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VOL. II. No. 9

SEPTEMBER, 1887

Railway
TORONTO, - ONTARIO.

WESTERN ASSURANCE CO.



**FIRE
AND
MARINE.**



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RAILWAY LIFE

A MONTHLY JOURNAL
(CANADIAN)

DEVOTED TO
RAILWAY INTERESTS

Vol. II.]

TORONTO, ONT., SEPTEMBER, 1887.

[No. 9.

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MR. JOHN J. GARTSHORE, 49 Front Street East, Toronto, has received another order from Grand Trunk Railway for 600 tons of Salisbury Pig Iron for the manufacture of wheels at Hamilton. The high character of the wheels made by this company is attained by the use of the very best iron that can be bought. The results are longer mileage and no breakage.

THEY are talking of holding a world's fair in Montreal to celebrate the completion of the Canadian Pacific Railway, and the *Witness* says: "Certainly Canada has never had a more important national event of a material sort or one more worthy of celebration than the connection of ocean ports three thousand miles apart by a single railway which, while being by far the longest in the world, yields to none in magnificence or perfection of management."

IN an interview General Superintendent Whyte, of the Canadian Pacific, was asked,

in view of the difficulties experienced in handling last year's wheat crop with sufficient promptness to satisfy grain dealers, what arrangements had been made this year. Mr. Whyte said he did not think there would be any trouble at all this year, as extensive arrangements had been made for handling the crop. The supply of cars would be equal to the demand, a large number of new ones having been constructed, and in case of a rush there were a large number of cars west of Donald which could be drawn upon. The elevators at Fort William and Port Arthur had been put in first-class condition, so that no delay would occur in that direction. It was feared that the tonnage would prove short towards the latter end of October, but Mr. Whyte said that he had been informed by Mr. Beatty, of the Beatty line of steamers, that there need be no anxiety on that score.

THE *Railway Age*, speaking of the Manitoba situation, says:—It is extremely unfortunate for both the people and the great railway company which has done so much for the Canadian north-west that this struggle has occurred. The people seem determined to build the new road and the Canadian Pacific will probably conclude it to be wisest to make such reduction in its rates as are practicable to meet the expected competition, and also to avoid any action which will simply appear to be taking revenge upon the people for their course, however uncalled for it may seem to the railway company to be. It would be a very strange and deplorable state of things to see the people of a great country arrayed in bitter and permanent hostility to their chief and, for most parts of that country, their only railway.

THAT this country is gaining fast upon the older countries was fully demonstrated at the Industrial Exhibition held at Toronto during this month. One very choice exhibit of home manufacture, shown by E. M. Trowern, the manufacturing jeweller of 171 Yonge Street, Toronto, was deserving of special notice. The whole of his exhibit, comprising diamond and sapphire necklace, diamond, sapphire, ruby,

garnet, opals and pearls, set in the latest style, and choicest settings in rings (ladies' and gent's), brooches, charms, &c., all designed and manufactured by himself, was such as to call forth the highest praise from even Sir John Macdonald. Many of the wholesale and retail jewellers stated that the whole exhibit was a credit to Canada and could not possibly be beaten by any European firm. E. M. Trowern has raised the standard of fine art in the jewellery trade and deserves the success he is meeting with. We would cordially recommend him to the notice of all our readers.

THE *Toronto Globe's* London correspondent cables:—The Imperial Cabinet has at length decided to subsidize the Canadian Pacific mail line from Vancouver to China and Japan. The negotiations carried on throughout the year have thus unexpectedly been brought to a successful issue. Three months ago, at the close of the Colonial Conference, despite the representations of Sir Alexander Campbell and Mr. Sandford Fleming, there seemed to be no hope of obtaining a subsidy. Mr. Goschen was understood not to favor the project and the feeling aroused by the new Canadian duties was considered prejudicial. Despite the favorable opinion expressed by the press generally, the negotiations were practically abandoned. The question has since been brought before the Government again and representations made through Sir Charles Tupper. The decision was finally come to by the Cabinet to grant a subsidy of £45,000 sterling yearly, with £15,000 from Canada, for a monthly service. The conditions are the carriage of the mails from an Atlantic port, the building of new steamers to meet Admiralty requirements, the use of armed cruisers when required to carry men and materials and low rates. The alternative proposal has not been accepted of £100,000 yearly for a fortnightly service, of which £80,000 would come from the British Treasury. I believe there will be no undue delay in giving effect to the arrangement, as the Treasury has communicated the decision to the Post-office Department.

Personal.

MR. JAR. YOUNG, who has been with the Chicago & North-Western, under Mr. Jno. Morley, has been promoted to the Chicago office.

MR. J. TUNNING, formerly with Mr. P. J. Slatter, City Passenger Agent of the Grand Trunk for four years, is now with the Chicago, Rock Island and Pacific Railway, Toronto.

MR. J. THOMPSON, who has been with the Chicago, Rock Island & Pacific Railway for some years, is now Travelling, Passenger and Freight agent of the Canadian Pacific, with head quarters at Chicago.

MR. S. R. CALLAWAY, late general manager Union Pacific Railway, was elected yesterday to the presidency of the Toledo, St. Louis and Kansas City Railroad, President J. M. Quigley resigning. Mr. Quigley's resignation was accepted by his brother directors only at his own urgent request. Mr. Callaway, his successor, is his close personal friend and it was to gain for the company the valuable services of the Union Pacific veteran that Mr. Quigley insisted on vacating the presidency.

Mr. Callaway was in the railroad service for 21 years before he became vice-president and general manager of the Union Pacific. He has had a wide experience, among the lines with which he has been identified being the Grand Trunk, the Detroit and Milwaukee, the Detroit and Bay City, the Chicago and Western Indiana, the Detroit, Grand Haven and Milwaukee, and the Detroit and South Lyons. He has an intimate acquaintance with every Western interest and is noted among railway managers as a "hustler."—*N. Y. Times*.

"OLD GREAT WESTERN," writing to the *Mail*, regarding the late Harry Donnelly, who was killed in the railway accident at St. Thomas, says:—My acquaintance with Mr. Donnelly began 17 years ago, and for 13 years I was more or less associated with him in our different duties. I can safely say that in those years I never saw him the worse of liquor. For 32 years or more he had been a trusted servant of the company, having been one of the Old Country drivers brought to this country by the management when the road was under construction, and up to the time of his death he was in charge of one of the most important trains on the main line. In the Old Country Harry Donnelly had more than once been the engineer in charge of the Royal train with her Majesty on board. In this country when her daughter, the Princess Louise, was with us, Donnelly was the one told off for duty on the train the Princess and the Governor-General had at their disposal over the whole Great Western system. Whenever they went he went with them. A man with such a record was not likely to have been a drinking man, nor one who would be blinded by drink while on duty, as some of the St. Thomas papers insinuate and state he was at the time of the terrible accident. As one who knew him well, I cannot let the occasion pass without saying this tribute to his memory and character.

Construction.

TRACK-LAYING on the St. Catharines & Niagara Central is rapidly proceeding. The bridge across the canal will cost \$33,000.

AN effort will be made to effect an extension of the Bay of Quinte Railway to Picton and ultimately to Milford and South Bay.

THE Toledo, St. Louis & Kansas City, a narrow gauge road extending from Toledo to Frankfort, Ind., 206 miles, is being widened to standard gauge.

MR. H. SUTHERLAND, president of the Hudson Bay Railway, estimates the cost of the line, including improvements at the terminal points and elevators, will be \$16,000,000.

It is understood that the Canada Atlantic has completed the necessary financial arrangements for bridging the St. Lawrence at Coteau, and the work will be proceeded with immediately.

IN an interview with Mr. Robinson, M.P.P. for Woodland, Mr. Hugh Sutherland, president of the Hudson Bay Railway, is reported as stating that he expected to be able to float the scheme in England this summer. These statements are given for what they are worth, for there is no way of ascertaining the actual truth of the matter.

A bold scheme of engineering is that of tunnelling the Rocky Mountains under one of their highest peaks for a distance of 25,000 feet or nearly five miles. It is claimed that this work if accomplished would shorten the distance between Denver and Salt Lake City nearly 300 miles, and it is asserted that considerable capital has been raised in England for the undertaking.

THE *Railway World* says:—The most important bridge now in course of construction in this country is the much talked of bridge at Poughkeepsie on the Hudson; the east shore cantilever of which is completed and in place. The engineer's schedule shows that one-half of the entire bridge will be completed by the middle of November, or that part from Pier 3 in the river to the west anchorage pier on the hill on the west shore. The false work now between Piers 2 and 3 is 100 feet in height, and this week the highest traveller in the world is to be placed upon it for the erection of the truss and cantilever in the river. This traveller will be 96 feet high, 55 feet wide, and will contain 85,000 feet of lumber. Two Westinghouse engines will be placed in the centre of the false work to hoist the heavy steel and iron sections, and the traveller located on rails will move the sections along to place.

A despatch from Windsor, dated 9th September, says:—At the general meeting of stockholders of the Lake Erie, Essex and Detroit River Railway Company, held at the offices of the company here on Thursday, September 8th, the following gentlemen were elected directors:—Messrs. Hiram Walker, John Coventry, M.D., Willard Parker, E. Chandler Walker, Merrill Walker and Thomas Reid. At a subsequent meeting of the directors Mr. Hiram Walker was elected president

and Dr. Coventry, vice-president. This is the railroad for which the Dominion Government granted the very liberal bonus of \$118,000. It is to be about thirty miles long, and to run south from Windsor or Walkerville to the village of Harrow, in Colchester South, and thence east through Kingsville to Ruthven. It is believed that it will be of great benefit to the townships of Colchester and Gosfield. The surveys have been made, and the right of way has been bought. The proposed railroad will undoubtedly prove a great boon to Essex County.

THE *Peterborough Times* says:—The portion of the old Cobourg railway between Peterborough and Chemong Lake, nine miles in length, is to be utilized at once, the property having fallen into the hands of the Grand Trunk. Engineers are now at work making an estimate of the cost of re-opening this line. The Grand Trunk authorities are very reticent about the matter, but enough is known to warrant the statement that the Mud Lake Branch will be operated next season, and that in the meantime the road will be pushed through to Bobcaygeon, and thence on to form a junction with the road to Sault Ste. Marie and the main line of the C. P. R. crossing the Victoria Railway at a point not far from Fenelon Falls. The old charter under which the Cobourg Company were to build a road to Bobcaygeon and Fenelon Falls fifteen years ago, will doubtless be utilized until a bill can be put through parliament authorizing the constitution of this railway. By reference to the map it will be seen that Peterborough is on a straight line between Sault Ste. Marie and Montreal, so that it will mean a great deal to this prosperous town, which ought in the very near future merge into a good-sized and thriving city.

Canadian Courtesy.

A CORRESPONDENT of the *Railway Service Gazette* writes: "I think the Canadians are more polite and obliging than our people. I bought some stamps in the St. John's post-office and tendered a five dollar bill. The post-master expressed regret that he did not have change. He said that if I would pardon him and kindly wait he would go out and get the bill changed. He had no clerk to send, and he actually locked up the post-office and went around the block and procured the change. At the express office the agent was starting to the railroad station to meet the only train that day for New York. He expressed deep regret that he could not wait for the parcel I wished to send. He said, however, that after I got it sealed and addressed, his son would run with it to the station, if in time he would forward it. The young man waited until I had sealed the package; he then locked the express office, and the last I saw of him he was moving his legs in a very impetuous manner in the direction of the railroad station. I fear that two such acts of courtesy would hardly be met with in one day by a stranger in a United States town. Is it because we are such a busy people that we think we have not time to be courteous and obliging?"

Mineral Product of the United States.

THE following condensed statement of the production of the more important minerals of the United States in the calendar year 1886 is issued by the United States geological survey in advance of a report:

Notably increased production and also an increase in value have been the general characteristics of the mineral industries during 1886. The total value of the mineral products increased in round numbers from \$428,000,000 in 1885 to \$465,000,000 in 1886. The important factor in this gain of \$37,000,000 was the increased production of pig iron from 4,044,525 long tons in 1885 to 5,683,329 long tons in 1886, and an appreciation of 75 cents in the average value per ton, making a total gain of \$30,483,360 in this industry alone.

The principal iron statistics for 1886 were: Domestic iron ore consumed, 10,000,000 long tons, value at the mines, \$28,000,000; imported iron ore consumed, 1,039,433 long tons; total iron ore consumed, 11,039,433 tons; pig iron made, 5,683,329 long tons, an increase of 1,638,803 tons as compared with 1885; value at furnace, \$95,195,760, or \$30,483,360 more than in 1885; total spot value of all iron and steel in the first stage of manufacture, excluding all duplications, \$142,500,000, an increase of \$49,500,000 as compared with 1885.

The value of gold produced in 1886 was \$35,000,000, an increase of \$3,199,000 over 1885.

The production of silver decreased from \$51,600,000 in 1885 to \$51,000,000 in 1886.

The production of copper in 1886, including 4,500,000 pounds from imported pyrites, amounted to 160,678,061 pounds, valued at \$16,469,503, a decrease of 10,284,526 pounds and \$1,923,496 in value from 1885. The average price of copper in 1886 declined to 10½ cents per pound. The copper sulphate, made chiefly from ores and matte, amounted to 13,400,000 pounds, valued at \$336,000 at 4 cents per pound.

The production of lead increased to 136,629 tons in 1886, valued at \$12,667,749, at an average value of \$93.40 per short ton in New York. In 1885 the production was 129,412 tons, valued at \$10,469,431. The production of white lead in 1886 is estimated at 60,000 short tons, worth, at 6½ cents per pound, \$7,500,000. The total value of the oxides of lead was about \$1,535,000.

The zinc production was 42,041 short tons, valued at \$86 per short ton; an increase of 1,953 short tons and \$212,552 in value over 1885. Zinc oxide was also made directly from ores to the amount of 18,000 short tons, valued at \$1,440,000.

In 1886 the production of quicksilver in California was 29,061 flasks, or 2,291,547 pounds, valued at \$1,060,000. This is a decrease of 2,092 flasks, but the total value shows an increase of \$80,811, due to an increase in price.

The production of all kinds of coal in 1886, exclusive of that consumed at the mines, known as colliery consumption, was 107,682,209 short tons, valued at \$147,112,753 at the mines. This may be divided into Pennsyl-

vania a. hracite, 36,606,475 short tons, or 32,764,710 long tons, valued at \$71,558,126; all other coals, including bituminous, brown coal lignite, and small lots of anthracite produced in Arkansas and Colorado, 70,985,734 short tons, valued at \$75,554,629. The colliery consumption at the individual mines varies from nothing to 8 per cent of the total product, being greatest at special Pennsylvania anthracite mines, and lowest at those bituminous mines where the bed is nearly horizontal, and where no steam power or ventilating furnaces are employed. The averages of the different states vary from 3 to 6 per cent., the latter being the average in the Pennsylvania anthracite region.

The total production, including colliery consumption, was Pennsylvania anthracite, 34,853,077 long or 39,035,446 short tons; all other coals, 73,707,957 short tons; making the total absolute production of all coals in the United States 112,743,403 short tons, valued at, anthracite, \$76,119,120; bituminous, \$78,481,056; total, \$154,600,176. The production of Pennsylvania anthracite, including colliery consumption, was 699,473 short tons in excess of that produced in 1885, but its value was \$553,828 less. The production of bituminous coal was 1,086,408 short tons greater than in 1885, while its value was \$3,866,592 less. The production of all kinds of coal show a net gain of 1,785,881 short tons compared with 1885, but a loss in spot value of \$4,419,420.

The total production of coke in 1886 was 6,835,068 short tons, valued at the ovens at \$11,552,781. This is the largest production ever reached in the United States, the nearest approach to it being in 1883, when 5,464,721 tons were made. This declined in 1884 to 4,873,805 tons. The year 1885 showed a gain upon 1884, the total being 5,106,696 tons. The production for 1886 shows a gain on that of 1885 of 1,728,372 tons, or nearly 34 per cent. The total increase in value was \$3,923,663. The production of 1886 is 1,370,347 tons, or 25 per cent greater than the maximum of the previous years.

The total production of petroleum was 28,110,115 barrels of 42 gallons each, of which the Pennsylvania and New York fields produced 25,798,000 barrels. The value, at an average of 7½ cents, was \$20,028,457. The production showed an increase of 6,268,074 barrels over the production of 1885.

No record is kept of the yield of natural gas in cubic feet. It is estimated that the amount of coal displaced by gas in 1886 was 6,353,000 tons, valued at \$9,847,150. In 1885 the amount of coal displaced by gas was 3,161,600 tons, valued at \$4,854,200.

Krupp.

ALFRED KRUPP, the distinguished metallurgist and manufacturer, died at his home in Essen, Prussia, July 14, aged 75 years. The great steel works at Essen were founded by Friedrich Krupp in 1810 as a small forge, employing only two workmen, and continued to grow under his management until the date of

his death, in 1826, when Alfred Krupp, his son, was only 14 years old. From 1828 to 1848 the works were carried on by the widow and sons in company, Alfred displaying a phenomenal aptitude for the business and remarkable executive ability. In 1848, Alfred Krupp, whose death is now announced, took entire charge of the works, and carried on the business under the firm name of Friedrich Krupp, and to him is due the credit for the establishment of these, the most extensive, and in some respects the finest works in the world.

The discovery which had most effect upon them, was that of a way to cast steel in large masses, an insurmountable task prior to Krupp's experiments. He signalized his discovery by sending to the London Exhibition of 1851 a block weighing 45 German quintals, which at that time was a great curiosity. General attention was then called to the works and their business rapidly increased. Herr Krupp was among the first to adopt the Bessemer process, and rapidly extended its use. Guns, armor-plates, rails, tires and many other articles of Krupp make are to be found in all parts of the world.

Engineers are chiefly interested in the many improvements introduced by Herr Krupp in the treatment of iron and steel. His was among the very earliest works to adopt any new process which promised well, and several dephosphorizing processes have long been used there. As, however, his works were very jealously closed against visitors, and a secret was made of nearly everything about them, only general information was allowed to get into print. It is charged that, while Herr Krupp was prompt in adopting every improvement in iron and steel making, he rarely gave credit or reward to the inventor whose improvement he adopted.

The enormous extent of the Essen Works may be appreciated from the following interesting figures with regard to the growth of the establishment which were published in 1884. In 1860 Essen Foundry had only 1,746 workmen, but that number had risen to 7,084 ten years later, and it was in 1884 upward of 20,000. Counting the women and children, Herr Krupp's establishment gave employment in 1884 to 65,381 people, of whom 29,000 lived in houses belonging to their employer. The foundry was divided into eight sections, and there were 11 blast-furnaces, 1,542 other furnaces, 439 steam-boilers, 82 steam-hammers, and 452 steam engines representing 185,000 horse power. At Essen alone, to say nothing of the branch establishments, there were nearly 40 miles of rails, 28 locomotives, 883 trucks, 369 horses, 191 waggons, 40 miles of telegraph wires, 35 telegraph stations, and 55 Morse instruments. Since then large additions have been made to the works.

Herr Krupp was a model employer: he built excellent houses for his officers and men, hospitals for the sick, established sick, burial and pension funds for his employees, and generally took the warmest interest in their welfare.

The importance of his services and his wealth induced Emperor William to offer him letters of nobility in 1864. They were, however, declined.



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Correspondence invited. Write on one side of paper only, and be specially careful with names and dates.

Our readers are requested to send us court decisions and newspaper clippings relating to railway interests.

It is desirable that communications, new advertisements and changes in old advertisements be handed in before the 10th of the month.

W. B. CAMPBELL, Publishers.
A. C. CAMPBELL,

Offices—64 Bay Street, Toronto.

TORONTO, SEPTEMBER, 1887.

SIR GEORGE STEPHEN ON THE MANITOBA SITUATION.

THE president of the Canadian Pacific Railway has done a service not only to the shareholders of the company but to the public as well, by his clear and comprehensive statement of the company's side of the Manitoba controversy, which is now raging so fiercely. It was necessary for the proper understanding of the question that such a statement should be made, for the popularity of shrieking against "monopoly" has led to the public being left uninformed as to some of the most important facts bearing on the case.

Too much feeling has been aroused on this question, not tending to make the issue clearer, but to blind the public eye to the facts and becloud the public judgment as to the best course to be pursued. And in this we do not believe that either side is wholly to blame. There is too much to be said on both sides of the question for either side to hope to gain by an appeal to anything but law and reason. If Sir George succeeds in caus-

ing others to imitate the calm style of discussion which he shows in his letter, he will by that alone have brought the question much nearer settlement.

The case hinges upon the position and responsibility of the Dominion Government under the British North America Act and under the bargain with the Canadian Pacific Railway Syndicate in 1881. There is no doubt that according to the plain wording of the agreement the Dominion Government must not "authorize" the construction of any railway to the boundary.

This being clear, two questions remain to be settled: First, can a railway be constructed without being "authorized" by the Government without violating the agreement and, second, if a road is constructed without being so "authorized," is the Government responsible to the company for violation of contract? There has never, so far as we know, been a clear and authoritative statement to show under what law the Red River Valley Line is being built by the Manitoba Government. If it is being done under the special act of last session, that having been disallowed, the work is illegal. If it is being done under the general Public Works Act of some years ago, which has never been, and cannot now be disallowed, the legality of the work may be contended for, but, in either case, the responsibility of the Dominion Government still remains to be considered. If the Manitobans are carrying on an illegal work, does the Dominion, under the contract, "authorize" it by not forcibly preventing it? If they are carrying on a legal work under a general Act, is the Dominion responsible for not having disallowed that Act? There are legal questions which will be discussed in time, no doubt, by the ablest lawyers in the country, and we would not presume to pronounce upon them until the arguments have been much more fully brought out.

All this does not affect the question of Manitoba's right to build a railway. Sir George Stephen clearly points out that the Dominion, and not the Province, has the power in cases of railways crossing the boundary, and common sense as well as law make it clear that in an international question, such as a boundary railway, the national, and not the provincial power, must be paramount. But there are, under our constitution, concurrent jurisdictions in

affairs. The Dominion, for instance, controlling trade and commerce, controls insurance companies doing business throughout the Dominion. But the provinces, having jurisdiction over property and civil rights, controls certain insurance interests. In this case the province may have rights which would give it power to bring into existence an international railway, yet, which, being called by some other name, would not be under control of the Dominion. This also is a fine legal point over which lawyers and judges will doubtless spend weeks and months of research and consideration, upon which we do not venture now to express an opinion. Even should this point be settled in favor of the Province, the question of the Dominion's responsibility to the company for breach of contract still remains.

Not as affecting the legal aspect of the controversy, but as setting forth the reasonableness, from a public point of view, of the Canadian Pacific Company's position, Sir George Stephen's statement regarding rates and branch lines is most important. He makes a specially strong point when he speaks of the satisfactory character of the service. In view of the universal tendency of a monopoly to grasp all and give nothing in return, the action of the Canadian Pacific Company, in giving a service superior to anything in the North-western states, cannot be too highly commended by the public. The rates also are most reasonable, and though discriminations have been alleged to exist under the schedule they are no more remarkable than those practised all over the continent, without such a hullabaloo being raised as has been raised in Manitoba.

To those who have been led to believe that this question was altogether discussable in such terms as "people's rights," "iron heel of monopoly," and so on, we would strongly commend a careful perusal of Sir George Stephen's letter.

GOVERNMENT CONTROL OF RAILWAYS.

To a man who has faith in existing political methods, and believes that the trend of politics is upward there is nothing dreadful in the idea that the state shall control the railways. To persons having stock in railway enterprises the idea should not be distasteful, for it has

become almost proverbial that the men who build the roads are not the men who get the profits, and there is no scheme of government control which does not presuppose payment for the works which are taken over for the public benefit. But to the people who distrust politicians and fear that government control means a most odious form of railway monopoly, the proposals to make the railways a branch of the public service is anything but acceptable. Hitherto nobody has brought forward a proposal of this kind, having in it such elements as need cause the stoutest opponent of the idea uneasiness. Men with grievances, generally fancied ones, in all parts of the country, have rushed into schemes for ridding the people of a "grinding monopoly," but a concession in rates or efficiency of service which, in the majority of cases, would have been made as soon as the exigencies of the company's work would permit it, even had no agitation been entered upon, settles the question and the "movement" dies out. The people who believe in government ownership for its own sake are very few, and, up to a short time ago, were far from vigorous in the advocacy of the change.

Now, however comes a party which promises to bring this question into practical politics in the State of New York, the very place where any considerable vote in favor of the change is likely to exert the greatest influence. The New York papers are just now full of discussions of the effect upon the approaching state elections of the new factor in politics which calls itself the United Labor Party, but is commonly known as the Georgeite party. The party newspapers do not admit it in so many words, but it is evident from their utterances that this new party is an entirely different thing from the "labor" parties of former days (which were merely private schemes to blackmail the great parties) and that the extent and direction of its influence are beyond the ken of the sagest politicians. While the chief plank of the George party is the appropriation to public use of the rental value of land, there is another which they insist upon with equal force, which declares: "We would further promote the common weal and further secure the right of all, by placing under public control such agencies as are in their nature monopolies. We would have mu-

nicipalities supply their inhabitants with water, light and heat; we would have the general government issue all money without the intervention of banks, we would add a postal telegraph system and postal savings bank to the postal service, and would assume public control and ownership of those iron roads which have become the highways of modern commerce."

We do not refer to these matters for the purpose of entering upon a discussion of the politics of the State of New York, but to point out that the position of affairs is different now from what it has ever been before and that the time has come for state ownership of railways to be discussed as a live question in politics.

Although it may be fairly said that Mr. George and his friends are forcing the land issue to the front with an honesty and straightforwardness which is much to their credit, there can be no doubt that it is upon the other planks of their platform that they have the best chance of winning with the farmers, for naturally the idea of confiscation is exceedingly unpopular among the people to whom their land is their very living. But it is quite the contrary with the idea of government ownership of railways, for every man who has been kept waiting half a day for a freight car feels that he has a grievance against the whole railway system and is ready to shout for the man who says he will "nationalize" the railways, no matter how crude and unworkable the scheme may be. On this point the Georgeites may hope to gain considerable support in the country, even among those who do not understand or who dread his land taxation scheme. In the cities they have the labor vote concentrated and aroused as it never was before. The leaders of the movement are mainly honest men, if the New York press is to be trusted, and they are making this as much a religious crusade as a political movement. The enthusiasm aroused among the faithful of the party is most intense, and history proves that such enthusiasm, whether it be aroused by a Peter the Hermit, a Mahomet or a Cromwell, carries with it a force unknown to those who are not affected by it.

Now it is not to be supposed that George will succeed with his land scheme, that being too revolutionary to

take with ordinary people. But if he makes progress, as we believe he will, one or other of the older parties will be willing to concede some points or steal some of the planks in his platform. The popular points are those which will be conceded first and, blink the issue as they may, the railway managers cannot alter the fact that at present more extended control of railways by the Government is popular with a large class in the United States. If our understanding of the factors in the problem is correct, it follows that railways are almost face to face with a common danger—not the railways of New York State alone, but those of the whole continent, for all are dominated from New York. As nearly as can be judged from the American papers this fact is not fully apprehended by the press or by the railway managers. Immersed in affairs as they are, it is natural that they should fail to note the rapid approach as a solid mass of this force, which was the mere vapor of one newspaper man's theory five years ago. What should, or can be done we are not prepared to say. The first thing is to call the attention of the railway world to the facts. If success is achieved in that, means of meeting the danger will soon be devised.

WIVES FOR WESTERNERS.

MR. C. T. LEWIS, agent of the Canadian Pacific at Indian Head, has created not a little excitement by his novel return rebate scheme for the benefit of newly married couples. The object of the scheme is to encourage the making of homes on the prairie traversed by the railway. It is quite the common thing to read in the North-West papers of some young man coming East for a bride. Were it not for the great expense of the trip many others would do the same. This is an old standing difficulty of Western life and ever since there was a West there have been schemes in fun or in earnest to cause a movement of women to the prairies. Mr. Lewis proposes, if the women cannot be sent West, to make it more easy for the men to return East. To accomplish this he has devised a system of rebates to young Westerners going East and returning within a fixed time with their brides. A good many of the Eastern papers have chosen to treat the subject as an opportunity only for the exhibition of elephantine gameful-

ness. But they do it at their own expense and undoubtedly cause some amusement. It is beyond question that the West wants homes as it is also an undoubted fact that homes would be quickly established but for the expense of the journey East and back again.

To reduce the expense would be to increase the number of travellers on the railway and the number of homes in the West. Mr. Lewis' proposal, as a matter of theory is an excellent one. The only question is, "Can it be carried out?" We can see no insuperable difficulty, and we believe that Mr. Lewis' system would be a good one to start on, modifications to be made as experience might suggest. The form devised by Mr. Lewis is simply an agreement for rebate to the ticket purchaser on return providing that he returns with a bride within a certain time, on the back being a marriage certificate to be signed by a clergyman and two witnesses and application to an agent of the company for two return tickets. The paper is surrendered on the tickets being issued. The agent to whom it is surrendered is to satisfy himself that the contract has been carried out in good faith and to send the certificate to the Auditor, taking credit in weekly statements.

The suggestion seems to us a practical and reasonable way of meeting a demand which results naturally from Canada's land and railway policy and from the inherent desire of mankind to move westward.

Editorial Notes.

DR. HARRISON, Commissioner of Agriculture for Manitoba, has spent some time this summer in Ontario presenting the advantages of Manitoba as a field of settlement and inviting farmers in Ontario to take advantage of special terms offered by the Canadian Pacific Company to visit the prairie province, inspect its farms and talk with its people.

AFTER all, the Imperial Government has seen the wisdom of recognizing to some extent the importance to the empire of the Canadian Pacific Railway.

A recent cable despatch is as follows:

The Imperial Government have assented to the granting of a subsidy of £45,000 yearly to the Canadian Pacific Railway for carrying the mails to and from the East.

It was understood that Sir Stevenson Blackwood, under secretary of the post office department, who is now on a visit to Canada, would inspect the Canadian Pacific as a mail route and that the government decision would depend upon his report. Sir Stevenson is still in Canada and could hardly have reported before the decision of the government was made public. It is understood, however, that he was much impressed with the excellent character of the road and with its advantages as an Imperial highway.

THERE have been no special developments in the situation as to the Red River Valley Railway. The Provincial Government is short of funds for the work, and though Premier Norquay has spent some weeks in New York, Toronto, Montreal, and other places, trying to effect a loan, it is openly announced that he has failed. The injunction applied for by Mr. Browning to prevent the road crossing his lots at Morris has been dropped, but the Dominion Government has applied for injunction to prevent the road crossing certain Crown Lands near the boundary. This case has not yet been decided. The grading has been completed, and the first consignment of rails received. Tracklaying is now proceeding. What is to be the outcome of the financial difficulty is not known.

THERE will be six millions of bushels of wheat for export in Manitoba this year, according to the calculations of both local and outside investigators. The season seems to have been phenomenal, rain falling exactly when needed and the frost holding off long enough to allow every bushel of grain to be got in in perfect condition. The average of wheat per acre is held to be 25 bushels and some of the farmers rejoice in finding their grain thresh out the magnificent yield of 40 bushels to the acre. Not only is the yield large but the grain is a splendid sample, running as high as 68 pounds to the measured bushel. This splendid return for the season's operations is proof that when the grain is sown early enough it will ripen in ample time to escape frost. The knowledge of this fact should direct the attention of the young men of the Eastern Provinces still more earnestly to the North-West as a field for emigration, and Manitoba next year should have ten millions of bushels of wheat to sell.

THE improvements in the means of transport which have taken place within the last fifty years has made the commerce of every country dependent, to a greater extent than ever before, upon the conditions existing in distant lands. There is no more marked example of this fact than the eager attention with which the farmers of America are watching the developments of the resources of India. It is claimed by those who pretend to know that the cost of transport of grain in India can be reduced by from fifteen to twenty five percent for the best wheat growing district. Taught by the experience of the past and profiting by the warnings of the future, the farmers of Canada, including those in the great wheat regions of the North-West, are engaging more and more in mixed farming. Even should it be that India improves her position in the wheat market, the change will not take the people of Canada by surprise, but other and more valuable branches of production will have been engaged in by the time the wheat market becomes overcrowded.

SHOULD Edison succeed in perfecting the contrivance on which he is now working, intended to extract the electrical force of coal with at the medium of combustion, he will be the author of the greatest mechanical and engineering revolution the world has ever seen, with possible exception of that which followed the invention of the steam engine. The great difficulty in the way of using electricity as a motive force everywhere is not that it is impossible, but that it cannot be made to pay. This is due to the great waste in the translation, so to speak, of the force of the coal into the electrical force exerted by the motor, for the reason that a furnace, a steam engine, a dynamo and a stretch of wire intervene, and at every stop there is loss. If the belief of the scientist is true, and heat, light and electricity are only different manifestations of the same power, and if it be further true, as none can doubt, that coal is but the bottled up light and heat of the sunshine of ages ago, there ought to be some discoverable means of releasing that light and heat in the form of electricity without the cumbrous and wasteful machinery which is now found necessary. Edison's wonderful success hitherto gives strong reason to hope that his "pyro-magnetic-dynamo," as he calls the new machine, will soon be an accomplished fact.

Sir George Stephen's Letter.

SIR GEORGE STEPHEN has issued the following address to the shareholders of the Canadian Pacific Railway, on the Manitoba situation

MONTREAL, Sept. 12, 1887.

To the shareholders: In view of the exaggerated accounts and persistent mis-stated facts which have been set forth concerning the railway agitation in Winnipeg, the directors of the company have thought it due to the shareholders to publish a brief statement of facts for their information. On the 21st of October, 1880, the contract for the construction of the Canadian Pacific Railway was signed, and for the purpose of carrying it out, the Canadian Pacific Railway Company was incorporated on the 18th of February, 1881. Article 15 of the contract provided that for 20 years the Dominion Government should not authorize the construction of any line of railway running south from the main line of the Canadian Pacific Railway to any point within 15 miles of the International boundary. It is asserted and widely believed that this clause has no effect in the original province of Manitoba, but the B. N. Act which settled and defined the constitution of Canada distinctly assigns to the jurisdiction of the Dominion Parliament all matters not specifically delegated to provincial legislatures, and power to legislate concerning railways extending beyond the international boundary or intended to connect with other lines at such boundary is nowhere in the constitution given to the provinces. Whether or not the 15 mile limit applies to the old province of Manitoba, the matter of a railway connection at the international boundary is clearly within the control of the Dominion, and as clearly beyond the power of the province. The object and spirit of the 15th clause of the contract with the company was the temporary protection of the interests of the Dominion in the North-West as well as the protection of the C. P. R. from the encroachment of lines from the south during the infancy of the enterprise. Could connections be made with the American railway system at the southern boundary of the original province of Manitoba, the clause would be meaningless; for, once across the boundary line there would be practically no limit to the extensions that might be made. The company required protection because it was bound, under its contract, to make an enormously expensive railway through what was thought to be an unproductive wilderness north and east of Lake Superior. It was also bound to take over and work the line then being built by the government, from Lake Superior to the Red River, through a similar unpromising district, and it was required to give security for the working of the entire line when completed. It was not expected at the time that sufficient local traffic would be developed for many years to make the section from Lake Nipissing to Red River, nearly 1,100 miles, self-sustaining. It was thought, indeed, that this section could never be self-sustaining, and that it must depend for its support upon the through traffic to and from the great prairies beyond, and this traffic had yet to be created, as the

settlement of the prairies had been scarcely begun. Railway lines were pushing forward from Chicago and St. Paul towards the Manitoba boundary, threatening to tap the prairie section of the Canadian North-West, and to deprive the eastern section of this railway of the traffic so necessary to its support and efficiency as part of the through line, and it was therefore on the part of the company absolutely necessary to the procuring of the requisite capital and to the safety of the capital proposed to be invested, and generally to the success of the enterprise that the traffic of the territory to be developed by the railway should be secured to it for a reasonable period of time. A term of five years from the time fixed for the completion of the railway was agreed upon.

Without this provision for protection the necessary capital could not have been secured and the railway could not have been built. The government had strong reasons of a more exclusively public nature for this protection. It was a political necessity that the detached provinces should be connected and bound together by a railway, and the other provinces were heavily taxed for the building of it. Political reasons alone would not justify the heavy burden it would put upon the country, but a vast territory was to be opened up, and the older provinces looked to the extension of their trade and manufactures over the entire northern half of the continent to justify this expenditure. Their interests required protection, and this protection afforded the company protected them as well. It was most important to the whole country that the railway when made should be in a position to sufficiently serve the purposes for which it was intended, and the need of protection was generally recognized. Indeed, the same protection was insisted upon by the government in respect of the Canadian Pacific Railway when it was commenced as a public work long before the company was thought of.

Winnipeg at that time was a mere village, and the settlements in Manitoba were mostly confined to a narrow fringe along the Red River. The province hailed the signing of the contract with satisfaction, and hardly a voice was raised in objection to the so-called "monopoly" clause. The company set about its work, and completed in less than half the time required by contract. Feeling that the protection clause in its contract placed upon it a moral obligation to provide railway facilities as rapidly as possible in Southern Manitoba, where the making of railways was to some extent restricted, the company, almost simultaneously with the commencement of work on its main line, laid out and commenced work on a system of branch lines in Manitoba, in addition to those previously made by the government, to the extent of more than \$5,700,000.

Partly in view of the same moral obligation, but chiefly for the purpose of promoting the development of the country, the company made its rates, both for freight and passengers, on a scale far below the rates of any of the railways of the United States similarly situated. The immediate effect of the open-

ing of the railway between Lake Superior and Winnipeg was an enormous reduction in rates theretofore paid by the province to and from the east over American lines. For its chief products and for fuel and commodities most essential to the growth of the country rates were made especially low, and year by year, as traffic has increased, these rates, in whole or in part, have been reduced until they are now in many cases, less than one-half the rates originally authorized. The charge that our rates are excessive or unreasonable is simply untrue.

The average earnings of the company for the past three years have been as follows: Freight per ton per mile—1884, 1.45 cents; 1885, 1.20 cents; 1886, 1.10 cents. Passenger per mile—1884, 2.60 cents; 1885, 2.45 cents; 1886, 2.10 cents. And omitting through traffic to and from the Pacific from the figures of 1886, they stand 1.14 cents per ton per mile for freight and 2.13 cents per mile for passengers, a low average than shown by any important American line aside from the old trunk lines in the east. It has been the aim of the company to adjust its tariff so that the settlers in the Canadian North-west should receive more for the products of their farms, and pay less for fuel, and no more for other necessities of life than settlers similarly situated in the United States; and that it has succeeded in this is clearly shown by a comparison of prices with neighboring sections of Minnesota and Dakota. The company has also dealt in a most liberal manner with all independent railway enterprises in the North-west, and the building and operation of at least two of these would have been impossible, but for its co-operation and liberality. The development of the prairie section west of Winnipeg has been rapid, and on the section from Winnipeg eastward to Lake Nipissing, where little was at first expected a valuable local traffic from forests and mines is growing up, giving promise that even this part of the line will, before long, be self-supporting.

It may therefore be argued that the protection afforded by the contract is no longer necessary; but it should be remembered that the company, encouraged and aided by the growth of its traffic, and on the faith of this protection has expended a vast amount of money on local lines, in Manitoba, and unless prevented by acts of the Province itself will yet expend a large amount in completion of the system of branch lines it has been carrying out as rapidly as its means would permit; and it should also be remembered that all of the 443 miles of branch lines operated by the company in the North-west and Manitoba, that all but 65 miles were paid for with the company's money, and that many miles were made prematurely at the earnest solicitation of the Provincial Government and without expectation of immediate profits. But notwithstanding the liberal policy of the company as regards branch lines and independent lines and rates of transportation; notwithstanding that the tariff of rates of the company have as yet been approved by the Government only from year to year, and are subject to annual revision, and notwithstanding that no complaint of

these rates has ever been made to the railway committee of the Privy Council, the natural and inevitable consequences of over speculation have been mistaken by many people in Winnipeg and some other towns in Manitoba for need of railway competition. This idea has been fostered by individuals with selfish ends to serve, by towns seeking advantages over others in trade, by local politicians striving for popularity, and by politicians at large for party ends.

The usual means have been employed for creating and keeping up a ferment—the cry of monopoly and extortionate rates, sensational articles in the local press, unfair and false comparison of rates, inflammatory speeches and appeals to prejudice. The local political parties have vied with each other in securing to themselves the support of the malcontents, and this has resulted in an undertaking by the Provincial Government to construct a line of railway to the international boundary, where it has agreed to make connection with a line advancing northward from the Northern Pacific Railway, and which is supposed to be building under the auspices of that company. The acts of the Local Government providing for the railway in question are in direct violation of the British North America Act and beyond the powers of a province, and are consequently without warrant of law. In attempting to proceed without legal right the Province has been checked by a temporary injunction and it is not to be believed that in the event of a permanent injunction being granted by the courts that the Local Government will set the law at defiance: nor can it be expected that the wishes of even a majority of the 100,000 people in Manitoba will prevail against the wishes of the 5,000,000 people of the Dominion. Independent of any constitutional question, and particularly in view of the heavy expenditure of the company in making branch lines largely at the instance of the Local Government, and of other great expenditures that have been made by our company for the development of the Province, the action of that Government in attempting to divert traffic by building a railway to the boundary, however insignificant that railway may be, is unfair, unjust and a breach of faith with the company. The service of our company has given universal satisfaction, and if the rates were oppressive no complaint has ever been laid before the constituted authorities that the facts might be authoritatively brought out and redress obtained. It would be absurd to urge that the completion of sixty-six miles of railway undertaken by the Government of Manitoba would ruin the vast Canadian Pacific system, but its construction would be a violation of contract with our company, and the directors feel it to be their duty to maintain the rights of the company in this matter in every legitimate way. That the country will carry out the contract with the company in good faith the shareholders may rest assured. The parliament of Canada at its last session sustained the government by an extraordinary majority in the determination to prevent, if only as a matter of public policy, the building of railways to the international boundary and the prompt action of the Govern-

ment in disallowing the acts of the Manitoba legislature, relating to the Red River Valley Railway, followed by the active steps taken by the Minister of Justice to stop work by an injunction, is sufficient evidence of the intention of the Government in this regard. The present agitation in Winnipeg is chiefly damaging in its effects on the province itself. The intemperate, sensational and ridiculous utterances of a section of the local press are printed and read abroad with alarm, and the effect upon emigration and upon the credit of every enterprise in the province has already been most serious. Your directors believe, however, that this agitation, like those which have preceded it, will disappear as soon as the people of the country come to understand the facts and discover the motives of those by whom it was created.

(Signed), GEORGE STEPHEN,
President.

Canadian Government Railways.

In commenting on the report of Canadian government railways the *Railway Age* says:

While it is true that the ownership of railways by the Dominion Government has proved directly unprofitable, there is another and broader view in which to look at the question of government railway ownership. The people have received the benefit of the operation of these roads which doubtless would not have been built by private capital. The people of Canada have looked upon railways as so great a public necessity that the government has in some cases built the roads outright and also maintained them at a heavy loss, as the foregoing figures indicate; while in a great number of cases it has donated liberal subsidies to aid private capital in the construction of proposed lines. The report referred to contains a list of 102 railway companies to which the Dominion Government has given subsidies of cash and lands, and that policy which in this country it is now popular to denounce is being carried on with great liberality in the Dominion. Moreover the various provinces of Canada have furnished and are still furnishing aid in very large amounts for railway building and the result of this liberal policy of the general and provincial governments is seen in the rapid development of the great domain of Canada within the last few years. The Canadian Pacific Railway alone received at the outset from the Federal Government a subsidy of \$25,000,000 in money and 25,000,000 acres of land, and this assistance was subsequently increased by a loan to the company of \$25,500,000 and a guaranty of dividends on \$65,000,000 of the company's stock. Although the ownership and operation of railways by the general government is not in keeping with the spirit of our republican institutions there is something to be said for the policy from the standpoint of a country like Canada. It is to the credit of the government officials of these Canadian roads that their lines have been operated with honesty and efficiency.

Lessons from the Great Railway Accident for the Public as well as for Managers.

The general manager of one of the greatest railway systems in the country sends the following timely and truthful comments
To the Railway Age.

It is safe to say that the late accident near Chatsworth creates a feeling of apprehension approaching dismay in the mind of every railway manager in the country. The criticism is sure to be and properly so unsparring; much of it quite likely unfair, and some of it being based on *ex parte* statements or inaccurate information is sure to be unjust. The criticism should be, as I say, unsparring, but the responsibility should be placed where it belongs, and I venture the opinion: to particularize this individual accident, but speaking more generally, that the public is quite as much and just as directly responsible as the officials of any railway upon which such an accident may occur. I speak of the public as they are represented through the various legislatures by the board of railway commissioners. A railway company with a line not long in existence, its plant comparatively new, earns as shown by its books a considerable surplus; or it may for a series of years have shown a reasonable balance after paying its fixed charges, its dividends and its operating expenses. At once the clamor is raised that the railway company is exacting too much from the public; it has a good road and good cars and engines, and the surplus it shows is the exact figure it has "robbed" the communities of. Then the average railroad commissioner takes the same view, and with more or less care figures out a schedule of rates that shall prevent the claimed extortion. The tariff is made, the roads adopt it, and no manager or superintendent holds office who does not try to so manage his line as to still make his earnings pay the stockholders and have his operating expenses conform, if he can, to the requirements under which his services are called valuable, or otherwise. What is the result? He patches up this bridge to make it go a year longer; this section of rails need renewing but we will take out the worst—all of them bad—and make the balance do "through the winter." Wheels, axles, cars, engines, all take the same treatment. *He employs three men where four are required*, he puts in four new ties where six are necessary, and perhaps he gets through, but perhaps also it would have been better if the public had allowed the railway company to acquire sufficient to make the renewals; or if they don't get it for the renewals they need it to pay for the damages resulting from the inevitable accident.

I am no believer in unjust exactions from the public, but I am fully persuaded that the constant pressure for lower rates contains a menace to the safety of the travelling public that they do not themselves realize. The universal demand is for better cars, faster time, additional and expensive safety appliances, and—lower rates. Accidents like this emphasize the need there is for the most conspicuous intelligence and expert knowledge

and experience on the part of those who are empowered to act as arbitrators between the railways and the public, and show the necessity of taking this office particularly out of the domain of politics, and beyond the reach of unthinking but clamorous legislative majorities. Speaking not for myself alone but I am sure for every railroad manager, I wish to give good, safe, efficient service at fair and reasonable rates. If it lacks the essential element of safety it does not follow under present conditions that the railway official is wholly to blame, nor should the whole fraternity be condemned because some members of it have treated the public unfairly. The point I wish to make is that this accident has in it not only a lesson for every railway manager but also for every board of railroad commissioners, every legislature, and for the general public as well.

Poor's Manual for 1887.

ADVANCE sheets of Poor's Manual for the current year, covering the history of the railroads of this country to December 31st, 1886, have just been issued. There are the usual tables giving the mileage, capitalization, funded debt, etc., etc., to the date mentioned, the work accomplished during the past year, and brief comments on the condition and traffic of the railroads of the United States. According to the Manual the number of miles of railroad constructed in the United States in 1886 was 9,000 miles, and the aggregate mileage for the whole country completed at the close of the year was 137,989 miles. The rate of increase during the year 1886 amounted to 7.8 per cent. Returns, giving the earnings and traffic operations for the year, were received covering 125,147 miles of road against 123,110 for the preceding year. The share capital of all the railroads making returns, including the elevated railroads, equalled \$3,999,508,508, against \$3,817,697,832 for 1885; their funded debts, \$3,882,966,330, against \$3,765,727,066 for 1885; their unfunded debt, \$280,673,814, against \$259,108,281 for 1885. The amount of share capital and indebtedness of all the companies for 1886 equalled \$8,163,148,652, against \$7,842,533,179 for 1885, the increase equaling \$320,615,473, while the rate of increase was about 4.09 per cent. The earnings from freight equalled \$550,350,054; from passengers, \$211,929,857; from miscellaneous sources, \$59,903,038. The operating expenses of all the roads for the year equalled \$524,890,334, and the net earnings \$297,311,615.

The general results of the operations of the railroad system of the country, as shown by the figures given, are summarized as follows. The traffic operations for the year—the passenger and freight movement—were largely in excess of any previous year, but the increase in the volume of traffic was nevertheless little above the average increase of past years, and is indicative of a healthy revival in the business of the country, and a continuance of its development rather than of any extraordinary movement due to speculative causes. In both passenger and freight traffic the rates per ton per mile and the average carrying distance of

each, fell off a trifle, so that, were it not for the increased movement of people and merchandise, the earnings would have shown a decrease. The gradual reduction of freight and passenger rates is, however, a natural sequence to the growth of the country. During the past year this decrease was less noticeable than formerly, for the reason that rates are now so low in the average as to admit of but very little further decrease. The earnings of the year, when compared on a mileage basis with the average of 1885, show large increases, but yet fall very much short of the averages of 1884 and 1883. This may be accounted for in some measure by the fact that a large extent of the mileage constructed in recent years has been through long stretches of comparatively undeveloped country, and again by the fact of the construction of duplicate parallel lines. The exhibit of earnings is made still more gratifying by the reduction in the cost of operating the roads, the total cost in 1886 being 63.84 per cent of gross earnings, against 65.12 per cent in 1885, the reduction being due chiefly to improved methods and the introduction of necessary economies. The payments made for interest on bonds during the year shows a decrease in the average rate of 0.02 per cent. This is probably due to the large increase in the funded debts of the companies, made to provide the means for new construction, on only a small part of which interest accrued or became due within their fiscal years; also to the provisions made in many reorganization schemes for a reduction in the rate of interest and for deferring interest payments for certain periods, and to the gradual retirement of high rate bonds by the larger corporations.

Among the additions to this year's Manual is a copy of the Inter State Commerce law which was passed by Congress last winter. There are also tables giving the range of prices of stocks and bonds at the principal exchanges in the United States.

Come to Stay.

SENATOR CULLUM, in a recent interview, expresses the opinion that the Inter State Commerce Law has come to stay. He says, "Under the law the inter-state commission is charged with the duty of reporting suggestions and amendments to the act to the Secretary of the Interior, who will then report them to congress. I anticipate that certain amendments will be suggested, as the practical working of the law has shown it to possess a few minor defects. That was to be expected, as no matter how perfect a theory may be, the moment it is put into practice there are certain to be some whom it will hurt in one way or another. Now, the other day I had a talk with one of the biggest wagon and carriage manufacturers in the country, and he was very bitter against the bill because it shut off his free passes. He said before the bill became a law the railroads furnished him with blank passes and when any of his customers wanted to come to Chicago or to visit his factory in an adjoining state all he had to do was to fill out a pass and the thing was settled. I replied to him that that was one of the bene-

ficent features of the bill, as under the old system he was given an advantage over the small fellows in his business they could not stand up against, and that eventually they would be crushed out and he derive the benefit at their expense. He finally admitted the justice of the bill. And so the thing runs. When the bill hurts it is objectionable, but on the other hand there are thousands who are benefited. Now, I think we will always have a bill of the kind on our statute books, but I look for modifications from time to time as the circumstances require. Inter state legislation has come to stay.

"Has the practical working of the law up to the present led you to think of any amendment which will make it less odious to the railroads and more popular with all the people?"

"I can't say that I have given it any thought the last summer, and up to the present I have thought of nothing by which it can be improved to meet the points suggested. I have no doubt, however, that certain amendments will be proposed at the next session of Congress."

The Steel Rail Outlook

The following is from the *Railway Age*. Some steel rail manufacturers are beginning to anticipate a falling off in the demand for rails in 1888, based on the fact that they are not looking many orders for the coming year. While it is somewhat early in the season to expect orders for the coming season, still there is some reason for believing that construction will not be as great as during 1887, although new enterprises are being announced every day and an enormous mileage has been projected. The great companies are not likely to push competition into each others' territory so actively next year as they are now doing, and this is a matter for congratulation. But there is still a vast extent of unoccupied territory which must have railways, and thousands of miles will continue to be added each year for an indefinite period. That the prices of rails are likely to be lower is not a matter for surprise. The rail makers of the country have been overloaded with orders during the past year and have pushed prices up so high that they have invited foreign competition. The Southern Pacific Company has received or has now on the way 55,000 tons of rails manufactured in England which are to be used in extensive developments of that system in California, and very considerable quantities of English rails have been bought for other roads, the imports for the year ending September 30 aggregating 77,026 tons, against 10,476 in 1886 and 4,177 in 1885. As a result of this foreign competition, in connection with the belief entertained in some quarters that railway construction will show a large falling off next year, prices of rails have materially declined. They are now quoted at eastern mills at about \$38 for delivery this year, while for next year's delivery \$36 is accepted. One Pennsylvania mill reports the sale of 15,000 tons at that rate. Every rail mill in the country has all the orders that it can fill during the present year, and when

1888 opens it very likely be found that the fears of a great falling off in consumption have been much exaggerated and that, at prices which will keep out the foreign article, American mills will still be kept busy. The reduction of from \$4 to \$6 a ton compared with the prices which have been obtained this year will of itself encourage railway building, as it will mean a reduction of something like \$400 or \$500 per mile in the cost of construction.

In this connection it should be said that unfounded reports have been published to the effect that all the great western railway companies had decided to stop further construction for the coming year. While new enterprises are not now projected by these companies on as great a scale as that of 1887, they all have lines under construction on which work will be continued next year, and the irresistible forces of competition will also very probably incite them to other undertakings which now are not anticipated.

Another Inventor Who Will Revolutionize Railways.

J. W. STOKER, of Kansas City, has just thrown upon the world an invention that is calculated to entirely revolutionize railroading, by doing away with steam and putting electricity in its place. It is said that a train carrying all of Mr. Stoker's patents would be a moving stream of electricity, a circuit on wheels, and the inventor is confident that it will be but a few years until all the railroads in the country will have adopted his patents. He has had no trouble in organizing a company of Kansas City capitalists, who are of his opinion and who have organized and taken \$1,000,000 of stock in the patents. The railway train of the future will be propelled by electricity, of course, and the inventor, to hasten the change from the old to the new method, has arranged his electrical contrivance so that it can be applied to the locomotive of to-day. The tender will be replaced by an electrical storage battery car, about one half as large as an express car. The electricity generated by the battery will supply an electric motor in the engine. The motor operates compressed air pumps which force the air into the boiler and run the engine with cold air instead of steam. This does away with fuel and water, smoke and cinders. Having furnished the power the inventor has turned his attention to the train itself. A very neat little contrivance, called by the inventor an electric conductor and air-brake coupler combined, provides connection for the electric wires which are run through the train, by connecting the tube which contains them with air-brake tube. The coupler makes the connection for both as simply as though they were but one tube.

Mr. Stoker is now at work upon an invention that he expects will entirely supplant the Westinghouse air brake. This is an electro-automatic air brake constructed upon an entirely different plan from that of the Westinghouse. By means of it the pressing of an electric button in the cab of the engine will

stop the train at once. The bell cord will be done away with by another invention, and the grasping of a wooden handle or the touch of an electrical button will blow a whistle in every car in the train and also in the engine.

There will be no further trouble with the brakeman who calls out the names of the stations in an unintelligible gibberish. In the end of each car will be a sign. At the side of the track at each station will be a post, at the foot of which will be planted an electric battery. An arm from this post will reach out so as to touch each car as it passes, and when it touches the car an electric circuit will be closed, and the card bearing the name of the previous station will drop, giving place to the one bearing the name of the next station.

Another electrical device that the train of the future will carry, will be a contrivance to prevent the wheels from sliding. This will cause a great saving on a railroad, as sliding wears out the wheels, and is a source of constant expense.

The inventor does not intend that there shall be any collisions of his moving battery trains, and one of his inventions is an automatic flag giving system. By means of this each train will flag itself around curves or at any dangerous point. When a train arrives at a certain distance from the curve an electric current is closed which raises a red flag or lantern on the other side of the curve.

Still another of Mr. Stoker's ideas is an automatic ventilator for railway cars. By a system of electric lights on which he has applied for a patent, the storage battery in the engine will furnish the light for the cars, and the miserable little coal oil lamps will be no more. The engine will also gleam forth into the darkness with an electric headlight, and the inventor has a system of electric lighting for switches. —*Omaha Republican.*

A Threatened Terror.

The *London Free Press* says:—The Germans have discovered a gray worm as long as the prong of a silver fork, which actually eats steel rails on the railroads. The *Cologne Gazette* tells about an investigation made at Hagen, which discovered the worm at work upon the rails, that were literally honey-combed and rendered worthless by this voracious steel-eating destroyer. It carries a corrosive substance in its head, which is ejected upon the iron, and eats into it, rendering it soft, whereupon the devouring reptile feasts upon the pudding thus prepared. The weevil, the army worm, the caterpillar, the locust, all the plagues combined fade into insignificance before this steel-eating discovery. Iron-clad ships no longer offer any sure protection, the canned corned beef has at last found a foe which can pierce its cover, and the boiler of the locomotive, the tea-kettle of the domestic hearth, the iron water-pipe of the street main, and even the mask of the base ball umpire become, each and every one of them, a snare and a delusion. America has given Germany the Colorado beetle: let us hope that she has not prepared in return this insidious and deadly

attack upon its railroad interest! Nothing but electricity can save us. Steel rails powerfully electrified might disagree with the digestion of this new terror, and by inducing a low and morbid condition discourage the work of destruction which would otherwise be unimpeded. Scientists cannot any too soon busy themselves in providing against the attacks of this scourge.

A Word for the Baggage Handlers: The Checking System.

The *Philadelphia Times* says:—Standing in a railroad centre, where steaming engines rush into the station with trembling haste, one may observe the trunk amasher at his work, and stand in wonderment that he executes his task so skilfully and yet with such little damage. A breathless span of time is allotted him to hand down his pile of trunks, and to the minute the work is done. All around him is the roar of a shifting, steaming world—embarking and disembarking in exciting speed—and the only man that stands cool at his place in the midst of this seething Babylon is the expert baggage master.

To be a trunk handler one must be an expert. None but men of peculiar fitness are stationed at the great railroad exchanges. A greenhorn can at once be detected. He tackles a trunk with bungling awkwardness, he rolls it with puffing labor, falls over it and tilts and drops it a score of times. To watch an expert unloading a train you will observe how his one hand rests upon one corner and the other upon the side. He lands the trunk upon the floor, never upon any corner, always on the full end. The corner is the wrecking point even of an iron clad. He most dexterously hurries it to one side with the ease of a toy, and hurls another after it with the grace and pose of a ball-player. He always prefers a large trunk to a small one—it is better to handle. The wrecking is never done by an expert who handles hundreds of trunks at the great confluences of railroads. It is done by the small fries of the least work—and particularly by the inexperienced hands of road expressmen.

Horses and Electricity.

It is a widely accepted truth that where there is a good deal of smoke there must be some fire. Applying this axiom to what is said in the newspapers about the propulsion of street cars by electricity, it would really seem that the fire is nearly ready to burst out. In the rapidly growing and densely populated cities of New York and Brooklyn the cruelly overtaxed horse equipment of the street car lines is fast becoming an eye-sore. The cable system has been introduced just enough to be appreciable, and show what might be done if somebody would do it. A few weeks ago the Julien electric motor performed some wonderful experimental feats on the Fourth Avenue line, pulling a car full of passengers at the rate of 12 and even 15 miles, the motor being all the time "under the most perfect control, stopping and starting with the greatest pre-

cision and ease, and running steadily either slow or fast along intricate switches and curves." In fact, it beat the horses all to pieces, and, according to current report, nearly all the officials of the surface line roads "became interested in it," mainly for the reason that it could be run at a cost of \$4.10 a day, a distance of 90 miles with a car crowded with passengers, while the average cost of the same service with horses, would be \$7.70 a day. We have not the means for verifying these figures but give them as we find them. In addition to this, we have the most tantalizing reports from other parts of the country. In Montgomery, Ala., electricity is said to be in use on 11 miles of road, and the cost is reported by the general manager to be only one-half the cost of horse-power. Tracks have been laid for a cross-town cable electric railway in New York, to be operated on the Bentley-Knight system, and the cars, it is said, will be ready in September. This project, in connection with the experiments with the Julien storage battery system above noted, is significant of a change in this great metropolitan stronghold of horse-car conservatism. Nothing, however, may come out of it, after all. But it is well enough to place the movements on record. The world, as everybody knows, cannot be reformed in a day, but if the horse-car nuisance is ever to be reformed out of existence, the cities of New York and Brooklyn are good places in which to make a beginning. — *National Car and Locomotive Builder.*

How to Speculate.

UNDER this caption the *Stockholder*, of New York, gives good advice which may be of benefit to some readers of the LIFE. Here it is:

No man becomes suddenly base, says a proverb. Substitute "rich" for "base," and the proverb becomes untrue: write "few men" for "no man," and it is true again. Everybody thinks he may be one of the few, and so it is utterly idle to preach to people to avoid all sorts of speculation: preach to the sexes to go through life apart, or to mankind to stop sinning, and you shall have just as good success. So if we were thoroughly alive with that view, we should not lay down as the first rule for operating in Wall Street, *keep out of it.* What cannot be hindered may perhaps be more or less guided. But, in the first place, we haven't any infallible recipe at all: if we had, we should trade on it before selling it to the world for three cents.

If you go into the Street at all, take in, along with your money, your head, your coolness and your pluck. If you lack these, stay out, or you will encounter the bears before you are through. Having head, you will understand that you can go in without taking your money in. The Street is a moneyed, that is, a mercenary place; it works to make money; but somebody loses it now and then. It may be you; but when you get in the crack of the door don't squeal louder than necessary, and don't forget that those who go out for wool take the risk of coming back shorn. If you have coolness, you will not rush to cover as soon as the match goes against

you, like the scared people who tip a rowboat over by pumping on the starboard edge as soon as the larboard side goes down a little; nor will you tumble over yourself in your hurry to sell as soon as a point is on your side.

A safe general rule is to go against the crowd. Crowds are vulgar and uncomfortable. A gentleman would not like to go to heaven in a crowd if there were any crowd going there, but the Bible says there isn't. Buy when the crowd are selling and sell when the crowd are buying. Find something, out of the many things, which is well below its value, and buy it if you have the strength and pluck to wait. Whoever does this will come out on top every time. But to do it will not be easy until one can operate infallibly on last week's knowledge.

Another pretty good rule is to keep free from the queer habit of the outside public of buying for a rise. Things do rise—but not always. It is quite as well to be bear as bull, if you are right on the thing, the price, and the time. The *if* is troublesome, we admit. The Street is full of *ifs*. Wall Street experience is peculiarly of the stern-light kind—it illuminates the past finely. Why did you not get ready for the recent drop? Why did you not foresee what Manhattan was going to do, when it was 160 and over? Patrick Henry, who knew of no way of judging the future but by the past, was as wise as most of us; but it does not follow in the Street that what has been will be—that is, there is no predicting the details of repetition—from which alone any points can be got. To see what you might have done yesterday is of no particular assistance in showing what you may safely do to-day. The combinations and the incidents of the day are past foresight. It is probable that nobody can write out the causes of all the fluctuations. Why a particular stock was 93½ at 2 o'clock and 93¼ at 2.10 is not referable to any cause. The causes exist, but they are too subtle and too much interlaced to be known. Nevertheless, it is by no means useless to study, record and compare phenomena; least of all, is it useless to study and analyze the bases of real values, for real values are the foundation of the whole. The Rainbow-foot Crock-of-Gold Mining Company's shares are borne upward with the current, but a current of froth alone would not move.

Smartness in the Street often brings smarting to its possessor, but the more informed you are and the more head you have, the better prospect of success, although, of course, fools are sometimes lucky; their heads dot the world so thickly that when luck drops it must sometimes hit one. Don't take into speculation all you have—in other words, don't bet *yourself* as a stake, for you can't afford it. Don't go in at all, if you have not strength enough to go out.

The business men of Buffalo offer a reward of \$100,000 for the discovery of the best appliance for utilizing the water-power of the Niagara River so economically as to make it practically available for various manufacturing purposes throughout the city of Buffalo. The prize is large enough to induce much earnest competition.

Engineer Donnelly

GEORGE T. PAROFF, in *Locomotive Engineer* Journal.

To the memory of the heroic engineer, H. Donnelly, who died at his post, in the recent disastrous collision at St. Thomas.

To the engineer and hero be all praise and honor due,
Who stood firm, despising danger, to his post and duty true;

With his hand upon the lever, firm the grand old hero stood,

Just to save the train he perished; tried his best; did all he could.

Life to him was just as sweet as our life is to us all.

But he bravely stood and perished, gave his life at duty's call.

"'Twas quixotic, rash and foolish" thus the bitter cynics say;

Such his praise; because to save them he had thrown his life away.

"He was half intoxicated"—such the words that others use,

Bitterly they thus revile him; thus the dead man they abuse.

Oh, thank God, that he is resting deep below the crumbling clay;

Sleeping sound within his coffin, little reck he what they say.

Shame upon the scandal mongers; shame upon their cowardly race;

They, if Donnelly were living, dared not say it to his face.

Take one of these base revilers, place the lever in his hand,

Place him in the same position as poor Donnelly did stand.

Let us watch our noble cynic—see his coward's cheek turn pale;

Little thinks he of his duty, little thinks he of the train.

Not like he who stood and perished—filled a hero's noble grave,

All our cynic thinks is simply his own coward-life to save.

Just because he did his duty, to his post stood nobly true,

Bitter words and harsh revilings are the perished hero's due.

Such his praise, and such his honor—he who feared not death and pain,

He who nobly, bravely, grandly, perished in raging flame.

Thus his epitaph should read: "Lies a hero underneath,

(One whose noble brow deserved the victorious hero's wreath."

One who died upon his engine true and faithful to the last,

Calm and cool, as swiftly forward to death's doom his engine dashed;

With his hand upon the throttle, faced grim death without a fear.

Oh, may angels crown with laurels the name of Donnelly, engineer.

Bill Nye on the New Law

FEWER people seem to be travelling for the delicious joy of travelling this year than ever before in the history of the country. Eating houses, dining cars and hotels seem to suffer most. A few days ago I had the pleasure of riding from St. Paul to Chicago and from Chicago to New York, over one of the fluent railway lines in each instance, and I could not shut my eyes to the fact that the interstate commerce law has made a difference. From Cleveland to Buffalo I rode in a special car. It was the special sleeping car Aberdeen, occupied by myself and suit. I had a conductor, a porter and a brakeman to do my bidding, and the whole car was mine, mine alone. It was pleasant at first but finally it seemed lonely so I called the porter and engaged him in conversation. He said it had been that way a good deal during the month of April. One day he said that he and a spotter had sat and gazed at each other all the way from Elkhart, Ind., to Syracuse, N. Y. He told me that it was a time for memory and for tears. Sleeping cars, he stated, have been for years the hotbed of the annual pass. It is for that reason that sleeper after sleeper is being side tracked. He was a bright, intelligent young man with a clear, olive-oil complexion, and when I left him I wrung out his hand for him and gave him a small piece of money which I hope he will expend wisely.

I also conversed with the train boy, sometimes coarsely and incorrectly called "the peanutter." He came into my special car to afford me an opportunity to speculate in a box of choice figs and an armful of paper covered pronouns, including "I," "Thou," "He," "Me," "She," and "It." He heaved a sigh when I spoke of the new law, and sitting down beside me, he looked sadly in my open ingenious face, while he rested nine or ten dollars worth of books on my knee. "Yea," he said, inserting a soiled thumb in the corner of his eye in search of a cinder, "it is an eric of financial depression. People that pay their fare bring their dinner, ride in the day coach, and sleep with their mouths open. They buy nuthin'. In fact nobody travels now unless it is a case of life and death. Then they take a hard boiled egg and a blanket and borrow the papers. And now I see some sardine from Snagaville says that under the interstate commerce law a peanutter has no right to ride free any more than anybody else, not being a railroad employee! I'm tired of it."

A Pneumatic Tube to Europe.

THE following is from the *Hartford Courant*.—Col. J. H. Pierce, of Saithington, who has been studying the use of pneumatic tubes, has reached a point at which he hopes to show that a tube across the Atlantic can be used. Following is the description of the apparatus as he conceives it.—The tubes will always be in couples, with the currents of air in one tube always moving in an opposite direction from the other. The heaviest cannon will serve to illustrate the tube. A car takes the place of the charge, the tube to be

indefinitely continuous and the speed of the car to be governed by the rapidity with which air can be forced through. Time is required to establish a current of air flowing with great swiftness through a tube perhaps thousands of miles in length, but when once created the motion will be nearly uniform. The speed of the current may be made as great as may be desired by using the steam driver fans employed in blast furnaces. Niagara Falls could drive blast fans and furnish motive power to keep in motion the trains to connect this continent with the old world. The temperature within the tube may be regulated by passing blasts of air entering the tube through furnaces or over ice. The speed attainable may reach 1,000 miles an hour. The tube lining and car exterior would be of polished steel with corrugated sides matching with wheels provided with anti-friction bearings. The speed, owing to the curvature of the earth's surface, will tend to overcome all weight and the pressure will be upon the upper part of the tube: thus there is scarcely any limit to the speed attainable. The inventions consist in the details of the work.

Prices of Rails Since 1848.

THE *Wall St. Journal* in a recent issue says. The recent advance in the price of steel rails is liable to lead to mistaken conclusions. It might be inferred that an advance of 10 per cent. in the price of so important an item as the cost of rails would make railroad building unprofitable. But the fact is that the recent advance started from an abnormally low basis—so low that the manufacturers were unable to get back a new dollar for the one already expended: in other words, when, two years ago, rails were sold at \$26 per ton, the price was \$3 to \$5 below the net cost of production. The following table gives the average price of iron rails from 1848 to 1882, and the average price of steel rails from 1868 to 1886, inclusive, at eastern mills:

Year	Av. price of		Year	Av. price of	
	I. rails.	S. rails.		I. rails.	S. rails.
1848	\$62.25	.....	1868	\$78.87	\$158.50
1849	53.87	.....	1869	77.25	132.25
1850	47.87	.....	1870	72.25	106.75
1851	45.62	.....	1871	70.37	102.50
1852	48.37	.....	1872	85.12	112.00
1853	77.25	.....	1873	76.67	120.50
1854	80.12	.....	1874	58.75	94.25
1855	62.87	.....	1875	47.75	68.75
1856	64.37	.....	1876	41.25	59.25
1857	64.25	.....	1877	35.25	45.50
1858	50.00	.....	1878	33.75	42.25
1859	49.37	.....	1879	41.25	48.25
1860	48.00	.....	1880	49.25	67.50
1861	42.37	.....	1881	47.12	61.12
1862	41.75	.....	1882	.....	48.50
1863	76.87	.....	1883	.....	37.75
1864	126.00	.....	1884	.....	30.75
1865	98.62	.....	1885	.....	28.50
1866	86.75	.....	1886	.....	35.75
1867	83.12	.....		

The first steel rails were made in 1867, but for a number of years railroad men entertained grave doubts as to the practicability of substituting steel in place of iron for this purpose, and the total manufacture of steel rails in this country for the ten years from 1867 to 1876 inclusive, amounted to only 1,163,028 tons, or less than the average annual produc-

tion for several years past. It was not until 1877 that the yearly production of steel rails exceeded those made of iron, but so rapidly did the former come into favor after that date by 1882 the manufacture of new iron rails had been practically abandoned.

It is now universally conceded that the life of a steel rail is many times that of iron, but the average price of iron rails at no time during their manufacture fell as low as the present price of steel rails, except in 1877 and 1878, and in 1872 iron rails sold as high as \$90.50 at eastern mills where the average for that year was \$85.12. In April, 1868, steel rails sold at \$172 per ton, and the average for that year was \$158.50, but there were only 7,225 tons manufactured. During the following seventeen years the price declined until it reached \$26 per ton in 1885, and the average for the year was \$28.50. At present the price is \$40, but most of the rails laid during the first six months of the current year will not cost the roads much, if anything, over \$35 per ton. It must also be remembered that the cost of the manufacture has been increased considerably during the past twelve months by advances in material and wages, so that all the differences between present and former prices is not profit to the manufacturer.

Liquid Fuel.

THE *National Car and Locomotive Builder* says:—If petroleum or other hydro-carbons could be applied successfully as fuel to locomotives, the traveling public would be greatly benefited through the absence of smoke and cinders. The principal obstacle encountered in the introduction of liquid fuel for locomotives has been the matter of cost, coal being much the cheaper combustible. There are circumstances where it would pay railroad companies to use dear fuel of the kind referred to, if the difference between it and coal was not very great. The annexed extract from an English journal tells of liquid fuel being quite successfully applied to steamers. Coal is cheaper in England than in America, and petroleum costs more there than it is sold for here. If the dear fuel can be employed economically for steamboat service there it ought not to be too expensive to burn in our locomotives.

"An important advance has just been made in utilizing hydro-carbons for steam raising purposes on board ships. A legitimate objection to the adoption of liquid fuel at sea under certain circumstances has been that the use of steam for the diffusion of the oil in the boiler furnaces entails a considerable loss of fresh water from the boilers. As this loss has to be made good by salt water on long ocean voyages, the density of the water is rapidly raised to a dangerous point. This is, however, entirely overcome by the system adopted in the steamship *Charles Howard*, owned by Messrs. Alfred Stuart & Co., which has recently been fitted with tanks for carrying refined petroleum in bulk, and also with Tarbutt's system of burning residual oils under the boilers instead of coal. She is 249 feet in length, with 30 feet beam, and 23 feet depth of hold. The

whole of the cargo space in the vessel is occupied by tanks for carrying the refined petroleum, while the refuse oil to be used for fuel is carried in the water ballast tanks. Her boiler is of the ordinary marine type, with three flues of three feet six inches diameter each. These flues are fitted with a brick combustion chamber feeding the boiler along with that condensed from the main engines. The Charles Howard left for the Black Sea, and as she steamed down the river at full speed not a particle of smoke was visible from the funnel, the fires working admirably from the first start. It is stated that the owners propose to fit the remainder of the fleet with similar apparatus. The storage of the oil in the water ballast tanks has, we believe, never before been introduced in practice. It is an important feature, as it saves the ship-owner the heavy expenditure incidental to the fitting of tanks in the bunker spaces, and, combined with the substitution of air for steam, marks a decided departure in liquid fuel practice."

Paper Car Wheels.

A RECENT issue of *Harper's Magazine* has the following: The paper car wheel was the invention of Richard N. Allen, a locomotive engineer, afterward master mechanic of the Cleveland & Toledo Railroad, who took for his aim in life the production of a better car wheel than those in use. His first set of paper wheels was made in Brandon, Vt., in 1869, and after much scoffing he was graciously permitted the use of a wood car on the Central Vermont road, under which they were tested for six months. The Pullman Palace Car Company, in 1871, gave the first order for 100 wheels; ten years after the Allen Paper Car Wheel Company, with great shops at Hudson, N. Y., and Pullman, Ill., produced and sold 13,000 in a single year. One of the set first experimented with under a "sleeper" is shown at Hudson, with a record of 300,000 miles' travel. It is the body of the wheel only which is of paper. The material is a calendared rye straw "board" or thick paper made at the Allen Company's mills, at Morris, Ill. This is sent to the works in circular sheets of 22 to 40 inches diameter. Two men, standing by a pile of these, rapidly brush over each sheet an even coating of flour paste until a dozen are pasted into a layer. A third man transfers these layers to a hydraulic press, where a pressure of 500 tons or more is applied to a pile of them, the layers being kept distinct by the absence of paste between the outer sheets. After solidifying under this pressure for two hours the 12-sheet layers are kept for a week in a drying room heated to 120° F.; several of these layers are in turn pasted together, pressed and dried for a second week, and still again these disks are pasted, pressed and given a third drying of a whole month. The result is a circular block containing from 120 to 160 sheets of the original paper, compressed to 5½ or 4½ inches in thickness, and of a solidity, density and weight suggesting metal rather than fibre. The rough paper blocks are turned accurately in a lathe, when shavings like leather and a cloud

of yellow dust fly off, to a diameter slightly greater than the inner circle of the tire. The hole in the centre is also made on the lathe, and after the paper has received two coats of paint to prevent moisture working its way within, the cast iron hub is pressed through, by the aid of the hydraulic press, and the hydraulic back plate is clamped on. The suction of enormous hydraulic power now drives the paper centre into the tire, by help of the bevel.

The Railway Service.

THE staff of men in the Canadian Pacific shops at Winnipeg has been much reduced and now there are only about 200 hands employed. These, however, have all they can do to get ready the cars to be used in moving the great crop of this year.

THE *Weekly Telegrapher* says: From straws which we have been able to see flying about in the air, and from a positive knowledge we have of the right and public favor of the proposition, we believe that Sunday labor will soon be relegated to the rear. The running of Sunday trains, we believe, in ordinary cases is a useless expense, and an injustice to employees, that is fast being found out and abandoned.

THE Canadian Pacific beats them all for improvements. Other roads have freight and baggage cars, coaches, sleepers and pay cars; first class, second class and emigrant cars, president's cars, directors' cars and manager's cars and snow-ploughs. The Canadian Pacific has all of these, and a prison car besides. The prison car has four separate cells and a guard-room, all stoutly ironed and capable of standing a siege from without or a mutiny within. The car is used to transport prisoners from the Pacific coast to the Kingston penitentiary. —*Exchange*.

THERE is something absurd in the fact that the general manager of the Grand Trunk Railway Company has been indicted for manslaughter on account of the killing of two men who were run over at a crossing by a train of that road. Railway companies and the individual officers and employees of these companies should of course be held to strict responsibility for their acts, but the idea of holding personally liable for the possible negligence of a train hand or a flagman the general manager of a company employing many thousands of men, of whose character and acts he can by no possibility have personal knowledge or oversight, does not seem within the bounds of justice or reason. —*Railway Age*.

I have found upon investigation that the English railways have to bear the onerous tax in the way of furnishing free transportation to prominent individuals and officials, as did the railroads in the United States before the passage of the interstate commerce bill. I was told by a railroad official the other day that all of the royalties travel free, and that they expect in addition special coaches. The visiting royalties have also been furnished

free transportation, and in many instances special trains. This pass system must be very expensive. Coming up from Portsmouth the other day I got a seat on the special train assigned to the members of the house of peers. These peers had with them innumerable relatives, and I noticed at one of the stations where the guard came along to take up the tickets that he looked very much surprised when I gave him mine. It was apparently the only ticket taken up by him on the train. Every peer and peeress in prospect and every peer's and peeress' relatives had passes. —*Exchange*.

The Dominion and Industrial Exhibition.

GREAT as has been the success attending previous exhibitions held in Toronto, under the auspices of the Industrial Exhibition Association, this year's event was the greatest success of all. This is due to the enthusiasm with which President J. J. Withrow and his co-directors, all leading citizens of Toronto, enter upon their work, and the thorough business ability they display, as also to the executive skill of Manager H. J. Hill, who is master of every detail of the work. With this year the Association's lease of the buildings from the city expires, terminating what might be called the trial period of the fair. When, ten years ago, the holding of this exhibition was undertaken there were very grave doubts on the part of many as to the possibility of success. Such doubts were set at rest, however, by the very first fair, and since then the exhibition has become one of the institutions of the city, the one of which the city has greatest reason to feel proud. There is no doubt whatever that the association's lease will be renewed and that the exhibition will enter upon another term of even greater prosperity than before. The display this year in every line was greater than ever before. Machinery Hall, in which RAILWAY LIFE naturally feels the greatest interest, was stocked with the products of some of the most important manufacturing factories in Canada. The display of wood-working machinery and of steam engines was especially good. A number of new devices for use in various departments of industry attracted great attention. So far, the inventor has not had the prominent place in the exhibition that his importance entitles him to. It would be well if the association could establish a department for the display of models of patented devices. No section of the fair would arouse greater genuine interest or do more good to both exhibitors and visitors. The railways were particularly liberal with the association this year, granting very close rates. All the roads carried enormous numbers of people. The Grand Trunk Railway, whose track passes by the northern gate of the grounds, ran trains from the city every twenty minutes and during the second week every train was crowded. The management of this business reflects great credit upon the officers in charge of it. The Canadian Pacific Line to Parkdale, the station being near the fair ground, also carried a large number of people, and did it without hitches or delay.

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Shears,

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Rolls,

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Machines,

Milling

Machines,

Cutting-off

Machines,

Shafting

Lathes,

Pulley-Turn-

ing Lathes,

Wood Planing

and Matching

Machines,

Surface

Planers,

Moulding

Machines,

Mortising

Machines,

Tenoning

Machines,

Band Saws,

Scroll Saws,

Wood-Turning

Lathes,

Timber

Dressers,

&c., &c., &c.

Complete Sets

of Machinery

for

Locomotive

Works,

Car Works,

Implement

Works,

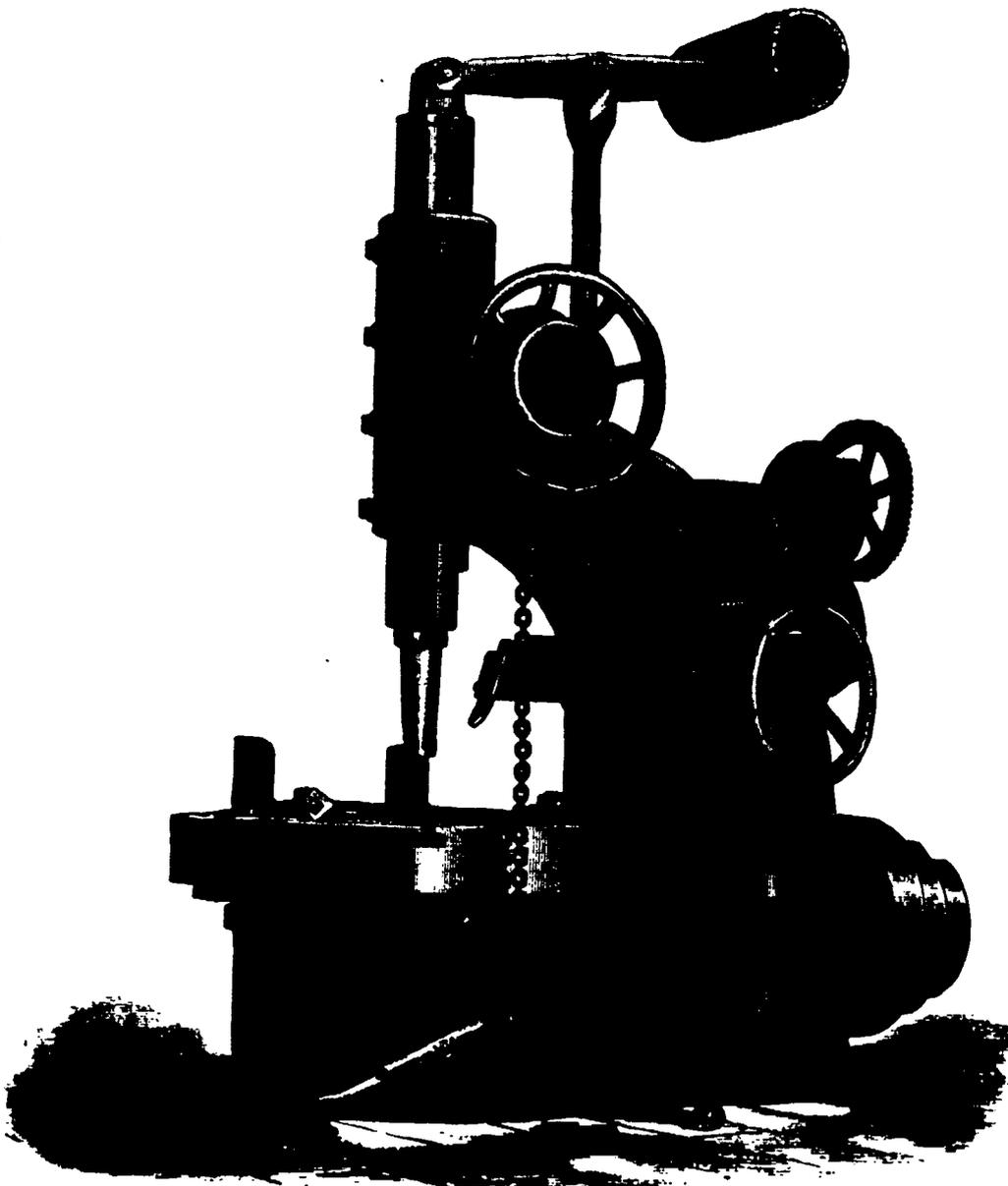
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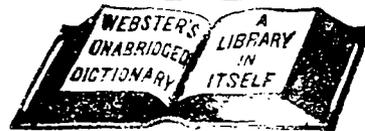
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