cold cast iron plunged into liquid molten iron sinks and subsequently floats on the surface.

Mr Wrightson's experiments on the expansion of iron in cooling were confirmed by the experiments of Mr. Lowthion Bell, and there appeared to be a perfect unanimity of opinion during the discussion that the experiments confirmed the impression which had so long prevailed, and no one ventured at the meeting to express any doubt on the subject.

From numerous circumstances that have come under the notice of the writer of this paper, he had many reasons to doubt that it was a fact that cast iron when passing from a liquid to a solid state expands in the slightest degree.

I can carefully considering the experiments made by Mr. Wrightson and Mr. Lowthion Bell, he comes to the conclusion that it was probable the expansions recorded by their measurements were due to other causes, and he therefore determined to make a series of experiments with a view of establishing the facts.

Mr Lowthion Bell's experiment was made with a solid cast iron cylinder 6 feet in length, and he showed that expansion went on continuously for an hour after the cylinder was cast, and that no change took place for a further period of two hours; the total expansion of the length of 6 feet being twenty-thirty-seconds, equal to .62 of an inch, or about 116th part of its total length.

It was thought that if expansion really did take place with molten cast iron, no more conclusive experiment could be made than by casting a long bar, and the following experiments were therefore undertaken.

1. A mould was made with a section 5 by 4 inches, the length of the mould being 31 feet 6 1/2 inches. One end of the mould was firmly secured; the other end of the mould was secured by a plate of iron which had previously been coated with loam, and arrangements were made so that the iron plate could be easily pushed forward if the molten metal expanded after it was cast.

About 4 inches from the back of this plate a lump of iron was securely fixed to be used as a fulcrum for the measurement of any expansion that might take place. A punch mark was made on the top of what may be termed the fulcrum plate, and another into the plate forming the end of the mould, and a pair of callipers adjusted to record any expansion that might take place. The iron plate was chalked, so that the slightest movement could be ascertained by the callipers. The iron was run into the mould at 10.34, and twenty-six observations were recorded by 123 when a very slight contraction was observed, which at 12.7 became more decided. At 12.25 the surface of the iron appeared red-hot by daylight, and at 12.8, when contraction had set in, it was still red-hot at the sides when slightly stirred with a rod.

Not the slightest sign of expansion was observed in this experiment. Numerous observations were recorded as to the contraction, and the bar was measured on the following day at nine o'clock a. m., when it was quite cold, its total length being 31 feet 1 1/2 inches, and the contraction 4 7/16ths of an inch, or 1.19 per cent. of its length.

2. A second mould of the same section was made, the total length being 31 feet 6 inches. This mould was covered with plates, so as to exclude the top surface of the iron from the air. The mould was run full of iron at 11.43, the arrangements for measuring being the same in all respects as in the previous experiment. At about twelve o'clock it was discovered that the plates were expanding, and were pushing forward the end of the mould which at 12.27 showed an apparent expansion of 1/4ths of an inch. This experiment was disregarded, as the mould had undoubtedly been pushed forward by the covering plates, and not by the expansion of the iron.

3. & 4. Two moulds were then made 3 feet 7 inches each in length, No. 3 being uncovered, and No. 4 being covered with plates as before, except that near the ends two small plates were placed as covering plates, and were removed immediately the bar was cast, so as to prevent any movement of the end of the mould by the expansion of the plates. Neither of these bars showed any expansion. The No. 3 bar, which was uncovered, contracted 3 1/2ths of an inch, whilst the covered bar contracted 3 inches. The end of the mould of the

No. 4 bar was somewhat distorted by the expansion of the plates before the small loose plates at the end could be removed.

5. A fifth bar was then cast 3 feet long, and immediately the surface had set it was covered over with 1/2 inches of sand, so that it might freely expand or contract. No expansion was observed with this bar, and when it was ultimately removed from the sand it was found to have contracted 3/16ths of an inch. As the length of some of these bars was 3 feet, if they had expanded in the ratio mentioned by Mr. Bell—whose experiments showed an expansion of twenty-thirty-seconds in a length of 6 feet—it would have amounted to upwards of 1/4 inches. In making the experiment with covered plates, a serious objection was discovered to the adoption of that system, as some of the fluid iron found its way into the crevices between the joints of the plates, and, in cooling, caused a certain disturbance of the mould, which led to the inaccuracy of experiment No. 2, and partially to that of No. 4. It was thought that covering a long bar with sand immediately the exposed surface had set would be a valuable test and a conclusive one, and the writer still believes there is no better mode of ascertaining the fact than by this method.

The writer having satisfied himself that expansion did not take place when iron was run on a level, still thought it desirable to ascertain whether any change took place when the iron was cast vertically.

6. The first experiment was made by casting a cylinder in the ordinary way in a dry sand mould 9 feet 4 1/2 inches long by 4 inches diameter. The bottom end of the box was firmly secured, and a blank flange was bolted to the top of the box. A hole was made in the centre of the flange plate through which the cylinder was run. The mould had previously been thoroughly dried in the usual way. A long trammel was adjusted to punch marks in the bottom and top flanges of the pipe box, so as to ascertain if there was any movement in the box. The cylinder was cast at 1.30, and the nuts which bolted the blank flange on to the box were slightly slackened. At 3.40 it was thought there was a slight expansion shown in the nuts, but at 4 o'clock all signs of expansion had disappeared. The pipe box at 4 o'clock had expanded a quarter of an inch.

7. It was then thought desirable to cast another cylinder of the same diameter in a much larger box, with a view of preventing its expansion. A mould was made 9 feet 1 inch long by 4 inches diameter. A loose flange was secured to the top of the box with a large hole in the centre through which the metal was run. After the bar was cast, the top of it was levelled off, so as to form an even surface. A small tube, with a pointed end, was filled with water to prevent or diminish its expansion, and was suspended from a fixed point immediately over the centre of the cylinder. An iron gauge was made in the form of a wedge, which was used from time to time to test whether the bar had expanded and approached nearer to the suspended tube. No movement whatever could be discovered, but about five minutes after the bar had been cast contraction had commenced. The box was trammelled in the same way as in the previous experiment, but it did not show the slightest sign of expansion, as was shown by the points of the trammel exactly fitting the punch marks.

8. The writer then thought the most conclusive mode of settling the question would be by using a large box as before, and casting a strong plate to be used as a blank flange, which could be screwed firmly to the top flange of the box, and a small hole cast in the flange through which the metal would be run, and as the bar was very much larger in diameter than the hole, the molten metal would press against the flange plate. The mould having been carefully dried, and the length of the box carefully ascertained, the top of the box was covered with a strong plate with two ribs to prevent its springing. The hole in the centre of the plate corresponded with the centre of the cylinder, and a thin ring of loam was placed on the top of the mould, of which it formed a part, and upon which the plate rested. The plate was bolted on the flange by four strong bolts, eight threads to the inch. The cylinder was then cast, the runner removed, and the bolts were tightened by two men with long spanners, and it was estimated that the full force exerted on the nuts was more than fifty tons, which force was applied to compress the cylinder. The nuts were then slackened, so that they could be turned back with the slightest friction. It was thought that if expansion really did take place, it could be measured with accuracy, as one entire revolution of each nut would show an eighth of an inch, half a turn a sixteenth, and a quarter turn a thirty-second of expansion. The trammel showed no signs of expansion in the box, the nuts were not tightened in the least degree, and no expansion whatever could be detected throughout the experiment. As the cylinder cast was upwards of 9 feet in length, or 60 per cent. longer than the cylinder in Mr. Bell's experiment, the expansion should have been nearly 1 inch if the same ratio had existed.

9. Another bar was then cast vertically, 9 feet 4 1/2 inches long and 4 inches diameter. The box was removed from the pit in which the bar was cast, and the ends of the bar exposed and levelled and a pair of callipers adjusted to fit the ends of the bar, but no expansion took place before finally contracting. The writer believes that the most reliable system of

making the experiment is that recorded in No. 4 as the slightest expansion would be discovered by the tight fitting of the bolts and nuts.

The reason why a lump of cast iron, at the ordinary temperature of the atmosphere, sinks through a mass of molten iron, and subsequently rises and floats on its surface, has now to be considered.

There can be no doubt whatever that cast iron contracts in cooling from the melting point in the ordinary temperature of the atmosphere, and the experiments already described show that the contraction amounts to about 1 per cent. Hence the specific gravity of cold iron is greater than iron in its melted condition, and theoretically a lump of cold iron should sink when placed in a ladle of molten iron, which it does in obedience to the laws of gravity. Why it should rise to the surface after being immersed in the molten mass for a few seconds has given rise to a diversity of opinions.

It is a well established fact that heat is diffused with great rapidity, and tends to establish an equilibrium of temperature. When a lump of cast iron, at a temperature of 60° to 70° F., is plunged in a molten mass of iron at a temperature of upwards of 2,000 degrees, heat is abstracted from the molten iron and absorbed by the cold lump, the outer surface of the lump becomes red-hot and expands, and the volume is increased by its expansion, while its specific gravity is reduced. The lump, indeed, could not rise from the bottom of the ladle and reappear on the surface if its specific gravity had not undergone a change. The following experiments were made in this direction—

1. Two lumps of pig iron were placed in a ladle of molten iron, the surface of which had been carefully skimmed. The pieces sank in the ladle, and reappeared after an interval of a few seconds. Both pieces of iron were removed from the ladle after they had floated upon the surface for a short time.

Upon examining the two pieces of pig iron they had the appearance of having been melted in contact with the molten iron, but upon being struck with a hammer, a film of scale broke off from the surface, and exposed the fact that the sand which had surrounded the piece of pig had been entirely enclosed by a film of iron.

It now became evident to the writer that this experiment was of great importance, and would probably lead to the final solution of the difficulty, as it clearly indicated the cause which led to the change in the specific gravity of the iron, which is unquestionably proved by its floating on the surface of the molten iron. The thin film of iron that entirely covered the piece of pig metal had been caused by the consolidation of the molten iron on its surface; and as the film formed a complete coating round the pig, its volume was increased sufficiently to enable it to float by enclosing small particles of sand and probably gas, and forming a surface that was not thoroughly united with the piece of iron.

2. Two pieces of pig iron had been prepared, one heated to redness, which was apparent by daylight, and the other heated to a less degree. The piece of pig iron that did not appear by daylight red-hot was placed on the surface of a ladle of molten iron. It sank and almost immediately rose again to the surface. The piece of pig that was heated to redness did not sink when placed on the molten metal, but floated on the surface. Care was taken in both experiments not to drop the pig into the molten metal, but the pieces were carefully lowered on to its surface.

It must be borne in mind that the outer surface of a lump of cast iron when surrounded by molten iron expands from its outer surface, and the enlargement of a piece of metal or a ball subject to such conditions would be to increase its outer diameter to the extent it would be even if heated to the centre, and consequently the specific gravity of such a piece of iron would be almost identical with the molten mass, as it has been shown in a previous experiment that no change in volume takes place for a considerable period after the casting has been run.

It will generally be admitted that the outer skin or surface of a lump of iron under such conditions expands almost instantaneously to its final enlargement before melting.

3. The writer thought it not improbable that the specific gravity of the two pieces of iron which were used in these experiments after they had been coated with a thin film of iron was less than that of molten metal, and the same pieces of pig iron when cold were again used for a similar experiment. One of the pieces floated on the surface and the other sank and rapidly reappeared. The operation was continued for several days, the cold iron with its increasing film floating in each case on the surface of the molten mass.

It is not improbable, from the experiments of Mr. Windsor Richards and other experimenters, that all metals contain a certain percentage of gas, which may be given off when plunged into molten iron, and that air spaces may exist between the film and the lump of metal, and thereby increase the volume.

4. It was thought desirable to ascertain whether a cold piece of iron sinks to the bottom of the ladle of metal into which it is plunged. To ascertain this fact a piece of this wire was attached to a pulley into a ladle of molten iron. It slowly sank to the bottom of the ladle, but its resistance was extremely slight,

as it had not long reached the bottom before the wire was melted, and the lump reappeared on the surface.

It has been shown in the early part of this paper that the volume of cast iron undergoes no change for a considerable period after passing from the molten into a solid state, consequently as soon as the outer surface of a lump of iron becomes red-hot its specific gravity approximates to that of the molten metal, but inasmuch as consolidation takes place, the film that is rapidly formed on the outer surface of the lump has a less specific gravity than if it had been cooled more gradually, as is shown by the various experiments.

5. An experiment was then made with three pieces of iron, one being a part of an ordinary pig, the other two being portions of a solid cylinder that had been specially cast, one portion preserving the ordinary surface obtained in casting, the other portion being turned in a lathe so as to present a smooth surface. The weight of the piece of pig iron was 38 pounds, the unturned piece of cylinder 40 pounds, and the turned piece 37 pounds. These three pieces of metal were simultaneously lowered into a ladle containing about five tons of molten cast iron. The piece of pig iron rose to the surface after a short interval. The unturned piece of cylinder remained under the molten metal for a longer period, and the turned portion reappeared on the surface last of all. The first piece was removed from the ladle in about three-quarters of a minute, the unturned piece of cylinder in about one and a half minutes, and the turned portion in nearly two and a half minutes. Each piece when cool was carefully weighed, the results being as follows. The piece of pig had increased in weight from 38 to 40 pounds; the unturned piece of cylinder, which weighed 40 pounds, had increased in weight to 41 1/2 pounds; and the turned piece of cylinder, which weighed 37 pounds, had decreased to 27 pounds.

The examination of these three pieces of iron showed, first that the piece of pig was encased with a film of iron enclosing the sand that had remained on the surface of the pig; secondly, that the unturned piece of cylinder was rather imperfectly coated with film, and, thirdly, that in the third piece, which had been turned, a large portion of the ends as well as of the upper surface had been melted away, and its cylindrical form had been changed into a kind of Y shaped mass. The under surface of this piece was coated with a thick film, and when struck with a hammer a large portion of the film became detached, and displayed the fact that the tool marks on the cylinder were visible and remained unchanged.

6. On the 22nd April another experiment was made with a piece of pig iron 15 inches long, weighing 39 pounds, a piece of unturned cylinder 9 inches long, 4 1/2 inches diameter, and weighing 40 pounds, and a turned piece of cylinder 9 inches long, 4 1/2 inches diameter, and weighing 37 pounds. The three pieces of iron were simultaneously lowered into a large ladle of molten cast iron. The piece of pig iron rose to the surface almost immediately after its immersion, and was coated over with a film, and had increased in weight to 41 1/2 pounds. The other two pieces did not rise to the surface.

7. A similar experiment was then tried with three pieces of iron as before, the piece of pig weighing 41 pounds, the unturned cylinder 40 1/2 pounds, and the turned cylinder 34 1/2 pounds. The turned piece of cylinder rose to the surface first, and the piece of pig iron in a few seconds afterwards, and when they were removed from the ladle the piece of pig had increased in weight to 42 pounds, and the turned piece of cylinder to 36 pounds. The unturned piece of cylinder did not reappear on the surface. The writer had previously observed that on some occasions small pieces of test bars when lowered into molten metal did not always reappear on the surface.

8. Four small pieces of iron, about an inch square and two inches long, were then dropped into a small ladle of molten iron. Two of them immediately rose to the surface, but the other two did not rise. The end of a skimmer bar was then forced to the bottom of the ladle and moved about, when the two pieces reappeared on the surface melted together. They are marked X Y Z.

There is no doubt that when the specific gravity of a piece of iron approximates to that of molten metal there can be little tendency for it to float after it has sunk to the bottom of the ladle. It is not improbable that when a piece of iron sinks to the bottom of a ladle that it is not very clean and contains some thick paste of iron in a half molten state it may adhere to the bottom of the ladle.

The sand shown on the two pieces of iron that are melted together was caused by their being dropped in a red hot state into some moulding sand. The writer has made a considerable number of experiments on the subject, but has always observed that when iron sinks and again reappears on the surface it is always partially coated with a film.

It appears to the writer that these experiments clearly prove that the reason why a piece of iron rises to the surface after it has sunk through a mass of molten iron is entirely due to the film of iron, which increases the volume sufficiently to enable it to float on the surface.

It has been shown that a red-hot piece of pig iron does not sink when placed in

a ladle of molten metal, and consequently its specific gravity must be nearly identical with that of the molten mass.

It has also been shown in the early part of these experiments with long bars that the contraction is somewhat less when the iron is very slowly cooled than when it is cooled more rapidly.

It was observed during these experiments with pig iron that whenever a piece of pig iron with a clean fracture at each end was placed in a ladle of molten metal, and left in it for some time, its volume decreased by melting from either end. It is the opinion of Mr. Knighton, the chief foreman of the Staveley Iron Works, as well as that of some of the most experienced workmen whom the writer has consulted, that no expansion does take place in cast iron after the metal has been run into the mould. The difficulty iron founders have to contend with is contraction, which is a constant source of anxiety in the daily operations of an iron founder, but it has never been found necessary to make provision for expansion.

THE EXPLOSIVE POWER OF COAL DUST IN MINES.

A report has been presented on the results of experiments made with samples of dust collected at Seaham colliery, in compliance with the request of the Home Secretary, by Mr. F. A. Abel, C.B., F.R.S., President of the Institute of Chemistry and Chemist to the War Department. "The results of the experiments with Seaham and other dusts appear," says Mr. Abel, "to have demonstrated that coal dust in mines not only much promotes and extends explosions in mines, by means of the rapid inflammability of the finely divided combustible, and of the readiness with which it becomes and remains suspended in air currents, but that it may also be itself readily brought into operation as a fiercely burning agent which will carry flame rapidly as far as its mixture with air extends, and will operate even as an exploding agent, through the medium of a proportion of fire damp in the air of the mine, the existence of which, in the absence of dust, would not be attended by any danger. That dust in coal mines, quite apart from any inflammability which it may possess, can operate in a distinct manner as a finely divided solid, in determining the ignition of mixtures of only small proportions of fire damp and air, and consequently in developing explosive effects. That a particular dust in a mine may, therefore, be a source of danger, even though it contains only a small proportion of coal or combustible matter. Although the explosion which may occur through the agency of a non-combustible powder in the manner described may be of very mild or feeble character in the first instance, it may be almost at once increased in magnitude and violence by coal dust which the first ignition will raise and bring into action. The proportion of fire damp required to bring dust in a mine into operation as a rapidly burning or exploding agent, even upon a small scale, and with the application of a small source of heat or flame, is below the smallest amount which can be detected in the air of a mine, even by the most experienced observer, with the means at present in use, as has been already demonstrated by the experiments of Mr. Galloway. Indeed, with the dusts of high sensitive or dangerous character, under these conditions, and very possibly with dusts not more so than the least sensitive of the Seaham samples, in the presence of a source of considerable heat and flame, such as a blown out shot or an overcharged hole, would constitute, a small proportion of fire damp, the possible existence of which in the mine might not be in the least suspected, may serve as the inciting cause to the development of an explosion of coal dust. In the complete absence of fire damp, coal dust exhibits some tendency to become inflamed when passing a very large lamp flame at a high velocity, if exposed to the action of a large volume of flame, such as produced by the explosion of freely exposed gunpowder or gun cotton, it exhibits, in addition, a decided tendency to carry or propagate flame. But, so far as can be determined by experiments on a moderate scale, this tendency is of limited nature, and very different indeed from the property of carrying or propagating flame, which even comparatively non-sensitive dusts possess in the presence of a very small quantity of fire damp. In conclusion, it may be admitted as possible that, with the large volume of flame and the great disturbing effect of a blown out shot as the inciting cause of the ignition of dust and its suspension in the surrounding air, such inflammation may, in the complete absence of fire damp, be propagated to a greater distance than the results of small experiments would warrant one in assuming. But it can scarcely be maintained that the air of a mine in which the coal gives off gas at all can be at any time free from fire damp; and as the existence of very small and unsuspected quantities of gas in the air of a mine may suffice to bring about the ready propagation of flame by coal dust, and thus to develop violent explosive effects, it would appear needless to assume that coal dust may, in the entire absence of fire damp, give rise to explosions, even of only limited character in coal mines, in order to account for casualties which cannot be ascribed to the existence of accumulations or sudden outbursts of fire damp."

MONTREAL PRICES CURRENT.

Table of Montreal prices current, categorized by Groceries, Coffee, Sugar, Molasses, Fruit, Spices, Rice, Beans, Fish, and Liquors.

Table of Montreal prices current, categorized by Boots and Shoes, Leather, Raw Furs, Weekly Review, and Iron and Hardware.

Weekly Review: Montreal, August 10th, 1881. Although the wholesale trade of the past week has partaken largely of the...

Boots and Shoes—Manufacturers are fairly busy filling orders for immediate as well as future delivery. The fall orders so far taken have been even larger than expected by the trade generally.

Notice: TENDERS will be received by the undersigned until Twelve o'clock (noon) on SATURDAY, the 26th AUGUST, for the...



MISCELLANEOUS.

BRITISH TOBACCO INDUSTRY.

The smuggling case at Brighton ended with a fine on the crew and forfeiture of the vessel and cargo, the quantity of which is not yet published. The attention of the Customs has been called to the matter and steps are being taken to prevent it under the notice of Mr. Gladstone, which the trade would do well to take into consideration. In this instance, as in those of the revenue, it is a waste of words to mention that those who sell an article in London are a matter of course, desirous of a duty as low as possible; but it is like a child crying for the moon. In forty years we have seen three additions to the duty, but we have never seen one of them taken off again. The only reduction, that on foreign goods was strenuously resisted by the English manufacturers; they showed, what has since been proved, that it would be ruinous to their trade, but Mr. Gladstone fell back on the officials and gave the consolatory answer, that if he had known as much at first as he did at last he would have lowered the duty still further. A return to the old duty on leaf would be of advantage to British cigars, but as to tobacco, we believe that would do little or no good till some check is put on the present ruinous competition. We hear of some large country manufacturers agreeing to a rise of "one penny" on their miserable prices of about 7s; they stuck to it till they had lost half their trade in those days, and then they were compelled to go down to the old prices. A trade representing twelve millions of pounds sterling, with no patents, the mode of manufacture open to everyone, leaps of profit and piles of money anxious for employment; yet if anyone were to propose to start as a tobacco manufacturer we could only advise his friends to put him into Hellam. One of the leads of the trade gives the reason "25 per cent of the manufacturers are trying to do all the good they can to themselves, the other 75 are trying to do all the mischief they can to each other. This has been going for many years before the last rise in duty and, as we see, the largest houses are beaten by it, and can only ascribe it to something wrong, smuggling or ruinous underselling. We believe many manufacturers who were opposed to the reduction are so disgusted with the state of the trade that they would now agree to anything by way of change."—*London Tobacco*

FINE DISTINCTIONS BETWEEN IRON AND STEEL.

An exceedingly interesting and important case has been on trial, for the last four weeks, in the United States District Court, in session in Boston. The case is known as James M. Newell, et al, vs. A. W. Beard, collector of the Port of Boston, and was brought to recover \$2,282.17, an alleged overcharge of duty on 4,237 bars of so-called Swedish iron imported by the plaintiffs. The point in question is new and this is the first instance, so far as we know, where it has been judicially determined. The bars in dispute were made in Sweden by the open hearth process, and the importer endeavoured to pass them through the custom house as iron while the collector insisted that they were liable to the higher duty imposed on steel. Eminent counsel was engaged on both sides and the case throughout was closely tried. Justice Colt presided at the trial and the jury returned a verdict in favour of the plaintiff for the sum of \$2,026.77. An appeal is taken to the United States Supreme Court on questions of law. Although this is the first time that the courts have been called upon to determine the legal status of the new or so-called mild or soft steels, yet it is not the first instance that this question has been under discussion in metallurgical circles. The new product of steel or iron, whichever it is, is hard to define. It does not partake of the properties of common iron solely and it has qualities quite as much at variance from the old fashioned hard steel. Mr. James Riley, of the Steel Company of Scotland, in speaking on the subject in a recent lecture, remarks:—

I doubt not that many of the outside public have been surprised and perplexed at the idea of steel being used in the construction of ships and boilers, the name "steel" being associated in their minds with sharp cutting instruments of hard and possibly brittle character. In the same way, but of course not to the same extent, many who have been engaged in the use of iron for a long period, and thoroughly understand its characteristics, but who have had no practical acquaintance with the newer classes of "steel" have no doubt had many misgivings as to the propriety of its use in those directions, and also of their own ability to deal successfully with it should they be required to use it in their ordinary occupation. These ideas have contributed largely to that disinclination to adopt the "new material" with which steelmakers have been so long and so successfully contending. The application of the term "steel" to the newer classes of this metal was indeed unfortunate, so far as the makers were concerned, and has contributed not a little to the many difficulties they have experienced in the conduct of their business. Even in the minds of experts there has been something approaching to a confusion of ideas regarding these metals, through the use of the term

and some efforts have been made to get over the difficulty by a division into classes, whereby the milder or softer should be called "mild iron" or "homogeneous metal," while the harder retained the older designation of steel, but difficulties which I need not here enumerate have prevented the general adoption of this proposal. Mr. Riley's definition of steel is that it is an alloy of iron, and this principally with carbon, the aim of the manufacturer being to obtain the alloy with such proportions of each as shall best fit it for the purpose for which it is intended. The importance of this Boston decision cannot be over estimated. It practically reduces the protection on certain grades of steel and places the new metal on a par with iron. If it is finally settled that open-hearth steel is dutiable on a basis of common iron, then it is a matter of considerable moment how far this ruling will tend to effect the value of all classes of steel in this country, and whether the results will not call for a change in our new revenue laws so far as placing open hearth steel in the same list with other varieties of steel.—*Exchange*

THE LOWER CLASSES

Who are they? The tolling millions, the labouring man and woman, the farmer, the mechanic, the artisan, the inventor, the producer? Far from it. There are nature's nobility. No matter if they are high or low in station, rich or poor in self, conspicuous or humble in position, they are surely upper circles in the order of nature, whatever the factitious distinctions of society, fashionable or unfashionable, dovec. It is not low, it is the highest duty, privilege and pleasure for the great man and high souled woman to earn what they possess, to work their own way through life, to be the architects of their own fortunes. Some may rank the classes we have alluded to as only latently low, and in fact the middling classes. We insist they are absolutely the very highest. If there be a class of human beings on earth who may be properly denominated low, it is that class who spend without earning, who consume without producing, who dissipate on the earnings of their fathers or relatives, without being anything in or of themselves.—*The Mechanic*

A number of Jesuits expelled from France arrived in Quebec lately.

A girl opened a barber shop at Homer, Ill., and closed it in a month, having already married one of the men whom she shaved.

The Chicago *Inter-Ocean* says that Dean Stanley in his last days was worried by letters from O'Donovan Rossa's emissaries, threatening the destruction of Westminster Abbey.

The wife of a manufacturer at Elgin, Ill., lent her carriage horse to be used temporarily in hauling lumber. The teamster whipped the horse, whereupon the woman went out with a rawhide and thrashed the teamster.

The Executive Committee of the National Memorial to Lord Beaconsfield have decided to entrust the execution of the statue to Signor Ranzani, to whom Lord Beaconsfield assigned some sittings not long before his death.

A medical paper at Leipzig has been fined 100 marks and costs, at the suit of 78 homoeopathic doctors, for publishing a lecture delivered to a Berlin medical society in which homoeopathy was denounced as quackery and swindling.

Chicago has undertaken to regulate two street amusements by law. Organ grinders are permitted to turn the crank only between 9 a.m. and 9 p.m., and persons who throw banana peel on the sidewalk are subject to a fine of \$10.

A few weeks ago the foundation stone was laid of a huge embankment, across a Welsh valley, which is to confine waters destined to supply Liverpool, 67 miles distant, with 62,000,000 gallons a day. The works are expected to take ten years.

A Swiss newspaper says that the only men who know how to keep a hotel are Swiss and Americans. It instances scores of leading hotels in Europe with Swiss managers, and thinks that American hotels are the best in the world.

Mr. James O. Fair heads the personal assessment roll just filed in San Francisco with \$42,200,000. Mr. J. C. Flood is assessed at \$36,500,000 for himself and \$20,500,000 as trustee for J. W. Mackey. Mr. Charles Crocker is assessed at \$20,000,000.

At an International Medical and Sanitary exhibition recently held in London, Sir James Paget, the eminent physician declared that he who did not promote his own health forfeited his right to wealth, and was guilty of the "basest want of patriotism."

A detective has been killed at a secret meeting of Nihilists at Kiev. He had been sent to the meeting to watch the proceedings. He was placed on a table and his throat was cut. Similar murders abound in the provinces whither the Nihilists have transferred their activity from the capital.

Mr. Dion Boucicault has taken his two girls, Patricia and Nina, from the school at which they were being educated in Germany, the one aged 16 and the other 14, and brought them both out on the

stage in London in one of his pieces. He intends to play them through the English provinces.

The *London World* says that the mode of volleying the ball practised by Renshaw, the lawn tennis champion, has created quite a revolution in the game of lawn tennis, and if things go on as they are doing, the game will become too difficult for people to play unless they make a special study of it.

The wealthiest Georgia negro, Henry Todd, gained his start toward fortune by owning slaves. He was once a slave himself, and his freedom was given to him by his master; but he quickly overcame any scruples which he may have entertained, and, at the outbreak of the war, owned twenty men.

A French newspaper relates that a millionaire lost his entire fortune, except 100,000 francs, and died of grief within twenty-four hours. His brother, who was his sole heir, had long struggled in poverty, and now, on the sudden receipt of what he regarded as a large fortune, has just died of joy.

An astronomical congress is to be held at Strasburg in September, at which celebrities in this science from Europe and America are expected to attend. The capital of Alsace, it is said, was chosen as the place of meeting as possessing an observatory furnished with all the best and newest instruments.

*London World*.—"The importance of the House of Lords lies not in the deliberative capacities of its members taken as a whole, but in the rare rigour and power of certain specially commanding intellects. The business of the Peers is transacted by some half a dozen men on each side of the House."

A return has just been issued in England showing that in the year which ended February, 24,681 animals were shipped hence to Great Britain. Of these nearly four and a half per cent were lost en route from various causes, bad weather being the chief. Much of such mortality is believed to be preventable.

The efforts made by railroad companies through soliciting agents to obtain passengers was illustrated at Hartford, whence a hundred Chinese students are to travel across the continent on their way home. Nine agents of competing trunk lines visited them, each offering special inducements, and the bargain finally made was at one half the regular rates.

Cora Van Tassel of Erie, Pa., became an actress a year ago, and has since been travelling as the star of a dramatic company, playing "East Lynne." Her husband is now suing for a divorce, the legal ground being desertion, but his real grievance, he says, is that she calls him *Sir Francis Llewison* in her interminable rehearsal, and he can't stand it any longer.

One of a Cincinnati Judge's reasons for refusing to grant a divorce to a man was that he had taken his wife, "from the domestic circle and launched her into the midst of iniquities which surrounded the path of a comely and youthful female in a business life requiring travel and frequent contact with worldly people." In other words, he had sent her out as a book agent.

Moody's Christian Convention at Northfield, Mass., is to last a month. Four noted exhorters besides himself will be present, and Mr. Sankey will have five sweet-singing assistants. It is designed to have two hours a day only of religious services, and the rest of the time will be devoted to social recreations. The enterprise, in fact, contemplates a place of summer resort for Christians.

A gold mine, the Havilah, just placed on the London market, is, according to the prospectus, mentioned in the Bible, reference being made to it in the eleventh and twelfth verses of the second chapter of Genesis. The passage in question reads as follows:—"The name of the first is Pison; that is it which compasseth the whole land of Havilah where there is gold. And the gold of that land is good."

A writer in the "Gentleman's Magazine" claims that kindness to animals is entirely an Anglo-Saxon attribute, and it certainly is true that the society for their protection in London was by a long period the pioneer society. On account of our flesh eating we are, he says, regarded by the Hindoos as detestable; but, however reluctant to kill animals, Hindoos are very far from being always kind to them.

The two great garden parties this season in London, independent of those of Marlborough House, which the Queen attends, have been given by Lady Wallace at Hertford House, Manchester Square, and the Duke of Portland at Cavendish Square. Both these houses have been lately closed, and are situated in the unfashionable part of London. The beauty of the gardens, unseen in the last half century, were a surprise.

The Veterinary Inspector sent by the Department of Agriculture to Picton, N.S., to investigate the alleged cattle disease, in view of the United States Government having sent an inspecting Commission to that place, reports the facts to be as previously published. There is a local disease, which is confined to the County of Picton. It is of long standing, and it does not spread. The causes, therefore, are clearly local.

The United States Commissioners have returned.—*Continued*

In passing through Germany on her way to Switzerland, the Empress Eugenie, who travels as the Countess Platenfons, first drove to the New Palace in order to view the rooms in which the late Princess Alice lived, and afterwards proceeded to the Royal Mausoleum, where she was met by the Hereditary Grand Duke and the Princess Irene and Alice. The Empress then knelt before the tomb of the Princess and after passing some time in silent prayer placed several wreaths upon it.

At the Windsor review the white costume of the Princess Royal shone out conspicuously by the side of the Queen, her mother, and she received a fair share of the obsequious greeting which hailed the royal carriage on its first appearance on the grounds. The Princess has altered little in face since she left England. Her figure alone has expanded from the slight and elegant slimmness of the Princess Victoria, the Rose of England, to the more portly and respectable dimensions generally assumed toward middle age.

The number of new houses built in London during 1879 was 21,389, and 401 new streets were opened. Street accidents resulted in death to 124 persons, and in lesser injuries to 3,950. The grown persons reported to the police as disappeared footed up 3,300, and the lost children, 9,539, but only 25 of the children and 141 of the adults failed to turn up afterward in some shape. Of the adults 41 were found to have committed suicide. Ownerless dogs numbered 25,669, and cabmen convicted of fast driving, 313.

The real cause for compelling Don Carlos to leave France is said to be not apprehension of any action on the part of the Spanish Government, but Don Carlos's open participation in the manifestations of the Legitimist party on the occasion of Count de Chambord's fetid day. A mass took place at St. Germain de Pres on Friday, nominally in honour of the St. Henri; but it was in reality, a demonstration of loyalty to "the King over the border," such as the French Government cannot tolerate on the part of a political refugee.

There seems a fatality about "pet" places. Newcastle has twice changed hands since Lord Byron's death. Rydal Mount has been spilt by careless tenants. Abbotston is hawked about as "a desirable autumn residence." Gad's Hill has been sold, and its contents dispersed, and now Lord Carlisle has decided to sell Strawberry Hill, so that in spite of Horace Walpole having "tasked the ingenuity of conveyancers to tie up his villa in the strictest settlements," to prevent its passing out of the Waldegrave family, it will change hands in less than a century after his death.

"Only those actually in the House," writes a London Journalist, "can form an adequate idea of the manner in which the precious time of Parliament is frittered away by questions, half of which, at the very least, are wholly frivolous and superfluous. Between the opening of the present session and Whit Sunday, 1,521 questions were put down on the notice paper, and if the number greatly increase the House will have to consider the expediency of appointing a trusty committee to 'edit' these queries, which usually lead to nothing but a waste of time."

A London paper says—"There are several ways of estimating the length of the parliamentary session. The oldest and not least striking is that which occurs to the old gentleman who had charge of the lavatory and cloak room in the House of Commons. 'I've been here twenty-eight years,' he says, 'and I never knew so many nail brushes worn out.' 'Well, it's a long session, you see,' said his interlocutor, 'all owing to those Irish members.' 'Yes,' said the old gentleman, shaking his head emphatically, 'but it's not them as used the nail brushes.'"

Young Kelly went to a Chicago Police Court to look after his first case, for he has just been admitted to the bar. He asked for an adjournment on the ground of "unreadiness." "You're telling a falsehood, young man," said Col. Cameron, the prosecutor. "You're a malicious prosecutor," the new lawyer retorted. The Colonel struck right out from the shoulder, felling Kelly, who was for a moment bewildered by the pugilistic nature of practice in that court, but he quickly recovered himself and gave his opposing counsel a furious and highly injurious kicking.

A Vienna chemist has invented a powerful soporific, by which a person may be instantaneously and helplessly stupefied. It is called "baudiger," and the chemist invented it in order to defend himself against a dog which was in the habit of attacking him. Afterward he offered it to the police as an instrument for overpowering desperate men. He has also invented an antidote. The *Telegraph* says: "Was to Vienna and many other cities when the rogues come into possession of this novel weapon which science has prepared for the service of their craft."

The hot weather in London has assisted the Government largely in carrying their Land Bill through the committee in the House of Commons. The Premier, with white coat, dark trousers, and a sporting tie, is pictured as the

gayest and slickest member in Parliament. He rises briskly and often, and strikes hard. He passes over Lord Randolph Churchill, Mr. Warton, Lord Sandon, and two or three more indolent gentlemen like a clod crusher in a cornfield, and seems positively rejuvenated in a temperature in which every one else is gasping for breath, and under an electrical state of the atmosphere which throws half the telegraph wires in this country into disorder.

The *Correspondence Francaise* gives the following comparative census of the French and German armies: Infantry—Germany, 603 battalions of 600 men; total, 361,800. France, 641 battalions of 400 men; total, 256,400. Cavalry—Germany, 405 squadrons of 180 men; total, 83,700. France, 392 squadrons of 170 men; total 66,640. Artillery—Germany, 2,935 pieces; France, 2,508 pieces. Engineers—Germany, 19 battalions; France, 19 battalions. The German Imperial Guard consists of 29 battalions of infantry, in all 12,400 men; 18 squadrons of cavalry, in all 3,240 men, and 96 pieces of artillery, forming 16 Batteries. Germany has thus 93,000 soldiers and 623 pieces of cannon more than France.

Among the foreign stage performers who have arranged for American tours next season are Charles Wadham, the leading actor in society plays at the London Criterion Theatre, Jenny Lee, who played in burlesques on her former visit, but has since been successful as "Poor Jo" in a dramatization from Dickens; Miss Rhea, a French actress who has learned to speak the English of "Heatise" in "Much Ado About Nothing," the Hanlon, who was here fifteen years ago as athlete, and lost one of their number by a fall from a trapeze, but are now pantomimic actors; Rosal, the Italian tragedian, who will repeat Salvini's experiment of appearing with an English speaking company, and Adolina Patti, who will sing in concert.

The fare at the hotels on the Rhine is said to be worse this year than ever before, while the charges remain high. One of the sturdy English grumblers says—"I arrived at one of the best hotels on the Rhine—one which is largely frequented by English and Americans. I gave a hurried order to the head waiter for a 'small dinner' in half an hour. I had a slice of salmon, which had certainly seen the early table *Photo*, with a disgusting imitation of sauce tartare, followed by an entree of sausage served in thick sauce, evidently warmed up. Then came a blue skinny chicken, and a rancid salad-dress, a compote of thinned apricots. On leaving, two days later, I found that the charge for these unwhiting provisions was \$2.18."

Alphonso XII. of Spain has known how to profit by his stay in Paris. The Jews applied to the Ambassador of his Catholic Majesty at Constantinople, asking whether it would be possible for them to return to the Peninsula, not individually, which they already have the right to do, but perhaps to the number of 30,000, which would bring back into the Peninsula some of the fanaticism who abandoned it at the end of the fifteenth century, plundered and persecuted. On the arrival of the telegram from Constantinople the young King cried that the gates of Spain were wide open to those whom she still considers as her children. "Scarcely anything happier than this could happen to us," said the King to his Ministers. "What a glory for me if I can efface the disgrace bequeathed to me by my ancestors."

From an article contributed to the August number of the "International Review" by the Rev. C. F. Twigg, we obtain striking statistics of this decline. It seems that whereas the percentage of the graduates of Harvard who entered the ministry was once 63 G, in 1870 it was only 67. At Yale it had fallen from 75.7 to 15 in 1870; at Princeton, from 50 to 31.2; at Brown, from 35 to 22.4, at Columbia, from 98 to 5.8; at Amherst, from 63.4 to 31.7; and at Oberlin, from 66 to 31.3. If we had the full statistics for the ten years from 1870 to 1880 we should get an even worse showing for theology. From such figures as he has obtained, Mr. Twigg finds it to be evident that the proportion is much less, than in any previous decade. At Yale it is only about nine per cent, and at Harvard it is less than two per cent.

According to a London paper, about six or seven weeks ago a poorly dressed woman asked for an immediate audience of the pope. The chamberlain told the woman to leave; but, owing to her persistence and the reporter's remarks that she had highly important communications to make, one of the Monseignors in the anti-chamber took it upon himself to inform the Pope of the woman's pertinacious demand. When she was admitted to his presence, he soon discovered that her shabby habiliments were far from being in keeping with her intelligence and manner. She begged to be confessed by his Holiness. What she divulged in her confession to the ears of the Pope has remained a secret in all but one point. The woman prophesied to the Pope the exact day of his death and that of his brother, Cardinal Pecci. No one learned more than this from the Pope as to the details of this singular interview. The very name of the woman was kept secret by the Pope, who ordered that she be allowed to depart in peace.

THE METAL TRADE.

THE BRITISH MARKETS.

(Cor. of American Manufacturers.)

The quarterly meetings have been the great event of the week in the British iron trade. And it is gratifying that upon the whole they have been an improvement upon those of three months ago. There has been the influx of the heavy stocks of raw iron for the closure of 13 furnaces blowing since the close of March has been insufficient to keep down the accumulations either in Scotland or Cleveland—yet the finished iron trade has improved somewhat; and there was not in the Wolverhampton and Birmingham districts the dropping of prices which occurred on last quarter in both crude and manufactured iron. The proposal to reduce the output of pigs to the extent of 10 per cent. made by Cleveland to Glasgow slightly strengthened business at the Middlesborough quarterly meeting, which was held on Thursday, but the competition with Glasgow by Cleveland has been too severe for some time past to lead to much expectation that the proposal will receive approval from the Scotchmen. They will be more than usually generous if they should join the movement; and if they do not it is very questionable whether Cleveland will move. The result is being watched with much interest throughout the iron centres. The prices which ruled at Middlesborough were 37s 1d to 37s 3d for prompt deliveries of No 3 or about 3d rise on the previous week. No. 3 warrants were 38s to 38s 3d. Forge pigs were less than No. 3. Stocks were shown to be increasing in Connal's stores, and on Thursday night they stood at 191,400 tons, an increase upon the week of 1,147 tons. The pig iron exports for the week ending Thursday night were 17,500 tons, a decrease of 740 tons on the week. Cleveland finished iron was in better request on Tuesday, and prices were a trifle stronger. The shipbuilding demand was more than maintained, and there was more doing in the sheet, together with the engineering requirements. Ship plates were £6; angles £5 10s, bars £5 10s, less commission; and puddled bars £3 8s net. The steel trade was reported active. Messrs. Bulckow, Vaughan & Co. have of late been rolling a lot of rails for the Indian state railways. The Scotch pig iron trade has been steady during the week alike as to demand and prices. The home demand is fairly active, and the shipments are tolerably good. Last week they totaled 13,825 tons, which was an increase of 3,700 tons over the corresponding period of last year. Yet large weekly additions continue to be made to stocks, and Messrs. Connal's stores now aggregate 570,000 tons. Yesterday some business was done at Glasgow at 37s. to 47s. 2d cash, and 47s. 3d. to 47s. 4d. one month. The manufacture of cast iron pipes, which for some time has been dull, has just received a fillip by the placing of a contract of 20,000 tons in line. The saleable iron trade is fairly busy, and steel is brisk. The Wolverhampton quarterly meeting on Wednesday was of an encouraging sort. Cheap pigs of local make had sold well in the previous fortnight or three weeks; and pigs of a similar sort made in the near shires of Derby and Nottingham well maintained their prices. From 35,000 to 50,000 tons, perhaps, of such iron for Staffordshire use, mostly in the mills and forges, have been sold in the Wolverhampton and Birmingham districts in the past three weeks. Some blast works proprietors were as heavily committed as they cared to be when on Wednesday the Wolverhampton meeting opened. But high class local pigs were not in much request. They had been and still were moving slowly. Makers of finished iron have learnt to mix common argillaceous in large proportions with splendid hematite pigs in small proportions greatly to the detriment of rich all mine irons of Staffordshire and Shropshire, for the hematite firms have been quietly wooing consumers' views, till it has been for some time and still is possible to buy a rich hematite pig at from 1s 3d to 2s. 6d., and occasionally 3s. per ton below the price at which the most reputable all mine iron firms mentioned can afford to take. The drop of 5s. per ton announced last quarter day in Shropshire and Staffordshire all mine pigs, which left Shropshire all mine qualities at £3 for hot and £4 for cold blast, was not improved upon; and the Wolverhampton meeting opened with the declaration that these would be the quotations also of the ensuing quarter. At the same time the Staffordshire brands were quoted from £3 5s. down to £3 2s. 6d.; though there were sorts which ran up to as high as £3 7s. 6d. Of the two, Staffordshire pigs were slightly cheaper on the quarter—say about 2s. 6d. per ton. Cinder pigs were quoted at £2, but might have been secured at £1 18s. 3d. and occasionally at £1 17s. 6d. Staffordshire finished iron was in much heavier demand than three months since. Few kinds were unimproved. Sheets were in requests considerably in advance of makers' capabilities. One thousand tons of sheets might have been booked on Wednesday morning by one maker of my acquaintance, if he would, all at current prices; but he is full of work in his sheet mills for two or three months, and he does not care to engage himself beyond that time unless upon terms to which consumers will not assent. His experience was that of

many others. Perhaps there was never so brisk a request as now for galvanized corrugated roofing and also for working up ungalvanized. Under this influence prices are a trifle, though slightly, creeping up. No one of the three chief gauges (24, 26, 28) ought to be sold now under from 6s to 16s above the prices of the Saturday quarterly meetings. The marked lat firms declared at Wolverhampton the prices of the previous similar gathering, when a reduction of 10s per ton brought down the crucial quotation to £7. Nor did Messrs. John Bradley & Son, or the New British Iron Company, depart from the position which at the earlier date they took up, when they refused to drop, and kept their rates £7 10s. Merchants, however, took hold of the claim and expressed their conviction that if they wanted the iron they could buy it at the prices which most of the other firms were prepared to take. Earl Dudley's bars (Round Oak brand) remain at £7 12s. 6d., subject to commission. Common bars were easy to buy at from £5 12s. 6d up to £5 17s. 6d., and medium bars were plentiful at £6 to £6 7s. 6d. From that figure up to the £7 quotation, bars were offered which their makers protested were equal to all the work of which the £7 marked bars are capable. The business done in bars was not great, but it was more than could be done three months before. A heavy demand for balling hoops prevailed; but the offers were mostly at a price which makers did not care to accept in the present fairly crowded state of their order books; though buyers were prepared to give from 2s. 6d. to 3s. 3d. in advance of their last previous purchase. One of the largest exporting buyers of hoops was present at the Wolverhampton meeting; but he had to take back most of the specifications, which, if makers had been more yielding, he would have gladly distributed. As I write, however, some of his orders are being distributed hereabouts. Wants of United States and also Brazil are in this way being expressed.

The Birmingham quarterly meeting fully upheld the determination in the matter of prices expressed at Wolverhampton the day before. The holders of sheet and hoop orders were no better off in the one town than the other. Makers had taken as many orders as they cared to take for some short time to come, and were incapable, without putting off deliveries already due, of accepting more work. Buyers wished to get their sheet orders accepted some up to October, while certain others would have placed on the condition that fifty tons should be delivered weekly up to June next year. A declared rise in galvanized sheets was feared. This originated in a meeting of the galvanized iron firms having been summoned. It had for its object the inclusion in the Association of this class of manufacturers of the firms who have establishments in Liverpool and London mainly; and in this respect it was a success. Several such firms subscribed the rules, and were enrolled. Less success attended the next object aimed at. The founders of the Association desire by the combination to prevent the underselling which has been felt most from the makers outside the South Staffordshire and Birmingham area. Having got such firms as members the next effort was to secure their adhesion to the old fashioned scale of extras. But the effort was futile. Freedom of action was claimed; and it had to be conceded. Nevertheless all were willing each to exercise the influence he was able to induce the rest to demand better prices from customers. A rise of twenty shillings on the quarter was declared to have been established by the aggregate of the transactions. To this conclusion the meeting came by comparing notes; and the chairman could have informed it that that very day he had been successful in securing a rise of 5s per ton in an order for 100 tons which he had had confirmed by wire whilst the meeting was on. Consequently more than firms were persuaded the corrugated roofing sheet business, which included buying for the Argue and several other foreign markets, but more particularly our own colonies of Australia, New Zealand and India. The colonial orders were placed mostly by merchants who had come down for that purpose from London; and more money had to be given to secure the acceptance of the work than would have been taken three months ago. Cheerfulness is beginning again to characterize the galvanizing industry. On Birmingham Exchange members of the trade present admitted that at length they were "beginning to see a profit." And as they did this with the smile of men who meant a good profit their admissions had the effect of confirming the determination of the sheet iron makers to secure a larger share of the spoil than they had been receiving. There was competition in Birmingham between the hematite pig iron firms. Simultaneously with an augmented demand for this material of steel lat making there has been a falling off in the demand for it at the iron mills and forges for best sheet, best plate, and best bar iron. This is mostly due to a larger output of mild steel, which is drawing rolled iron of the class I mention. True, hematites are wanted for mild steel, but not for that purpose in the iron making centres where they have been before sold in their efforts to get back the trade lost the new agents are, with a connivance of their principals, broad, through old mutual contacts and underselling their competitors by 2s. 6d. a ton. This is being done very stealthily at present; but if other firms are not prepared to see their business taken from

them they must be prepared to accept £3 2s. 6d. per ton for splendid hematite forge iron delivered at customers' works in central England, the manufacture of Barrow-in-Furness and of South Wales.

THE LONDON MARKET

The following were the closing prices in the London metal market July 15, 1891—

Table with columns for various metal types (IRON, COPPER, LEAD) and their prices. Includes items like Bessemer rails, English pig, and various grades of iron.

UNITED STATES MARKETS

Pittsburg.

Pig Iron.—Some commission merchants report about the same amount of business doing as last week, but most of them have not done so much. The furnace owners, or some of them, at least, are asking fifty cents per ton more for mill iron, and although some has been sold at the advance within the last few days, it is this that has caused the decreased demand. Furnaces hold neutral gray forge firmly at \$23 4 mos., instead of \$21 50, as quoted last week, and small sales have been made under the advance. Neutral mill iron from Lake Superior ores is held at \$23 by some makers, which is an advance of fifty cents per ton since last week. Foundry is dull at last week's quotations—\$25 4 mos., for No. 1, and \$23 50 for No. 2. What iron is selling is for August, September and October delivery. The mills and foundries continue very busy, and consequently the consumption is still heavy. Manufactured Iron.—There seems to be no abatement of demand for manufactured iron, and prices are firmly maintained. Every mill is in motion, and the chief difficulty is to fill orders as promptly as buyers wish. Indeed, as stated last week, many orders have to be turned away by those who are most busy, if not by all. The unexpected slackness of business in the spring is being made up with interest. Bars, \$24 00@25 00; No. 24 sheet, 40; tank 30@32 50; C. H. No. 1 boiler plate, 5 1/2; homogeneous steel 60, 6 1/2; hoop iron, 2 7/8@2 9, as to size—all 60 days, or 2 per cent. off for cash. The demand for hoops is, like that of other sorts, extremely active. Nails.—Are firm at \$2 75 per keg for 10d. to 60d. in carload lots, with 2 per cent. off for cash. Wrought Pipe and Tubes.—The demand continues good. Steam and gas pipe has advanced, the discount being 67 1/2@65, instead of 65@67 1/2, as quoted last week. Tubes and oil well casing and tubing are unchanged. Discounts and prices for all sorts are now as follows: Discount on gas and steam pipe, 67 1/2@65 per cent., and on boiler tubes 45 per cent. Oil well casing is still 70 cents, net, and tubing 21, net. Steel Rails.—There is nothing new to report. The works are very busy, and prices are substantially the same. For prompt delivery they are quoted from \$60 upwards. For delivery next year, \$57@60 is quoted. Railway Supplies.—Are in active request, and a little higher. Spikes 3c. per pound; spikes bars, 2.40c; track bolts 3c.—all thirty days. Steel.—The situation in this trade is about the same. Prices are unchanged and demand good. The works are all busy. Best quality refined cast steel, 11 to 12 cents per pound, as to quantity purchased; crucible machinery steel, about 7 cents, and Bessemer and open hearth spring 4 to 1 1/2 cents, and do. plough 4 to 4 1/2 cents. Old Rails.—We could learn of no transactions in old rails. They appear to be held above the views of buyers. Scrap Iron.—Is in good supply. Prices are unchanged. No 1 wrought is still bought by consumers at \$20 to 27 per gross ton. Philadelphia. Last week's review of the iron market cannot be materially modified, but any modifications must be in favour of greater activity and continued upward tendency of prices. There is cheerfulness and buoyancy on all sides, but no approach to speculation, nor to a boomish turn to coin a phrase. The general facts heretofore and elsewhere adverted to, that imports are not holding their own, that consumption is increasing, that stocks are light and

that the tendency of prices is upward, all unite to create a good market, and to justify hopes that pig iron will eventually get out of the \$18 rut it has been in so long. Heretofore, when merchant iron advanced, furnace men could creep up a little, but the late advance in bar has as yet not been accompanied with any marked advance in pig. That it will advance, a good many are met with who believe it firmly, but two facts stand in the way, till furnaces here and the probability of fresh imports. Importers here and exporters abroad have been arguing on chances of easing up the foreign market, but circumstances continue unfavourable. The over-production abroad helps low prices there and the very active demand here tends to create a margin here for foreign stocks, but so far this theory has not yielded practical results to those who are waiting to unload 60,000 tons on our market. So far the imports this year of pig are 200,000 tons in round numbers, and as far as inquiries can pry into possibilities, which sometimes is not far, the imports will decline. The facts as to this are: buyers are closing up fall contracts without reference to foreign iron. No recent orders have gone abroad except for the ordinary supplemental supply of Bessemer, and these orders have decreased lately because of the supply on hand, and the advanced asking price. To-day \$23 was bid for a lot said to be 10,000 tons, but the bidders did not need it for two months. \$24 is asked, but 80 cents less will buy. During the past week very considerable contracts were placed, running from 60 to 90 days at \$23 50 to \$24 50 for foundry, and \$19 at furnace for gray forge. The special brands continue to occupy their usual relative positions, and the furnace representatives say that the product has been sold longer ahead. Manufactured Iron.—Blooms are in more active demand than at any time within twelve months, and buyers are unsupplied at this writing, although orders have been in a month. \$25 has been offered for hammered charcoal for prompt delivery, and the order could not be filled. Inquiry develops short supplies, plenty of orders ahead and advancing figures. A strike took place at one leading works the other day, at another all hands quit on account of heat and went harvesting at \$2 50 a day. A leading maker of muck iron stated to-day he had no muck bars to sell at any price, and would sell none under \$40 if he had. Sales have taken place at \$39 50, which seems to be the top of the market, but \$39 is a fair average quotation, with little to be had and orders covering production for several weeks to come. Bar is stronger than a week ago, and if things keep on the mill price will be 2 1/2 and store 2 8. Every manufacturer spoken to, and I have seen all, say 2 1/2 can be had for the asking, but they don't ask. The plate and tank mills are so far over-old that new customers have a poor showing. Prices have been quietly growing stronger, and a 3 1/2 basis is now quoted, with a plethora of orders, which goes to show that buyers put off buying a long time, and are now seeking to secure supplies to cover future requirements. Iron cannot be got out as fast as is required. Sheet iron manufacturers report a continuance of the very active trade, and an accumulation of orders beyond present capacity. Wrought pipes are active, and discounts unchanged. Structural shapes are firm and business in excess of facilities. Manufacturers unite in reporting an unusual activity and an abundance of orders, which anticipates their output for an indefinite period. Angles are 2 6; tees, 3 3; beams and channels at combination price. Boiler plate is in special demand. One leading manufacturer stated he had inquiries enough to absorb the output of an entire mill. Fine iron is wanted faster than made. In short, the entire range of iron for construction purposes is in unprecedentedly active demand, and but for the prudence and wisdom born of experience prices would advance beyond the danger line with the usual inevitable results. Nails have improved during the past week. Some moderately sized shipments have been made. Inquiries point to a very active demand in a short time. Orders for spikes and fastenings and joints keep pace with the demand in other branches. Steel Rails.—Since last report orders aggregating 125,000 tons were placed at prices running from \$56 to \$60, and makers report other inquiries in hand for as many more. Under the active inquiry and placing of large orders, higher prices are quoted. Much of the Southwestern and Pacific Coast consumption is provided for in foreign mills. It appears there still remains much unprovided for mileage, and construction companies are waking up to the fact that steel rails do not grow on trees. Negotiations which should have been terminated in May are now being wound up on telegraph wires, and at prices which indicate that procrastination, which is always the thief of time, has in some recent cases been the thief of some money. The philosophic indifference which has animated some buyers is now supplanted by penitential haste, and hence the heavy recent transactions closed and those still hanging fire. Prices abroad as per cablegrams are less able to oblige American customers than two months ago. Iron Rails.—Iron rails meet with moderate demand, and prices are quoted at mill at \$47 to \$47 50, a slight advance. Another batch of inquiries are on the market, and unless the recent advance asked stops business some heavy orders

will be placed before the close of the week. Old Rails.—Very little is to be seen in the market ready to ship up at present, but holders finding buyers in the market are pushing sales. \$20 is named, but few are few. Scrap.—Scrap sales to date have been well maintained, and equal to all requirements. No wrought sells at \$17 to \$24. Cast \$20 to \$20. New York. Pig Iron.—American With some few exceptions the commission firms still complain of the volume of business and claim that their sales do not show the market to be a great deal better than it was a month or six weeks ago. All the furnace agents, and sellers in general report an increased trade, however, and agree in stating that prices are decidedly firm at present, with the most encouraging outlook for the improved price being maintained. On the whole the two interests here would appear to be about equal as last week's report represented that at Pittsburg. At all events, the bulk of business here is effected without calling in the service of brokers. As a natural consequence, the latter are inclined to discredit many of the sales reported, and even go so far as to doubt the prices said to be obtained on many transactions. The result of this, conflicting reports and some little misrepresentation of the actual condition of the market. It is a fact, however, and not an insignificant one at this time, that the commission men are unable to pick low priced stock to offer as an offset to the claims of high prices made by makers and dealers. The actual sales coming to notice indicate a good week's business, aggregating as they do some 6,000 tons various grades and brands, independent of several large transactions rumoured to have been made sub rosa. As to prices, there is very little change as compared with last week, the standard brands not being available at less than \$24@25 for No. 1 X foundry, while \$23 50 is unquestionably the lowest for anything in the way of a good article. For the time being about \$23 50@25 for No. 1 X foundry \$22@23 50 for No. 2 X foundry, and \$21@22 for gray forge may be considered the most reliable quotations. It is understood that contracts for 12,000 tons No. 1 X foundry have been closed at \$24. Scotch.—There is still a very fair trade in the leading brands, though the sales reported are not quite equal to those of last week. Of the arrivals comparatively little is left over after deliveries on previous purchases are made, and this fact, coupled with the moderate supply in store and a very good demand from consumers, enables importers to maintain prices. Some of the large consumers are holding back in anticipation of securing lots that may be attracted on consignment by the good prices now current, as such lots could undoubtedly be secured at lower prices than the regular importers have authority to sell at. The prices to-day are about \$10@21 for Ellington, \$22@22 50 for Carron, \$26 50 for Glasgow, \$23@23 50 for Gartsherris, and \$23 50@24 for Coltness. English—Middlesbrough iron of brands in favour among our consumers is selling quite firm on the basis of \$18 50@19 for No. 3, and \$17 50@18 for No. 4, on the spot, owing to moderate stocks, but round lots to arrive could probably be secured at lower prices. Bessemer is still quoted at \$23 50@24, but does not appear to find very extensive sale. Steel Rails.—There is a great deal of talk about large transactions in both foreign and American. No particulars regarding the amount of these sales or the prices will be given, but it is stated on good authority that several important contracts have positively been closed. American are still quoted at \$55@57 1/2 a rail, but it is stated that \$61@63 are now the lowest for foreign. Iron Rails.—Several parcels of American, making in all about 8,000 tons have been reported sold, mainly at \$16 67 at mill, and none seem to be available now at lower rates. There is some business in foreign for future delivery at Southern ports, but apparently nothing on local account. The lowest figure now quoted are \$16@17 laid down here. Old Rails.—The cost to import at present, according to the latest advices by cable, is about \$31 for double heads, and in view of this fact holders are not very anxious to sell. Buyers are not pressed for stock, however, and it may be questioned if over \$20 for tees or \$24 for double heads can be secured at the moment. About 1,000 tons of the latter were sold at the price quoted. Scrap Iron.—No large lots are selling and the demand seems rarely to extend to more than one or two hundred tons on a single order. Stocks are evidently in good shape, and No. 1 wrought rule quite firm at \$28@29 in yard. Some very fair lots of foreign, however, were had at \$26@27 from store. Annie Cullen went driving out of Baltimore with Mr. Boulder. When they were several miles from the city she threw a marriage license in her lap and swore that she would never return home except as his wife. This peculiar kind of wooing was temporarily successful, for the girl went unreluctantly to a wayside minister and was married, but on getting back to her parents she refused to even see her husband, and a divorce is to be obtained.



INSURANCE MATTERS.

COOPERATIVE ANNUITY COMPANIES

Scrutator writes to the Ottawa Citizen - I have received per mail from the agent in this city of the Hartford Life and Annuity Insurance Co certain documents and other papers relative to the working of the above company.

To begin, I have before me the Canada Gazette of Saturday last containing the list of all companies licensed by the Government to transact business of insurance in Canada, with the name of the agent on whom to serve process when necessary, and the amount of the deposit of each company, but I fail to find the Hartford Life and Annuity Insurance Co. on the list.

It is not licensed and has no deposit with the Secretary of the certificate holders. Again, section 25 of 40 Vic, chap. 42, the Consolidated Insurance Act, 1877, states distinctly that "no company shall do any business of insurance in Canada (other than Marine excepted) without permission obtained from the Minister of Finance, who after report made by the Treasury Board and approved by the Governor-in-Council, shall decide in each case whether such permission shall be granted and whether a license shall be proper or necessary to be issued, and whether any and what deposit shall be required to be made with the Receiver-General."

and any company doing any such business without obtaining such permission or license, and any person delivering any policy of insurance, or collecting any premium on behalf of such company, shall render themselves respectively liable to the penalties stated in the 13th and 14th sections of this act. The said penalty being \$1,000 for each policy or certificate issued, which penalty may be sued for and recovered on information filed in the name of the Attorney-General of Canada; one-half the penalty when recovered to go to the Crown, and the other half to the informant.

The company in question, "The Hartford Life and Annuity Insurance Company," has applied to the Government as to doing business in Canada, and has been informed, on the opinion of the law officers of the Crown, that they cannot legally do business in Canada without obtaining a license from and depositing \$50,000 with the Dominion Government. Neither one or other of these has been done, consequently the "Hartford" is an illegal company in Canada, and no suit would do good in our courts relative to it.

The law officers of the Crown have over and over again given their opinion that all such companies as the "Hartford," co-operative, mutual benefit societies, etc., are illegal and liable to the penalty heretofore stated, unless duly licensed by and a deposit made with the Dominion Government. Consequently the policies or certificates issued by such companies are perfectly worthless, and the public are being imposed on by such companies and their agents.

But let us see what the American press, which knows such companies best, say of them. I have before me the Spectator of the 4th instant published in New York and Chicago, and from it I make the following extract:—"As we go to press information reaches us to the effect that the Attorney-General has, at the request of the Insurance Department, prepared papers for the arrest of all agents of the Hartford Life and Annuity Company doing business in this State. The charge is that they are doing business in violation of the law. We hope to see the case pushed with vigour, but it may be definitely determined whether the co-operative delusion can be prosecuted in the State in defiance of the law."

Again, a Hartford paper of this month says: "We learn that some of the assessment co-operative mutual benefit associations have gone into Canada, and are doing a rushing business. That is well for the companies, and a little rough on the Canadians; for every dollar paid for membership and dues comes into the States, while every dollar which is ever paid for losses, the Canadians agree to pay themselves. It is nevertheless a good joke; pay five or ten dollars a week each, to a company on this side of the line without a dollar of capital, which agrees to do nothing but assess you for every dollar of losses, which has to be paid on the Canadian side. That is mutual benefit with a vengeance, we get the membership free and annual dues, and the Canadians pay their own losses. We can stand this arrangement as long as they can."

This same Hartford paper, referring to the repudiation by certain prominent men of Indianapolis of their names being used as officials of the "Pioneer Relief Association of Canada," another co-operative affair, says: "This is only bettering a little the example of 'The Hartford Life and Annuity Company,' which continued to publish the endorsement by prominent men of a scheme they knew doctored of, and long after they had denied all responsibility for it. It is getting so that a man of standing and influence, who values his good name, needs to have it copyrighted in order to save himself from being advertised as the promoter or endorser of some plausible scheme and to avoid the unpleasant necessity of public repudiation."

From the above the public will be able to form an opinion as to the estimate in which such associations as the "Hartford Annuity Co" are held by our American countrymen, who know them best, and although reproaching on your space I cannot refrain from referring to, perhaps, one of the best associations of the kind, viz: "The Indiana Masonic Mutual Benefit Society." The President, Mr. Woolled, at its late meeting, submitted, as a part of his address, the following facts and advice: "Many intelligent men doubt the permanency of societies formed upon the plan

of the Masonic Mutual. Indeed, it is the almost universal opinion of insurance experts that such societies are necessarily short-lived, and contain within themselves the seeds of dissolution." This subject, "has caused me," says the worthy President, "much thought, and no little anxiety, and to add:—"I know that the Masonic Mutual has heretofore performed all the functions of a reliable insurance company at a much less cost than the average cost of the protection such societies give. It has paid its losses promptly, and now has the funds to satisfy all its obligations, matured or contingent. "Can it in the future do what it has done in the past? There is the question that confronts you to-day. To ignore it would be folly; to meet it is your duty. The average age of your membership is a fraction over forty-six years. It must be kept at that rate or brought lower, else the society's future is pregnant with danger. Should the average reach fifty years, it will be so heavy as to sink the society. We cannot stand the cost which an average age of fifty years would entail, for the cost of remaining in the society would then be greater than the cost of obtaining an equal amount of insurance from a regular life insurance company. I need not tell you that such a condition of affairs would be fatal to our society. You know as much without my saying it." I have written the above with no ill-feeling to any one but for the public good, and in justice to the various life insurance companies doing business in Canada, who have made their deposit with the Government and are duly licensed thereby.

The Ohio superintendent of insurance on the 28th ult. refused the application of the Mutual Benefit Association of Phoenixville, Pa., for permission to do business in Ohio on two grounds, which may be stated thus: that it is too much of a co-operative for admission as a regular life company, and imitates the regular too nearly to be admissible as a co-operative.

Railroad companies that fail to comply with the requirements of law in keeping axes and saws always ready for use by the passengers in case of accident, to save life and property, receive a terrible admonition from avengeful Illinois farmer. He has commenced 9,000 suits against one company, for a failure to comply with law in that many cases. The aggregate penalty, if the prosecution proves successful, will be \$1,800,000, half of which the complainant will receive.

The Supreme Court of Missouri has just rendered a decision in the case of the American Insurance Company, of Chicago, v. Smith. The facts and the substance of the law laid down were as follows: Defendant was a citizen of Gasconade county, Mo., and insured property in that county in the plaintiff company, giving a promissory note in consideration of the policy. The company sued on the note, and offered it in evidence, together with defendant's application, and rested. The Circuit Court held that as plaintiff was a foreign corporation, and had failed to show that it was duly authorized to do business in this state, the note sued on was without consideration, and, therefore, void, and plaintiff could not recover. Held, that under our statute, where the note is offered in evidence and its execution not denied, it makes a prima facie case. Defendant admitted his signature to the note, and the policy is presumptively good, there being nothing to show that it was issued in violation of law, or for any other cause illegal and void. Reversed and remanded.

It was stated in the last report that seven of the life companies from other states authorized in Massachusetts in 1853 were still occupying the field, their aggregate business having increased in amount insured from \$65,984,071 at the beginning of 1853 to \$666,892,463 in the commencement of 1870—an increase of more than tenfold; and in amount of admitted assets at corresponding dates, from \$6,821,942 to \$194,724,878—an increase of more than twenty-eight fold. These seven companies were the Mutual Life, Manhattan and United States, of New York; the Connecticut Mutual; the Mutual Benefit, of New Jersey; the National Mutual, of Maine; and the National, of Vermont. We refer thus to the business of these companies because they are the only ones from other states now left that were authorized in Massachusetts in 1853, and because its results furnish so good an illustration of the wonderful growth, as well as the periodical depression, of life insurance in America. Had annual statements been rendered from their first year of business, still greater contrasts would have appeared. While this condition of things is most hopeful and encouraging, it should not be forgotten that out of a judicious and just administration of the great and important interests entrusted to them can the present managers of American life insurance expect to escape the criticisms so deservedly uttered in condemnation of these sacred obligations and the betrayers of confiding patrons. From the record of companies remaining in Massachusetts, now so thoroughly sifted, and apparently so free from discredit, association, there seem to come welcome assurances that in their ranks the disgraceful scandals which have blackened the history of so many unworthy competitors will find no repetition. That it may be so no honest official, or anxious policyholder, or trusting dependent, can offer a more appropriate invocation.—Massachusetts Life Insurance Report, 1881.

The Union City, Ind., Eagle of July 21 has a local article showing the operations of the death-bed speculators in the vicinity of that town, and it mentions the significant fact that the companies favoring the business are all either Ohio or Indiana corporations. We select the following from a dozen instances named by the Eagle: "Three aged residents of our neighbouring county of Dark, two of whom at least were in poor health for several years, died recently with policies, not six months old, on their lives—each with three policies, we believe, and another with eight. Several policies were written on a man not a dozen miles from here who was upwards of 80 years of age, stricken with paralysis, and who had as visitors at one and the same time, his physician and an insurance agent—and he considerably 'passed off' in a very short time afterward. Of course his beneficiaries did not get the thousands they hoped for but they got something—so also did the companies and their agents—and the dupes who held policies in these companies furnished the money. A young man near here holds a policy on his father's life. One night about a month ago the old gentleman became suddenly and seriously sick. His smart son heard of it, but instead of hastening to his father's bedside, he saddled a horse and rode for dear life for a dozen miles, for an insurance agent—intent on getting an additional insurance before it should be too late. The funny part of this affair—for it really has a funny side—is, the old man got well. Not a mile from the Eagle office lives a man, not so aged (about 60 years) but who has had lung disease for over two years, unable to work, and not expecting, nor by his friends expected, to live long, upon whom, about three months ago, a policy for several thousand dollars was taken out. This was at or within a few days of the time when he was seriously sick that a watcher or attendant was necessary at night, and it was thought probable that his death might occur at any time. He still lives, however."

The United States army of 25,000 men has a medical staff of 200. The navy, with 8,000 men, has a medical staff of about 1,000. The marine hospital service, which has about 25,000 patients annually, has but 35 medical officers and the same number of active assistant surgeons.

POSTAL TIME TABLE.



POST OFFICE, OTTAWA.

ARRIVAL AND DEPARTURE OF MAILS.

Table with columns: MAILS, Close, Delivered. Lists routes to Montreal, Quebec, and other locations with times.

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

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POSTAL TIME TABLES.

POST OFFICE, MONTREAL.

MONTREAL, July 5, 1880.

DELIVERY. MAILS. CLEARING.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to Ontario and Western Provinces.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to Quebec and Eastern Provinces.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to local areas.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to United States.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to Great Britain, etc.

Table with columns: A.M., P.M., MAILS, CLEARING. Lists routes to West Indies.

Letters, etc., prepared in New York are forwarded daily on New York, whence mails are despatched. For Havana and West Indies, via Havana, every Thursday p.m.

\*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, 4.30 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 English Mails.

a race of high-souled, ardent Hebrews, filled with the spirit of an Ezra, a Macabees, a Joda Hallel, a Frankel—but a breed of indifferents, who sneer at the synagogue, and whose ignorance is a greater source of evil than the bugbear of radicalism." The Messenger also applies the rod to those wealthy Jews who "fancy that their money absolves them from compliance with the laws and statutes of their faith, and whose consciences are lulled to sleep by timid and accommodating babies."

There is a fakir at Lucknow about whose miraculous doings the native papers tell the most astounding stories. His latest exploit was to sit "cool, quiet and perfectly unconcerned" close alongside of an enormous fire. The fact was so great that the crowd of spectators could not approach within 200 yards of the blazing mass, which was composed of eleven car-loads of highly combustible material. The native scribe who chronicles the feat asserts that the fakir remained "in this interesting position" for four hours without taking the slightest harm. Of course, the fame of the Jevotes spread abroad like wildfire, and from all parts of Lucknow came pious Hindoos bringing offerings to the incomprehensible saint. So great at last became the concourse of pilgrims that a detachment of police had to be stationed on the spot. How the trick was managed remains to be shown. It seems established that some occurrence of the sort described really did take place.

There is no doubt about the conservatism of the Jewish Messenger, which condemns the Judaism which is remodelled every decade by the majority vote of a synagogue's members, and says: "This is the course of a morose Judaism, deepening and poisoning the moral sensibilities of our people, curtailing their energies, paralyzing their strength, producing a generation of infidels and apostates—not

RAILWAY TIME-TABLES.



Canada Central Railway.

CHANGE OF TIME

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

WESTERN EXPRESS TRAIN, making close connection with Grand Trunk Railway for Toronto and all points West, arriving in Toronto at 11.15 a.m. 11.30 a.m. Pombrook Express Train, connecting at Carleton Junction with trains for North, Smith's Falls and Brockville 4.30 p.m. ARRIVE IN OTTAWA. Express Train from the West, leaving Toronto at 7.35 a.m. 8.45 p.m. Express Train from Brockville, North Pembroke, and all intermediate stations 1.60 p.m. Trains run on Montreal time. These trains make only four stops between Ottawa and Brockville Junction. Connection made at Brockville with the Utica and Black River R.R. for New York, Albany and all points South. T. A. KINNON, GENERAL MANAGER, Brockville, Ont., 21st June, 1880.



ST. LAWRENCE & OTTAWA RAILWAY.

CHANGE OF TIME

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

For the East, West, South and North-East 11.15 a.m. For the East 2.00 p.m. For both East and West 10.30 p.m. ARRIVE IN OTTAWA. From both East and West 6.00 a.m. From East, South and South-East 4.00 p.m. 6.20 p.m. From the West. Going West take the 11 a.m. train. Ample time for dinner at Prescott Junction. Close Connections with Grand Trunk Trains to and from both East and West, and with those of the Rome, Watertown & Ogdensburg and Lake Champlain and Utica & Black River Railways at Ogdensburg, to and from New York, Boston, and all points South and East. A Steamboat Express Train will leave Ottawa on Tuesdays, Thursdays, Saturdays and Sundays, at 5 a.m., connecting with the different lines of steamers on the St. Lawrence, for both East and West. A Sofa Car will be run on the Night Train between Ottawa and Prescott Junction. Trains are run on Ottawa time. WALTER SHANLEY, General Manager, Ottawa, Ottawa, July 26, 1880.

Q. M. O. & O. RAILWAY.

CHANGE OF TIME.

COMMENCING on Wednesday, June 23rd, 1880, trains will run as follows:

Table with columns: Mixed, Mail, Express. Lists routes to Hochelaga, Quebec, and other locations with times.

[Local trains between Hull and Aylmer.] Trains leave Hull and Station seven minutes later. \*Marquette Palace cars on all passenger trains and elegant sleeping cars on night trains. Trains to and from Ottawa connect with trains to and from Quebec. Sunday trains leave Montreal and Quebec at 4 p.m. All trains run by Montreal time.

GENERAL OFFICE, 13 Place d'Armes Square. TICKET OFFICES, 15 Place d'Armes and 302 St. James St., Montreal, and opposite the St. Louis Hotel, Quebec. L. A. SENEVAL, General Superintendent.

INTERCOLONIAL RAILWAY.

SUMMER ARRANGEMENTS, commencing 1st June, 1880:—

Through Express Passenger Trains daily (except Sunday) as follows:—

Table with columns: Leave Point L'Evêque, River de Loup, Arrive Trois Pistoles, etc. Lists routes and times.

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 Halifax car leaving Montreal on Monday, Wednesday and Friday, runs through to Halifax, and that leaving on Tuesday, Thursday and Saturday, to St. John. The trains leaving Halifax at 6 p.m. and St. John at 10.30 p.m., and which reach Montreal at 6.30 a.m. by connecting at Chandler's Curve with the Grand Trunk train at 5.30 p.m., remain at Chandler's Curve 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.

D. POTTINGER, Chief Superintendent.

DOMINION TRADE REGISTER

INDUSTRIAL DIRECTORY

AGRICULTURAL IMPLEMENTS
A. S. WHITING MANUFACTURING CO.
WELLAND VALLEY MANUFACTURING CO.
ANILINE DYES
EMIL THOURT & CO.
BRASS WORKS
H. N. TABBA & CO.
BRIDGE BUILDERS
TORONTO BRIDGE CO.
CAPS AND FURS
J. JOHNSTON.
CARPETS
FENTLEY & CO.
COTTON BROKERS
M. WRIGHT.
COTTON MILLS
DUNDAR COTTON MILLS CO.
HAMILTON COTTON MILLS CO.
JOHN MACKAY.
EDGE TOOLS
R. T. WILSON.
ENGINES AND BOMBS
O. C. MORRISON.
THOS. WILSON.
ENGINEERS AND MACHINISTS
JOHN PENNOM.
ENGRAVERS, ETC.
JOHN FLEMING & SON.
FRIES
THOS. GRAHAM.
FREDERICK HAUSCH.
FILE & SPRING CO.
U. OUTRAM & SON.
FURNITURE
OSHAWA CABINET CO.
AMERICAN BRACKET CO.
TESS & CO.
JAMES WRIGHT & CO.
GLASSWARE
HAMILTON GLASS CO.
GLOVE MANUFACTURERS
W. H. STOREY & SON.
HAMBERS
HENRY J. WARREN.
NUSS, SPORES AND BENT GOODS
P. W. HORE & SON.
IRON WORKS
CANADA SCREW CO.
COWAN & CO.
DOMINION BOLT CO.
H. R. IVES & CO.
HAMILTON BRIDGE & TOOL CO.
McKECHNIE & BERTRAM.
THE OSHAWA MALLEABLE IRON CO.
OLMSTED & SON.
SHUFF WORKS
THE WHITMAN & BARNES MANUFACTURING CO.
KNITTING MILLS
F. LENNARD & SONS.
LASTS, BIES, ETC.
CHAS. CHILDS.
LEATHER BELTING
DOMINION BELT AND PIANO CO.
ROBIN & SADLER.
ORGANS AND PIANOS
WM. BELL & CO.
DANIEL BELL & CO.
DOMINION ORGAN AND PIANO CO.
S. R. WARREN & SON.

ORGANS AND PIANOS

WM. BELL & CO.
J. H. SMITH & CO.
DOMINION PAPER CO.
CANADA PAPER CO.
JOHN FISHER & SON.
LINCOLN PAPER MILLS CO.
W. M. HARDELL & BRON.
SAW MANUFACTURERS
R. H. SMITH & CO.
SEWING MACHINES, ETC
W. WILKIE.
SCALES
CANADA SCALE WORKS.
C. WILSON & SON.
HOWE SCALE CO.
R. D. VAN DE CARR & SON.
F. DIVER & CO.
WM. CLYDINNEO.
HOLT TELEPHONE CO.
BUTTER & CHEESE TRIMMERS
B. GREENING & CO.
MAJOR & GIBB.
TIMOTHY GREENING & SONS.
WOODEN GOODS
C. T. DRAXTON & CO.
J. R. McLAREN, Jr.
WOOLLEN MANUFACTURERS
J. ROUTH & CO.
JOHN WARDLAW.
WOOLS AND COTTON WARPS
WINANS & CO.

PETROLEUM

The above are wholesale prices per Imperial gallon at which refined oil is sold by the car load...
The latest refined oil quotations in New York market are as follows...
Reduced oil for the New York City trade...
Refined oil of 150° burning test...
Cases of refined oil for export...
PETROLEUM PRODUCTS
Lubricating
Tur
Gasoline
Kerosene
Paraffin Candles
Wax
THE BRITISH MARKET
ARTHE BROWN & CO'S PETROLEUM REPORT
Refined Petroleum Oil—Spot further declined last week...
Turpentine—Advanced on spot...
Above represents stocks and movements at London Public Wharves...
PETROLIA WEEKLY OIL REPORT
Nothing of a startling nature has occurred since our last issue...
CANADIAN MARKETS
(Petrolia Advertiser.)
The market is firmer, if possible, than last week...
Refined is about the same as last week...
This is the price obtainable for the crude oil or warzone receipts issued by the different Pipe Line Companies...
REVISED OIL MARKET
Petrolia (Ont.)
London
Toronto
Ottawa
Montreal (P. Q.)
Quebec
Halifax and St. John's

THE MONEY MARKET.

Table with columns: BANKS, Capital sub., Capital paid up, Rest, Dividend last year. Includes sub-sections: TORONTO STOCK REPORT, DEBENTURES, &c., MONTHLY STOCK REPORT.



THE DRY GOODS TRADE.

NEW YORK ADVICES

In general the goods are essential... The market for foreign dry goods... The movement of cotton goods...

In agents' quotations are noted... The ladies of Great Britain are taking such vigorous and kindly steps... The errors of the great Parliament House clock at Westminster...

whom have entered varieties of British goods... BRITISH IMPORTS... BRITISH EXPORTS... Cotton, raw... Flax... Hemp... Silk, raw... Wool of all kinds...

MINING NEWS.

NEW MINING COMPANY.

In the Canada Gazette Mr. J. A. Gemmill, solicitor for applicants, gives the following notice... Notice is hereby given that within one month after the last publication of this notice, application will be made to His Excellency the Governor-General...

WASTE OF COAL IN MINING.

Mr. William Wilcox, Mine Inspector for the first bituminous coal district of Pennsylvania, in his annual report, has the following to say upon this important subject... There is no product of nature, of which we have any knowledge, of greater importance to the human family than coal...

them. In such a case as the above, timber is used to little purpose... In the Connelville coke region the same waste is going on... The aggregate production of coal in Great Britain during 1880 was 147,020,268 tons...

BRITISH COAL PRODUCTION.

The aggregate production of coal in Great Britain during 1880 was 147,020,268 tons, or about six times the coal production in the United States... Table showing coal production in tons for 1878 and 1880 across various regions like Northumberland & Durham, Lancashire & Westmorland, etc.

Notes, and it will be seen that the extra duty on the duties of fuel in those countries during the last year was a strike up to the ordinary annual average. But during the last ten years the greatest and most rapid progress has been made in the Midland field. It having been less sparsely than the North of England, which last year shows to such an advantage in production.

WASHING COAL BEFORE COOKING

Nothing the remarks of a Connellsville paper that "coke made from the washed coal is more expensive, and at all times an inferior furnace fuel compared with the first grade of the Connellsville coke," the Iron Age remarks that it is true that the washing of coal adds somewhat to the cost of coke, but not as much as is generally supposed, the cost with approved appliances and machinery, including handling, being but a few cents per ton. But it is not true that coke made from washed coal is more expensive than Connellsville coke. As the rule, and one which holds good in Pennsylvania, the coal that is washed for the manufacture of coke is slack having little or no value, which is, or has often been, sold delivered on cars at the cost of loading. Nor is it always true that a coke from washed coal is an inferior furnace fuel. Indeed, the rule is just the opposite. A washed coke made from a given coal is in most cases better than the unwashed. It is true that washed coke made from other coal is not as good as the unwashed coke made from Connellsville coal, but it is a question if washing Connellsville coal would not give us a better coke. Even the best Connellsville coke contains a much larger amount of ash and sulphur than Durham, and both could be lessened by washing. The ash usually credited to Connellsville coke is 10 to 12 per cent. This could be reduced to 7 or 8 per cent, or lower, perhaps, by proper crushing and washing. The sulphur in Connellsville coke could probably be reduced two-thirds by washing. We do not intend in what we have said to disparage the character of Connellsville coke; all things considered, it is the best furnace fuel in this country; but as in the nature of things it must cost more in the near future, it is a subject that should be seriously considered whether the reduction in ash and sulphur that will result from washing will not make a fuel enough better to pay its costs, and more too. Certainly there would be an economy of fuel, a more regular working of the furnace and a superior product.

Our Government has received information of the purchase by a wealthy London house of the great copper mines of Belle Cote, Little Bay and Roberts Arm, the now well known mining centers of Notre Dame Bay, from the original English and Scotch proprietors of these mines. A New York company, incorporated as the Consolidated Copper Mining Company, effected some months since a transfer of this property. The sum of \$200,000 was paid down in cash, and the company, having watered the mining stock up to \$3,000,000, attempted to float it on the money markets of Europe. It being, however, rejected both on the Bourse of Paris and on the Exchange of London, the company threw up the sponge and withdrew their stock lists. The London house referred to has assumed the entire money liability to the foreign company, and has paid off the advance made by the Consolidated Copper Mining Company. The terrific forest fires that lately raged around these mining colonies, while they appeared to be mere miseries of ruin, have proved to be absolutely beneficial. Thousands of acres of valuable timber were indeed laid low, but the fires that wrought such destruction to the forests have laid bare a vast metalliferous area hitherto unsuspected and undreamed of. Over this ground eager prospectors and explorers are now busily engaged locating lodes and tracing veins of copper ore. The Crown's Land Office is daily besieged with anxious applicants for licenses of search and for land grants. These are all met with a uniform refusal, for until the New York Railway Company allowed to have selected all their eight mile blocks along the whole 400 miles of railway guaranteed under the existing contract with the company, the Newfoundland Government has no authority to convey or grant to outsiders any of these mineral lands.—St. Johns, N.F. Dispatch.

An Ohio woman owed her hired man \$310. She married him to square the account, and then for \$60 got a divorce, thus saving \$250.

The polo quadrille, just introduced at the watering place, is much like the old basket quadrille, and the feature is a very rapid all hands round.

Lord Dudley, who is in bed with, has sublet Blackmoor Forest, which he leases from Lord Brudenell, to Alwyn the brewer, for \$20,000 the season.

Eighty thousand acres of Arkansas land have been bought by the Catholic Colonization Society. The aim is to induce Irishmen to become farmers.

A society for the Promotion of Marriage was started two years ago in Cincinnati. An inaugural picnic was given, and one of the ceremonies was the marriage of James McHugh and Belle Walker. The society died quietly soon afterward. Its memory has now been revived by the brutal murder of Mrs. McHugh by her husband.

DEFLATION IN ENGLAND.

Mr. Joseph Hutton's work, "Today in America," studies the Old World and the New, abounds in excellent reading, his chapters on English commercial affairs being both comprehensive and interesting. As the American correspondent of the London Standard, and a well known writer, Mr. Hutton has been afforded during his residence in England ample opportunities of making complete inquiry into the commercial position and needed legislation. Subjoined are some further extracts from his new work.

"Boy, said a New York traveller to a Yankee stippling who was sunning himself on a country fence—'boy, the hogs are getting into your potatoes.' 'Well, I guess there's no hogs,' replied the boy, grinning. 'But, see, they'll spoil your whole crop of potatoes.' 'Well, I guess they are our letters too,' retorted the youngster, without stirring. This seems to be the backbone of Mr. John B. Wise's answer to the Cobden Club tract entitled 'The Western Farmer of America.' The Cobden Club is an association of Free Traders. It counts two hundred members of Parliament among its members, and several of the ministers of Mr. Gladstone's Cabinet. The very essence of Liberalism would seem to be its motto, and Free Trade is the backbone of the Liberal party. It is true a large number of Conservatives are Free Traders; but not in the aggressive spirit of the Cobden Club, which sends its arrogant mis-ives to all the countries of the earth, forgetful of the proverb that 'what is one man's drink is another man's poison.'

"Jonathan B. Wise is the name of Dr. John L. Hayes, of Cambridge, Mass., and he has hit the Cobden Club very hard in his demonstrations of the difference between the position of the American farmer and the English farmer. There is unquestionably a good deal of meddling impertinence in the Cobden Club's voluntary advice to Western farmers to give their support to no candidate for the House of Representatives who does not pledge himself, if elected, to vote for a reduction of five per cent every successive year on the import duties till the whole are abolished. Nobody doubts that the time has arrived when certain tariffs may be reduced, but the time will never arrive when any country, much less America, will accept with patience the dictatorial interference of the Cobden Club. Trying to compete with America, in America, and to equalize prices as against high tariffs in other lands, English manufacturers have made 'shoddy' goods, and so the country sustains a double blow.

The worst of John Bull is his extreme. Given a principle accepted, in carrying it out he goes the whole hog. His proper course to day and for years past would be found in a modification of Free Trade compatible with existing circumstances. He should have admitted food free always and have taxed luxuries with 'Customs tariffs.' Then he would not have to lament the annihilation of the silk and other kindred manufactures and the ruin of his sugar trade. If all the rest of the world positively refuses to accept his views, Mr. Bull's proper course is surely to fit them to the necessity of the times; not to stand and 'bully creation' because creation will not dance to his pipe. Free Trade is a fine thing in theory. Protection for new countries with industries to build up is equally fine in practice. A reasonable and expedient combination of the two is the 'happy mean' which governments quite as enlightened as that of England recognize; and I am glad to see that America does not allow the Cobden Club to judge its precedent for 'warning' and 'cautioning' the Universe without a reply. The story of the boy and 'our logs' is quite an answer enough even without being backed by argument; though Mr. Wise has propounded some unanswerable 'points' in defence of the policy of the Government at Washington.

The points which free traders, who refuse inquiry into the present condition of things, persistently ignore are, the gradual falling off of our exports, and the equally certain and steady rise of our imports, coupled with the improved manufacturing methods of other countries, which for the first time in the history of English industrial supremacy have shown that they can make the very goods upon which we pride ourselves better and cheaper than we do—I do not say than we can. The duties of the two periods before and after protection was not aggravated by the fact that the world had shown itself capable of manufacturing for itself; nor had the foreigner, while shutting us out of his ports, come into our own with competing wares. The situation to-day has no parallel in the past, and the difficulties of it are not to be tooth-pooched.

If England is to become a mere residential country, then the fate of our mills and factories is of no great moment, but if we are to maintain our position as a great manufacturing nation, the traders who pay taxes at home and duties abroad should be heard and legislated for when they say, 'Place the foreigner on an equality with us in our home markets at least.' This seems to me to be as far as 'the simplifications' go at present. That first request is only for official inquiry into the entire question. That they are entitled to this, and possibly to much more, is shown by the figures previously shown.

There is something truly admirable and earnestly characteristic in the

turning as with which Free Traders even in the midst of ruin, adhere to their principles; though a leading inhabitant of Birmingham said to me 'I had Mr. Wright, the leader of the Cobden Club here (the country), declare that if he undertook it he would produce such facts and figures as would compel any government to cancel Free Trade.' When the future historian comes to tell the story of Free Trade in England he will have to pay tribute to the dignity with which the farmers during the last twenty years have borne their fall from comparative affluence to poverty. To-day, while the American agriculturist is accumulating wealth, the English farmer is a ruined man. The chief source of a nation's prosperity, the cultivation of the soil, is 'a played out industry' in England; while in Ireland hundreds of tenant farmers, having paid no rent for years, are on strike against paying any more at all. Free Traders who take credit for every kind of industrial and material progress must surely debit themselves with some portion of the general bankruptcy and distress of the cultivators of the soil. To-day Ireland asks for relief with bitterness in her heart, and a gun in her hand. Tomorrow England will follow suit, but without the gun. Neither of them dare blame Free Trade, which is a sort of fetish to the Liberals, and a something the Tories dare not touch, lest they be pointed at, and called 'Lunatics' and 'retrogrades,' and so the political world attacks landlords and the present land tenure. But the English farmer knows that he can't grow wheat in competition with his American rival, and that he is even hit in the matter of stock raising, and no amount of 'tenant right' and land reform will help him; that he and his family will go to the workhouse or act on Lord Darnley's advice and emigrate with the happy consciousness that they are victims to the maintenance of a glorious principle, martyrs to the virtue of self-denying Christianity which, struck on one cheek, turns the other to the smiter. In the height of our manufacturing distress the honourable member for Birmingham himself spoke with some serious misgivings about the future of England. It was on the occasion of some celebration at Manchester. Mr. Bright was the chief guest at a great banquet. No wonder that, standing on the down hill of life, though at the summit of his greatness, his friend of Cobden, and joint founder of the famous Manchester school in politics, Mr. Bright should experience sensations of sadness as well as of pride. In the great prose writer's 'American Note Book' there is a pathetic suggestion for a story or an essay: 'An old man, on a summer day, sits on a hill top, or on the observatory of his house, and sees the sun's light pass in vain on a distant object to another connected with the events of his past life—the school house, the place where his wife lived in her maidenhood—his settling house falling on the churchyard.'

Mr. Bright at Manchester reminded me of Hawthorne's taunting picture. The great politician looked back over his past career and the sun which has set on his political work—for John Bright is white haired and totters somewhat in his gait, though the lamp of his eloquence burns brightly as ever. There is something peculiarly sorrowful in the anecdotal episode of his speech, in which he referred to a visit to the ruins of Tantalion Castle thirty-five years ago: 'As I walked among these ruins my friend Mr. Ashworth stopped me, and turned round, with a look of sadness, and said, 'How long will it be before our great warehouses and factories in Lancashire are as complete a wreck as this castle? I have thought of that several times—thought of it with sadness, as I think of it now.'

So far as I can estimate the results of my inquiries, they are unfavourable to the continuation of a one sided arrangement which is establishing foreign manufactures, and crippling those of England. Hostile tariffs against us in every land, met with free imports at home, is not Free Trade. If it is, then the sooner we return to protection the sooner will England see her working people once more fully employed and her great factories busy with profitable orders. If giving the continent our pig iron, and receiving back, free of duty, the raw material manufactured to undersell our own artificers, while the continent closes her markets to our manufacturers, is Free Trade, then Free Trade is no longer a boon to England. It was all very well when England had a monopoly of machinery and mechanical power; but to-day we are fighting our own inventions; to-day we are competing with the very machines we have sent abroad; to-day the pupil is as clever as his teacher; to-day Jack is as good as his master. The free traders, in those past days when England was the chief workshop of the world, told us that America would give us her produce, and we should give her our own manufactures. But to-day we are paying for that produce not in hard ware, but in machinery, not in cotton, not in silk, not in carpets, but in gold. Mr. Bright told us that the other nations, seeing our prosperity, would emulate us. France is held up as one of our converts. Yet France goes beyond the ordinary line of protection. She gives bounties to her sugar refiners, who undersell us in our home markets, and sugar refining in England is a ruined industry. The so-called Free Traders say the few must suffer that the many may be happy. But surely we are passing that ancient land mark. Not the few but the many—are they not be-

coming to suffer for the few? We are importing £12,000,000 a year in French silks. £1,000,000 of gloves chiefly French. Why should we not balance the same quantity by a duty on silks and gloves? 'But says then, the Free Traders will reply, 'sugar will go up in price.' So it may a trifle per pound; but what is the good of cheap sugar to the poor wretch who can hardly buy bread, and to whom sugar is an unaffordable luxury?

This continual separation of the producer and consumer in an industrial country such as England is folly. We import beads, china clocks, embroideries, lace, fur, awlkins, and many more luxuries. Tax them, and give the poor that breakfast table we have looked so much about. Luxuries of all kinds might bear a duty for the general good. It would not hurt the rich; it would help the poor, who are not confined to the labouring classes, as those who know anything about the small shopkeepers, clerks, counter-men, and the middle walks of English life can testify. The French treaty is the one triumph of the Bright school, and England is congratulated to-day because there is a prospect of a renewal of it. Mr. Hester, a practical authority on the question of textile manufactures, answers this in a few telling lines:—

'Being that they have under the former treaty entirely destroyed our silk trade, and have under that treaty increased their exports of silk manufactures to England from £500,000 before the treaty to from nine to ten millions last year, while we have the additional blessing of about five millions from other countries, I think they may well be content with their share of that trade, as practically we have now got none left. Add now for worsted and woolsens. In 1877 they sent us £3,238,000, and we sent them £3,073,000, so that in this branch of industry they sent us more by £800,000 than we sent them; and the returns for 1878 show, as do those of 1879, that while they have been gaining ground we have been losing; and as they charge duty on all we send them, and the 'cruse' admits all their goods free, I think they may well be content with that part of the bargain also. But we must come to cotton. We sent them in 1877 £2,619,000 against their £692,000, or two millions more than they sent us. Now, it is these two millions of cotton goods that they intend to handicap with further duties, and then they think they will also be Free Traders. And this is Mr. Forster's promising consent! They have destroyed our silk industry under the old treaty, and have further shaken Bradford to its foundation, for it will only require a decade to make it a second Coventry. We might as well fight against the winds and the waves as fight against seventy-two hours with fifty-six'

'But,' say the Free Traders, 'we have given you cheap wines, and Mr. Gladstone has blessed the country with Free Trade in wines and spirits.' In America, where they have no Mr. Gladstone to give them cheap wines, they have established an enormous trade in cheap and wholesome ale, lager beer. The rich, who drink wine, are content to pay a duty for the benefit of the country; and the poor, who drink the mild, wholesome beer of the country, are sorer than our poor, who cannot afford claret, and have no cheap form of mild, invigorating ale to drink. It is questionable whether the English are morally or constitutionally better for the forcing upon them of the thin wines of France. The old 'ale conning' in modern shape, under modern administration, and the fostering of the national beverage, would possibly be more beneficial than the philanthropic development of French industry and the advancement of the French wine trade. In America you rarely, if ever, see a girl or woman go into a bar to drink. This kind of promiscuous uppling used to be confined in England to the lower classes. But Mr. Gladstone, from the highest motives, no doubt—for all he does is, of course, eminently conscientious—made every public-house a drinking shop, so that the women of the middle and of the upper classes could go out and tittle as well as their poorer sisters. And they do it. Mr. Gladstone's famous free trading measures has increased drunkenness among the women of England to an alarming extent; and the evil was in no wise neutralized by the very opposite principle of restriction applied to men drinkers in the Licensing Act of Mr. Gladstone's Government. 'The principle' of Free Trade in that case did not prevent Mr. Gladstone from 'protecting' the subject against the publican, and to that extent he is to be commended for not letting the bogey of a so-called 'principle' frighten him from an alliance with 'national expediency.'

The English people have been so 'bewitched with principle' in the matter of Free Trade that, in accepting the 'theory,' they have not discriminated about the 'practice,' so long as the country was prosperous. Until quite recently, if one dared to question the results of so-called Free Trade, it was to have your life made a misery to you by the sneers and set arguments of aggressive politicians of the Bright school (and how aggressive they are, except when the national honour abroad is concerned) who could always theorize you off your legs; because in theory Free Trade is as beautiful as republicanism, as noble as turning your other cheek to the railer, as sweet as humility, and as

successful as sweet, but it is only a theory, and a theory is only a word, and a word is only a sound, and a sound is only a vibration, and a vibration is only a motion, and a motion is only a force, and a force is only a power, and a power is only a right, and a right is only a duty, and a duty is only a law, and a law is only a rule, and a rule is only a habit, and a habit is only a custom, and a custom is only a tradition, and a tradition is only a superstition, and a superstition is only a delusion, and a delusion is only a dream, and a dream is only a shadow, and a shadow is only a reflection, and a reflection is only an image, and an image is only a copy, and a copy is only a counterfeit, and a counterfeit is only a fraud, and a fraud is only a lie, and a lie is only a falsehood, and a falsehood is only a deception, and a deception is only a trick, and a trick is only a ruse, and a ruse is only a stratagem, and a stratagem is only a device, and a device is only a contrivance, and 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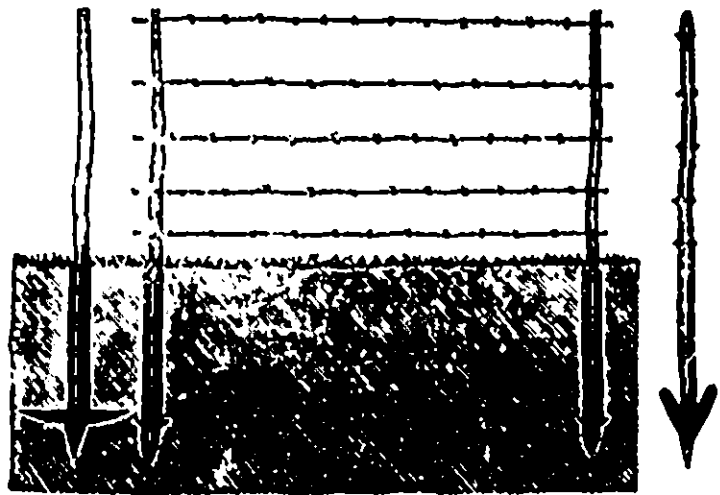
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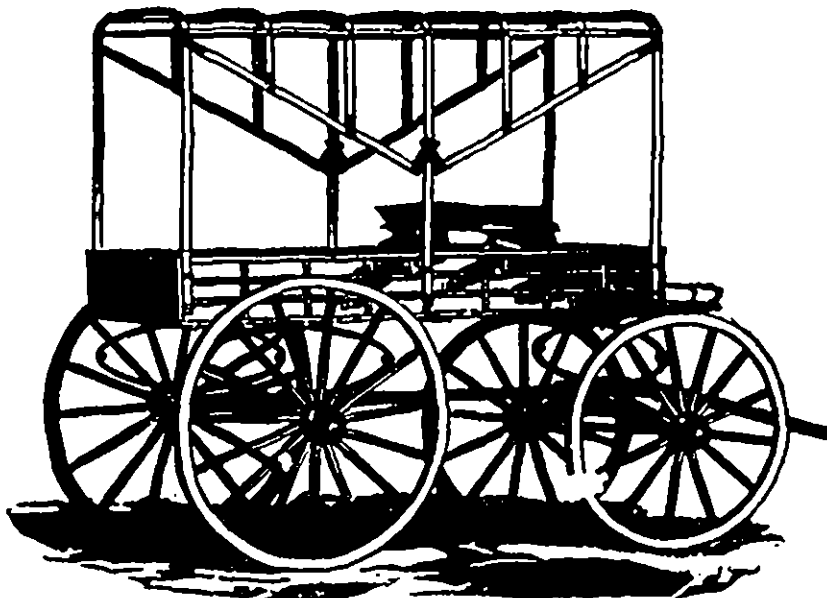


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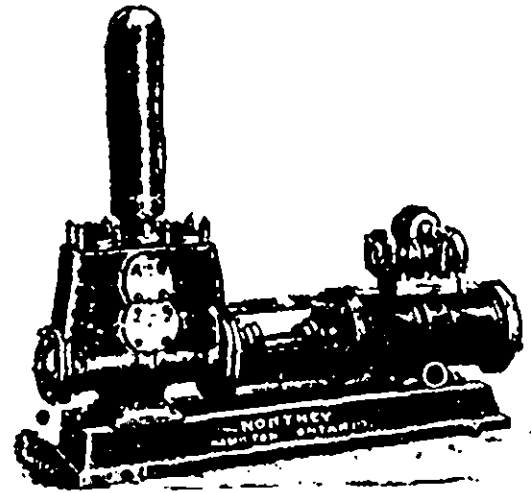
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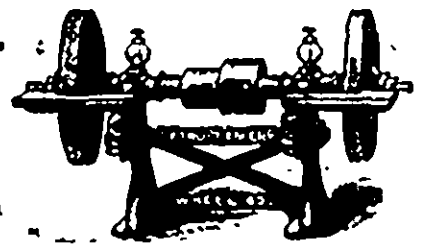
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