

MAINE STATE LEGISLATURE

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Public Documents of Maine:

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

PUBLIC OFFICERS AND INSTITUTIONS

FOR THE YEAR

1875.

VOLUME II.

AUGUSTA:

SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.

1875.

REPORT

OF THE

RAILROAD COMMISSIONERS

OF THE

STATE OF MAINE,

FOR THE YEAR

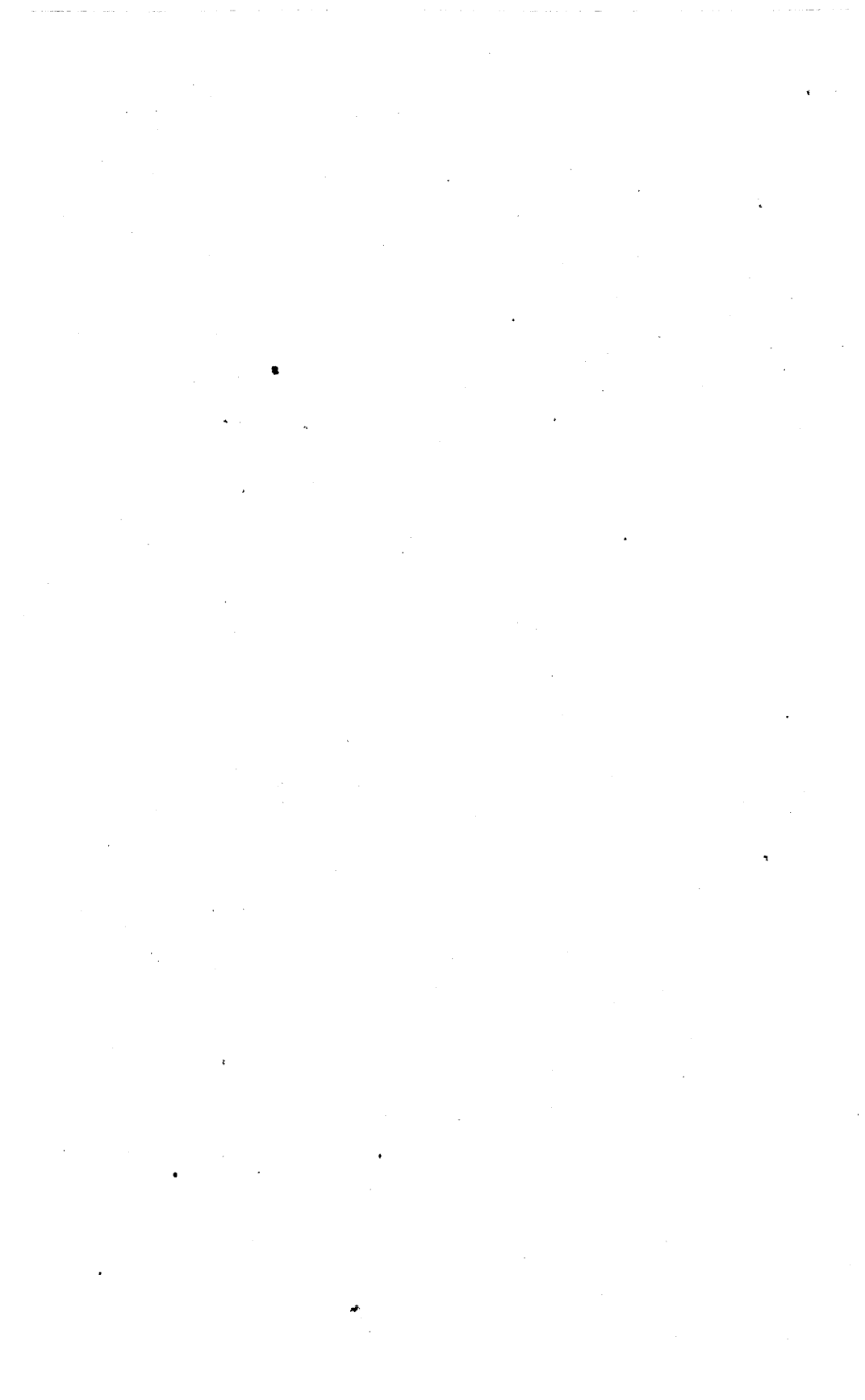
1874.



AUGUSTA:

SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.

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REPORT.

To the Governor of Maine :

The Railroad Commissioners respectfully submit their Sixteenth Annual Report.

The condition of the railroads of the State has improved during the past season ; their material and equipment are better than ever before. This is especially the case with the *Grand Trunk* ; the *Maine Central* and the *Portland and Rochester*, where the improvements have been much more than ordinary, and made in excellent judgment, many of them at a very large expenditure of money, and of a permanent character.

All the roads that are operating in the State have been as well kept up as could reasonably be expected from knowledge of their respective resources, and a majority of them are intrinsically better than they were a year ago. While they have felt the depression of the times, that has affected all business activities, they have in great part, if not altogether, made up their losses from this cause by opening new sources of traffic and travel. Their future looks brighter and better than heretofore. They have during the past year been free from any great disaster. No life has been lost upon any of them from the neglect of its officers or employees ; although deaths have unfortunately happened from causes extraneous to their management. Injuries, however, somewhat serious to persons and property, have been suffered from inattention and neglect on the part of employees. This is to be deplored, and should be reprehended, for whilst accidents from defective machinery must always arise so long as artisans and machinists will at times fail to make perfect work, or perfect work fail to give warning of weakness that concussion and time may bring upon it, yet disaster from collisions, misplacing of switches, defective culverts, weak bridges and such like casualties, occasioned by some positive neglect, proximate or remote, are inexcusable. There have been several of this sort, that more mind in

administration or more attention to duty or capacity to apprehend it in employees, might have prevented. Accidents of precisely this nature, that knowledge of and proper attention to simple duty would avoid, are occurring everywhere, even in England and on the Continent, but frequently here; and the remedy there as well as here—first securing the requisite physical and mental capacity in employees,—is in a more thorough scientific and practical education for the specialty to be performed, and a discipline as exacting as military rule imposes in times of imminent danger.

The Portland and Oxford Central Railroad still rests under the injunction of the S. J. Court, requiring that it shall refrain from operating passenger trains until certain specified repairs—deemed by your Commissioners necessary to assured public safety—are effected.

Three new railroads have been opened for travel during the past year, namely: the *Somerset*, twenty miles long; the *Lewiston and Auburn*, a branch of the Grand Trunk, five and a half miles long, and the *Bucksport and Bangor*, eighteen miles long. Besides these, the Bangor and Piscataquis has been extended six miles and a quarter to the town of Abbot, making the aggregate length of steam railroads now existing in the State, nine hundred and fifty-seven and one-half miles, and of horse railroads six and three-quarter miles.

Copies of the statutes prescribing the duties of this Board have been applied for by citizens of the State, as well as by parties residing in other States, who are deliberating upon the proper functions of similar organizations. The hope of benefits to accrue from exchanges, and the positive advantage of having these statutes in a portable form and readily accessible to all, have induced their publication in this report, which procedure it is hoped will meet with your approval.

From the Revised Statutes of 1871—Title IV., Chap. 51.

SEC. 2. A railroad corporation, for the location, construction and convenient use of its road, for necessary tracks, side tracks, depots, wood sheds, repair shops, and car, engine and freight houses, may purchase or take and hold, as for public uses, land and all materials in and upon it; but the land so taken shall not exceed four rods in width for the main track of the road unless necessary for excavation, embankment or materials; but shall not take, without consent of the owners, meeting houses, dwelling houses, or public or private burying grounds. The guardian of a person incapable of giving valid conveyance, whose land is taken, may settle and give a valid release for damages; and persons having any interest in such land have the rights and remedies of owners to the extent of their interest.

SEC. 3. If the parties do not agree as to the necessity and extent of the real estate to be taken for said side tracks and buildings, the corporation may make written application to the railroad commissioners, describing the estate, and naming the persons interested; the commissioners shall thereupon appoint a time for the hearing near the premises, require notice to be given to the persons interested as they direct, fourteen days at least before said time; and shall then view the premises, hear the parties and determine how much, if any, of such real estate is necessary for the reasonable accommodation of the traffic and appropriate business of the corporation. If they find that any of it is so necessary, they shall furnish the corporation with a certificate containing a definite description thereof; and when it is filed with the clerk of the court in the county where the land lies, it shall be deemed and treated as taken.

RAILROAD COMMISSIONERS.

SEC. 71. The governor, with advice of council, shall appoint three railroad commissioners, who shall act as a board and hold their offices three years; two of them shall be experienced in the construction and management of railroads, and one of them shall be an engineer. Their compensation shall be five dollars a day while actually employed in their official duties, to be paid by the railroads on which the services are rendered.

SEC. 72. A majority of the board, annually, between the first of April and October, and at any other time on application, or without when they think necessary, shall carefully examine the tracks, rolling stock, bridges, viaducts and culverts of all railroads; shall give a certificate thereof to the clerk of the corporation, therein stating the condition of the road and rolling stock, and shall annually, in December, make a report to the governor of their official doings, with such facts as they deem of public interest, or he requires; and all persons managing railroads shall give the board such information as they from time to time request.

SEC. 73. The corporation shall file such certificate in the office of the secretary of state before the first day of December, and pay the commissioners for the examination, or forfeit one thousand dollars, to be recovered in an action of the case, half to the state and half to the person suing therefor; and if the president and directors of a railroad while it is guilty of such neglect, allow a passenger train to run over it, they shall be personally liable for any damages occasioned by a defect in said road, or rolling stock, but this will not relieve the corporation.

SEC. 74. If the board at any examination find the track, culverts, bridges or rolling stock in use so out of repair as to be unsafe for travelers, they shall immediately notify the managers of said road of its condition, and the time in which the repairs shall be made; and may require them to reduce the speed of all trains until repairs are made.

SEC. 75. If they do not comply with such requirements, the commissioners shall petition the supreme judicial court in any county where the railroad extends, setting forth their examination, the condition of the road, the notice and requirement and refusal to comply; and shall notify the attorney general or the county attorney of the county where the petition is filed, of the filing thereof, one of whom shall appear and take charge of the proceedings in court. The court shall order a notice thereon and appoint a hearing; and after a hearing, may order such things to be done by the managers of the road as they deem necessary to secure the safety of travelers; and unless such managers will execute a bond to the state, with sufficient sureties, for such sum as the court deems necessary to make the repairs, conditioned that they will, within the time fixed by the court, make the repairs or otherwise satisfy the court that they will be so made, the court shall issue an injunction on said corporation, and its managers, prohibiting the running of any passenger trains over the portion of the road found to be unsafe, until the order has been complied with or revoked.

Sec. 76. When the managers of a railroad authorized to cross or connect with another road, are unable to agree therewith, as to transportation of passengers and freight over their roads, and other matters, they may apply to the commissioners in writing, and either of them may endorse an order of notice thereon to all interested, fixing a time and place for hearing; and the applicant shall cause such order to be complied with. At such hearing, any corporation or person claiming to be interested, may be made a party and be heard thereon, though not named in the application; and said commissioners have the authority of courts at law to summon witnesses, compel their attendance and testimony, and depositions may be taken and used as in suits at law. When the hearing is closed, they shall determine and award the rates for transporting passengers, freight or cars over the road of each or over any road on which either is a common carrier by contract or otherwise, and all other matters in controversy between the two roads arising from such connecting, or crossing, or the times of doing so; and may require either party to give security to the other for the payment of balances resulting from their mutual business, on such terms as they deem equitable; and may determine that their award may be suspended, after its acceptance, at the election of the party injured by the non-performance of the conditions thereof by the other.

Sec. 77. The award shall be returned to the Supreme Judicial Court in the county where the hearing was had, and accepted, or for good cause, rejected or recommitted. Exceptions to any ruling of the Court in such proceedings may be taken and allowed within the rules of the Court, except in recommitting the report, and when so allowed, a certified copy thereof and of all papers used at the hearing, shall be forthwith sent by the clerk of the Court to the Chief Justice thereof; and the parties shall be heard thereon by the Law Court in the district where the hearing was had; but if such Court does not sit within thirty days after the papers are received by the Chief Justice, he shall, at the request of either party, detail a majority of the justices to hear the case at the time and place ordered by him; send the order to the clerk of the court where the matter is pending, and he shall enter it on the docket under the case, and that shall be sufficient notice to the parties; and the case shall then and there be heard the same as if at a regular law term. When the award is accepted and judgment rendered thereon, it shall be binding on all parties notified, whether they appeared or not, until a new award is made on another application; and the court has full power to make the award effectual by process for contempt or otherwise as in equity cases; and if the corporation or managers of any such road, after they are notified of the acceptance of such award, fail to comply with it, the directors, superintendent or other agents running such road shall be subject to a fine of not less than ten nor more than fifty dollars for each day of such failure, to be recovered by indictment in the county where it occurs.

Sec. 78. When a serious accident occurs on a railroad and any person is thereby injured, the commissioners shall immediately proceed to the place, examine into the cause thereof, may send for persons and papers, and make a full statement of the cause and results of the accident in their annual report, and any other manner they think the public good requires.

CHAPTER 204.

AN ACT giving additional powers to the railroad commissioners.

Sec. 1. The railroad commissioners, upon petition of responsible parties representing that the public convenience and necessity require the erection and maintenance of a depot for freight and passengers, or a passenger station, on the line of any railroad, after fourteen days' notice by copy of said petition upon such corporations, and by publishing said petition, with the order of said commissioners thereon, in such public newspaper as shall be designated in said order two weeks successively, the last publication to be prior

to the time fixed for said hearing, shall hear the parties and determine whether the prayer of the petitioners shall be granted; and if such prayer is granted, shall determine at what place or places a depot or station shall be erected, or maintained if erected, and whether for passengers or for passengers and freight.

SEC. 2. It shall be the duty of said commissioners to designate the site, and what kind of buildings shall be erected and maintained, as the case may seem to demand, and the time in which said corporation shall comply with the order.

SEC. 3. If said railroad corporation refuse or neglect to comply with the order of said commissioners within the time prescribed therein, said commissioners shall enforce a compliance as provided in section seventy-five of chapter fifty-one of the revised statutes of eighteen hundred and seventy-one, in relation to making repairs of railroads.

SEC. 4. In all cases heard before the commissioners under the provisions of this act, the expenses and costs attending the same, including the compensation of the commissioners, shall be paid by the railroad corporation against whom the complaint is made, if the prayer of the petitioners is granted, and in case the prayer of the petitioners is denied, such costs and compensation shall be paid by the petitioners. If the party or parties against whom costs are adjudged as aforesaid shall refuse or neglect to pay the same within thirty days after such adjudication, upon complaint for such costs made by said commissioners to any one of the justices of the supreme judicial court, such justice may cause execution to issue therefor.

SEC. 5. This act shall take effect when approved.

Approved February 24, 1871.

CHAPTER 197.

AN ACT amendatory of chapter fifty-one of the Revised Statutes, relating to Railroads.

Section three of chapter fifty-one of the revised statutes of eighteen hundred and seventy-one, is hereby amended, by inserting after the word "time," in the seventh line of said section, the following: "*Provided however, that when land is held by a tenant for life, and the reversion is contingent as to the persons in whom it may vest, on the termination of the life estate, such fact shall be stated in the application, and the commissioners shall, in addition to the notice to the tenant for life, give notice by publication to all others interested, in such manner as they shall deem proper.*"

Approved February 22, 1871.

AN ACT amendatory of and additional to chapter fifty-one of the Revised Statutes, concerning Railroads.

SECT. 1. Section thirty of chapter fifty-one of the revised statutes is amended so as to read as follows:

‘Sect. 30. Every railroad corporation shall make an annual report to the railroad commissioners on or before December first, of its operations for each year ending September thirtieth, to be verified by the oath of its treasurer. It is to state: first, the length of the road in operation, the length of single track, the length of double track, the length of sidings and of spur tracks, the time when laid, the length laid with steel rails, the weight of rail per yard, the length laid with fished joints, and of what sort, the length laid in chair joints, and the length laid with Whitman's improved cross-ties; second, the capital stock, and the amount called and paid in; third, the whole cost of the road, showing the amount expended in the purchase of lands, for grading, for masonry, for bridging, for iron, for expenses of engineering, for passenger cars, for freight and other cars, for locomotives, and for the total expense of equipment; fourth,

the amount and nature of its indebtedness and its dues; fifth, the whole cost of operating; sixth, number of passenger trains during the year; seventh, number of freight trains during the year; eighth, number of mixed trains during the year; ninth, average number of passengers per train; tenth, average number of tons of freight per train; eleventh, the number of through and way passengers and rates of fare; twelfth, average receipts per passenger per mile; thirteenth, average receipts per ton of freight per mile; fourteenth, the number of through and way passengers and the rates of fare; fifteenth, the amount of receipts from passengers and freight originating along the line of the road; sixteenth, the amount of receipts from passengers and freight brought to the road by other railroads; seventeenth, the amount received for the transportation of passengers, of property, of the mails, and from other sources; eighteenth, the number of depots, engine houses, engines and cars of their several sort; nineteenth, the number of miles run by passenger, freight, mixed and other trains respectively, and the average rate of and speed of each; twentieth, the whole number of stockholders and the number who reside in this state; twenty-first, the amount of each dividend and when made; twenty-second, the amount charged for depreciation of road and other property; twenty-third, the number of persons injured in life or limb, the cause of injury, and whether passengers or persons employed; twenty-fourth, whether any such accident arose from carelessness or negligence of any person in the employ of the corporation, and whether such person is retained in its service; twenty-fifth, the number of employees of every sort, and the average pay of each of the following grades: conductors, baggage masters, station agents, switchmen, engine drivers, firemen, brakemen, foremen of track sections. If any railroad company neglect to make such report, it forfeits one thousand dollars; and it shall be the duty of the attorney general to prosecute for the recovery of the same upon complaint thereof made to him, and the same shall be published in the annual report of the railroad commissioners.'

Sec. 2. When in the opinion of the railroad commissioners the passage of passenger trains over any portion of any railroad by passenger trains would be attended with imminent danger, they may notify the president or superintendent of such road of such unsafe condition of said portion of said road, and order the immediate stopping of all passenger trains about to run over the same. In case said order is not obeyed said commissioners shall at once apply to some judge of the supreme judicial court, who may, upon satisfactory proof of the necessity for such order, and without notice to said company, issue an injunction prohibiting the running of passenger trains over said road until further order of the court.

Approved March 3, 1874.

In a general consideration of the true interests of railroads, it would seem that steps should be taken to determine what ought to be the maximum weight and length of single trains, both passenger and freight, and also the ruling speed for each. Without attempting a solution, or even a long discussion of these important questions, the attention of railroad managers is invited to them, in a hope that they may feel disposed to contribute practical facts bearing upon each, which will aid in reaching such positive knowledge that certainty may take the place of the very reasonable doubt entertained by some respecting the soundness of the present practice.

Professor Vose in his "Manual for Railroad Engineers," page 454, says: "In 1854 a convention of American Railroad Managers recommended the adoption of a higher rate of fare upon express passenger trains, corresponding in some degree to the increased cost of such trains. The cost of running trains has been stated to increase nearly as the square of the speed. The wear and tear of engines, cars and track certainly increase in a rapid ratio with the velocity, and in addition to this, the influence of express trains is not confined to themselves, but all trains in motion at the same time, within a certain distance of the express, must be kept waiting with steam up, or be driven with extra velocities to keep out of the way."

In a discussion before the *Institution of Civil Engineers* in England, upon "the maintenance and renewal of permanent way," in 1866, it was said "With regard to the destructive effects of high speed upon the rails, from the information given by Mr. Meek, it appeared that with the same locomotive engines, and everything similar except variations of speed, the same rails required more than three times the traffic to wear them out at the lower speeds. There was no statement given of what the comparative speeds were; but he believed it would come out that, for equal quantities of traffic, the wear of the rails would be in the ratio, not of the velocity simply, but of the square of the velocity; a proposition which he thought would be found equally amenable to practice as to reasoning." It was also well said, so long ago as 1850, by Dr. Lardner, in his "Railway Economy" (page 179), that "The consideration of the great damage done to the railway, as well as to the rolling stock, by these extreme speeds, (from 40 to 70 miles an hour), is a serious drawback to the gratification which such wondrous performances naturally excite. The fracture and wear of rails is augmented in a very high ratio with the speed; so, likewise, is the wear of all parts of the vehicles most affected, such as wheels, axles, &c.

"The injurious effects proceeding from these causes would be considerably less if an additional track were laid and reserved for the exclusive use of the merchandize traffic, and the third class (slow) passenger trains, with proper sidings, the main line, which now performs the entire work of the railway, being reserved for the fast passenger traffic, less inconvenience and injury would arise to the railroad property, and much more expedition, punctuality and safety ensured to the travelling public. * * *

“In railway traffic the entire stream of transport ought to proceed, as much as possible, with an uniform speed, so that one part should not be liable to overtake another. The greater the difference of velocity of the different objects of transport, moving in the same direction, and on the same rails, the greater is the danger of collision; and the consequences of collision are dangerous in the exact proportion of the difference of velocities of the bodies which strike each other. These causes of danger and injury are augmented to the highest conceivable degree by express trains moving with exceptional and sometimes enormous speed. Collision becomes inevitable unless a warning be sent along the line to clear the way. Nor is it always practicable, even with the warning, to avert it.

“An engine attached to a goods train, for example, becomes lamed between two stations; it is necessary to send on to the adjacent station for help, and notice must be sent back to stop the following train. This notice may in general be rendered effectual to trains moving at ordinary speeds, but an express train, moving more rapidly cannot safely pull up except within a considerable distance. The chances therefore of a fast express train running into a disabled train upon the road are very considerable.

“The use of the electric telegraph diminishes this danger; but to give notice by the telegraph, a message must be sent to the nearest station, which may be at a considerable distance.

“It is not without regret that one would discourage the ardor for improvement produced by wholesome competition; but it is indispensably necessary to regulate our progress with discretion, and it must not be forgotten that the safety of the public is not less to be considered than expedition of travelling.

“The public, in general, concerns itself very little with the question of safety. The traveller who desires to reach a distant point with speed, is seldom so well informed as to be enabled to appreciate the degree of danger which must attend the attainment of his object; and it is necessary that those who have the control and management of railways, and who alone are competent to appreciate the danger, should resist this tendency in the public, which would impel the conductors of railways into a course attended with serious damage and loss to railway proprietors, and with no small danger to the travelling public.”

Robert Stevenson estimated the most advantageous speed for railroads to be fifteen miles per hour for passenger trains and

seven miles per hour for freight trains.* The rule at present generally obtaining, is from twelve to fifteen miles per hour for freight and thirty miles for passenger trains. The actual practice in running time too often exceeds the ruling rate in both, but especially, and to a more damaging extent, in the freight trains, which are frequently and often unnecessarily detained in sidings and then recklessly driven at a rate of thirty or even more miles an hour to overtake time and make up their average speed.

That these high rates are not the most economical for the roads is admitted by all railroad men. But they have been led on to this increase in part from the recklessness and impatience of the employees, and partly from a vain endeavor to satisfy the discontented travellers, who were just as dissatisfied—and no more—with the speed formerly attained by stage coaches, and can never be satisfied with any rate of speed attainable; if it were forty miles per hour they would just as loudly demand fifty, and but for the time cease fault finding during an exceptional movement of fifty or sixty miles an hour, sometime consequent upon a published time of forty. And should these extreme velocities become the rule, when their novelty wore off they would as surely demand seventy miles an hour.

If the proportional expense, in power and renewals of the wear and tear, is as the square of the different velocities, then the present rates quadruple the cost of transportation that would be incurred under the rates of speed recommended by Robert Stevenson.

When all the elements that properly enter into an exact elucidation of the question are ascertained and applied, it may perhaps be demonstrated that practice guided by experiments, on the rule of thumb, has finally settled upon the true rates of speed. And it must be admitted that this rule of thumb, resulting from the long continued and acute observation of eminently practical and sound minds upon the actually existing realities, may be a safer guide than the most exhaustive exposition and scrutiny of the purely scientific, if based upon an hypothesis that anything connected with a railroad is exactly true or precisely what it purports to be. If a road-bed was throughout substantial, and uniformly so, with its superstructure, entirely perfect and equipped with rolling stock built as thoroughly in every part as the deacon's legendary

* Our own eminent civil engineer, Benj. H. Latrobe of Baltimore, in a conversation upon this subject, suggested as the most desirable speed where practicable, about eight miles an hour for freight and twenty-two miles an hour for passenger trains, including stops.

'one-horse shay,' the safe limit—so far as wear and tear goes—of a continuous maximum speed might be definitely fixed, with positive assurance of a secure system, at an extremely high rate. But none of these complete conditions are ever found, neither in the road-bed, track, nor rolling stock. And each one of them contributes an element of unsafety and destructiveness in every—however slight—failure of perfection; limited only by the extent of the defect and a due repression of speed. For example, so seemingly slight a fault in a pair of wheels as being the one hundredth part of an inch off their true centering, that might not perceptibly affect their slow movement, would at a high rate of speed cause them to act with a constant succession of sledge hammer blows to the very rapid deterioration of not only the track but the car they carry; and so if the axles are not exactly parallel with each other, in ever so little, the wheels are constantly gripping the rails and at high velocities produce a tearing friction with,—as in the case of the defective wheels,—a steadily increasing ratio to the increase of speed.

But if it should become clear that the ruling are the proper rates of speed, can it prove to be true economy to work the enormous trains attached to correspondingly ponderous locomotives now sent over many of our roads? Would it not be better to reduce their weight and great length, and if need be, multiply their number? And should it not become a rule imperative to reduce the speed inversely to the weight of the trains moved so as to accord more strictly with the known natural law of applied power. In other words, a reasonable, uniform speed of trains having been definitely fixed, ought not their maximum length and weight to be determined,—especially those carrying freight,—upon due consideration of the gradient and curvature of each and every road, and also the strength and connections of the cars; then to this standard train fit the locomotive, with a sufficiently ample margin of power, and keep this order up as a regular system, invariable as the law of the Medes and Persians, in place of permitting engine builders to increase constantly the weight, power, expense and destructiveness of the locomotives, to be followed up in operating them by daily experiments as to the number of loaded cars the engine drivers can manage in one train. Would there not then be more regularity of movement, and less frequent breaking apart of trains, and might there not on the whole be more profit to the railroad companies?

The following communication procured by request from the Superintendent of the St. Croix and Penobscot Railroad, W. W. Sawyer, Esq., of Calais, bears, in part, practically upon one of the points above adverted to, and will prove of interest throughout to practical men. It is the sort of paper your Commissioners hope to induce other practical and observing experts to contribute more and more freely with each succeeding year.

Mr. Sawyer says: "With two engines in equally good repair, we ran one at a speed of 26 miles an hour, 42 miles daily, with a mail train, and at a speed of 14 miles an hour daily with a freight train; total 84 miles daily, until it had run 14,000 miles, when it became necessary to take it off for general repairs. The other ran 84 miles daily at a speed of 14 miles an hour, with a freight train, until it had run 21,000 miles before requiring general repairs, and was even then found in better condition than the one running at the higher rate of speed. Wood and oil were consumed nearly in the same proportion. It is fair to suppose, also, that the rails, sleepers, bridges, &c., suffered the same additional wear. It is my opinion, that an increase of speed of 12 miles an hour beyond 14 or 15 miles, will increase the cost of repairs at least 75 per cent.

In relation to wheels, I think at a low rate of speed a 350 pound 28 inch wheel is more than equal to a 500 pound 32 inch wheel at a high speed. A heavy axle will jar off at high speed before a light one will become unsafe with the same number of miles run at low speed. A 25 ton engine is of sufficient weight for general use. If additional power is required with a snow plow on heavy freights, rather increase the number of engines than the weight of them; there is less risk in moving snow with power and force than with momentum. As to passenger cars,—a fifty-seat passenger car can, in my opinion be run more economically than the ordinary car. The first cost is \$1,000 less, the weight and wear on the rails are less, the cost of repairs is less, and it requires less power to move six fifty-seat cars than it does to move five sixty-seat cars, there being a difference of 18 tons in favor of the six light cars.

Convenient repair shops and tools are of vital importance to the economical management and prosperity of any road.

As regards the price paid for labor, we found by experience that reliable and responsible men with fair pay are far more economical than a cheap class of men at less wages. Some years ago, a cheap man in the employ of this company made a bad fit of a wheel; a square shoulder was also left for the back of the wheel upon the

axle; one of the wheels became loose and caused damage. Another set of wheels under the same car was fitted by a higher priced man; his fits were perfect, and round shoulders were left upon the axle. In three years the axle fitted by the cheap man broke in the square shoulder; the axle with the round shoulder is in use yet. The cheap man in the course of time cost the company hundreds of dollars more than the man who received the higher wages.

This principle holds good also with section men. I am doing more work now with twelve active men, who command good pay, than I once could with eighteen cheap men on the same length of road. A cheap man is more apt to indulge in profanity and loose talk concerning the road, its business, or management, in the presence of strangers, casting wrong impressions, which is decidedly damaging to any road.

Very truly yours,

W. W. SAWYER."

Because it follows so appositely Mr. Sawyer's suggestive letter, and so well enforces suggestions made in former reports, the following extract is taken from the Railroad Gazette of March 3, 1873:

"We have frequently called attention to the profit which must result from the application of a higher order of scientific training to railway operation. There is something very depressing about the total indifference which the majority of railroad managers manifest with regard to the qualifications of the persons whom they place in charge of their machinery, road and other departments. We think we can safely state that in a large majority of cases, where a candidate offers himself for any of these positions, such a thing as inquiring into his scientific attainments never occurs to those who have the appointing power. We have before us now a letter from one of the most intelligent master mechanics we know, who is young and ambitious. He is entirely self-educated, but wide awake to every practical application of science or knowledge to the operation of railroad machinery. He writes: 'Good men are not paid enough, and for this reason they are driven to seek more lucrative positions. I must say that I feel that way myself, and I am now giving my leisure time to the study of higher branches of railroading. I must either have more money for the service I am now performing or I shall seek another position. I like the machinery department best; it is my *forte*; but I am poor and must look for a business that will pay me better.'

That many others occupying similar positions feel as our correspondent does, we know from personal intercourse with them. That a policy which drives the most intelligent men out of the employ of companies whose business is more complicated, and which requires a greater amount of and more varied knowledge than that of almost any private manufacturing establishment, seems to be a very unwise one."

There is, of course, another side to this question, which is very forcibly stated in the same paper from which we have already quoted. In discussing the management of iron works, Mr. W. Mathiew Williams says :

"Why is it that even at the present day, when all admit the value of science in its application to manufactures, we still hear so many complaints of opposition and prejudice against scientific improvements and improvers? Does it all arise from ignorance among practical men, or is there something else underneath that is not quite so visible to outsiders? There was a time when I should pretty confidently have answered this question by attributing it all to ignorance; when, had I seen a black-faced, perspiring puddler sneering at the learned suggestions of a well-dressed and courteous University professor, I should, without further inquiry, have concluded at once that all the ignorance was on the puddler's side, and all the science resided with the professor; but subsequent experience behind the scenes of iron works, etc., has taught me some rather unpalatable lessons in this direction; has shown me that in many cases the scientific gentleman, paying a patronizing visit to the puddler's furnace, and making his patronizing expositions and suggestions, may really be talking arrant nonsense, the shallowness of which the illiterate puddler perfectly understands and appreciates, although unable to refute them in learned phrase. Such displays of learned ignorance are far more common than most people suppose, and I suspect that they occur more frequently in iron works than anywhere else; at any rate, it is there that they have most commonly come under my own observation.

"It is not at all surprising, then, that the puddler, or other workman, who has witnessed a few of such exhibitions, either in the form of verbal disquisitions or of so-called practical experiments, should acquire a prejudice against all sorts of 'schemers' and 'theorists,' as he calls them, and should become very sceptical concerning the application of science to his own business.

This scepticism and opposition is not likely to be removed by sending raw University men to teach the technical bearings of science to shrewd artisans. A man who has merely gone through the course of study necessary for the acquisition of his University degrees and honors, however high, has merely completed one-half of his education, as far as experimental or practical science is concerned; and if he imagines otherwise, he is likely to make such a display of his ignorance of the other half as will lead his artisan pupils to despise his teaching altogether."

That some railroad companies have had experience somewhat similar to that indicated by what Mr. Williams has written, we know quite well; but it only proves that education is not completed when the University degrees and honors are conferred. Of the two, the practical experience is much the most important qualification in the management of railroads, but the two *combined* are what is needed, and either one without the other is only the half of an education.

There has lately come forward an organized movement against permitting railroad companies to adjust their own rates of toll; originating in the Western States, it pervades, in a degree, all parts of the country. Regarded abstractly, and apart from any local or factionary conditions, it would, if successful, seem to have a destructive tendency not only to the business of railroads but to be at the same time and to the same extent adverse to the true interests of the general business of the country. With no intention of apologizing for or extenuating those breaches of trust and moral (if not legal) delinquencies shown by such managers of roads as have attempted to enhance and monopolize the profits of the carrying trade by officially entering into contracts with themselves, as individuals, and putting thus all and probably more than all, the profits into their own pockets, there are one or two points in this connection that suggest themselves as being worthy of more consideration than appear to have been accorded to them. In the first place, the yet very imperfect knowledge of the full expense incurred in moving freight through long stretches of country, with all the contingencies of every sort to which it is subjected in its passage over several different roads, would alone seem to preclude inflexible, specific rates or limits of toll. Then the great amount of interest due on the capital invested in the roads, its proportion of which this business ought to meet and also yield a fair marginal profit to the proprietors of the roads.

And although it may be alleged that some of these roads have cost \$40,000 or 50,000 per mile that might have been built for 25,000 or \$30,000 in cash, and other like plausible and reasonable pleas advanced, are these altogether really a sufficient reason why such interest should not, as a general rule, be met by an adequate tariff upon the whole business of the road? In almost every case, the only way any existing road could have been built was by the hire of money to pay for its construction at whatever interest lenders might demand, spite of all possible efforts of the corporation managers to procure it at low rates. If these Grangers or others who ever thought, or were liable to make use of the roads, had contributed in money sufficient for their construction, they might without doubt, have been built at one-third, or perhaps fifty per cent. less than they cost. Those who did build them had not money enough for the purpose, but had to buy it on their credit; for without the actual cash in the hands of their builders, procured some way, none of these roads could have existed at all.

Prior to the establishment of railroads, in almost every region there were highways, in a certain degree, adapted to the general need of the people. When railroads were anywhere instituted, it was, as a rule, because certain of the people along the proposed route felt a pressing need of greater facilities for the movement of persons and merchandise, and to such a degree that they were impelled to burden themselves with the liabilities of their construction. Every promise of gain connected with these improved facilities for the transaction of business, they gladly share with any who are willing to share in the cost of them. Whatever might be the immediate purchase effected by the pledged credit, whether money or *other* instrument or implements of grading, or bridges, or iron, or rolling stock, or anything that went directly to the construction or equipment of these railroads must, certainly upon due consideration, come to be regarded as a perfectly legitimate and really indispensable expenditure. These impellent citizens, in constructing railroads, usually strain to the utmost their own credit and that of the company's, whose financial standing thus becomes too low to invite favors from the illiberal, and the burden is left upon those who assume it. But would it not be gross injustice to impede any fair process by which they might free themselves and the railroad companies from the burden? Is it unreasonable that they should hold the right to demand such rates

of toll as they claim and can prove to be necessary to the maintenance and equipment of the roads by which the traffic is effected, and to provide for current interest upon the invested capital? More especially when the highest of these rates are seen to be much less than the previous cost of transportation, and when, also, it is manifest that in points of time and certainty of movement, freedom from injury, and many other respects, these railroads are found to be incomparably more advantageous to general traffic than the old highways at any price, even when these are supplemented by the canals. Would it be an uncivil retort if the railroad managers were to remind these clamorous persons who, as a rule, have contributed no part to the construction of railroads whose management they berate, that they can at any time buy into existing roads and then shape their course to suit the preponderating interests; that they may, if they choose, build competing roads and lose money equally fast, or that they can avoid them altogether and manfully use those ways only that they have themselves been compelled by law to aid in the construction of?

In the minds of those who give this subject the fairest consideration, and possess knowledge enough of it to appreciate fully its difficulties, it becomes a conviction, more positive the longer it is dwelt upon, that the only sure way to obtain permanently low rates on railroad traffic,—and especially on freight,—is to leave the problem untrammelled by legislative enactments, to those whose special business it is to study out *all* its intricacies. Who—possessing as good natural ability and better special attainments than those who would assume to dictate in the matter,—devote their daily life to developing the mode of operating and the rates that will bring the greatest amount of business to their respective railroads, then “the more the traffic the lower the rates may be,” is a truism recognized by all.

The following extract from the very able editorial of the *American Railroad Manual* for 1874, by Edward Vernon, Esq., is worthy of attentive consideration:

“The leaders of the Grange movement are, however, entirely at fault in their arguments against the discrimination between local and through tariffs; and an ‘*ex parte*’ view of the question has evidently only been taken.

Local shippers or travellers consider it an act of injustice to them, the original promoters and builders of the road, that the company should transport traffic which comes from a distance at

lower rates than that which originates along the line of the road. The arguments adduced by these chronic grumblers are doubtless plausible to those who are ignorant of the fact that *through* business can in almost every instance be transacted for one-third less expense than local, and that if this *through* traffic was not obtained, the managers would be compelled in most every instance to raise their *local* tariff, or otherwise allow the property to depreciate through an insufficiency of earnings to pay the current operating expenses, simultaneously with the required interest upon the liabilities of the company. It must be remembered that the *through* business is almost always competitive, and that unless rates were regulated to meet the competition of other rival lines, the traffic would be entirely lost. The natural result of a heavy *through* business is to increase the wealth of the country through which the road is located. For example, a railroad transacts a business of \$3,000,000 per year, of which two-thirds are derived from *local*, and one-third from *through* traffic. The operating expenses incident to the \$1,000,000 of through traffic would, at a very low computation, amount to \$600,000; and of this sum a considerable portion would be spent among the employees along the line of the road, and trade would be stimulated thereby. In this estimate no account is taken of the increased ability which the managers of the railroad company derive from controlling this *through* traffic to make salutary reductions in certain items of *local* traffic, and at the same time pay a reasonable dividend upon capital invested.

The reader will doubtless be able to follow our line of argument, which is substantially this: Pass laws prohibiting a railroad company from carrying traffic for a long distance, or over the entire length of its line, for a less rate per mile than for a short haul, and the result will be that *through* business will be neglected, or will be forced over rival routes on account of high rates; and in this case the *local* shippers must either contribute the whole amount of the loss, or the owners of the road lose the interest on their capital, in which latter case the *local* shippers must still furnish the entire operating expenses. Legislatures, in attempting to define for railroad companies a policy of management, should remember that corporations, in the transaction of their business, are governed practically by the same rules as individuals; that self-preservation is with them a natural instinct; and that they will not abuse any privileges of monopoly, knowing full well that if such abuses are perpetuated the result will be a loss of business, and

the creation of a competition which, under other circumstances, would never have existed. Besides, ownership and management should be identical; and no definite rule can be established for the government of railroad property, since each line is operated under different conditions. Each case, to use medical parlance, requires a separate and distinct 'diagnosis.' "

Dr. Lardner said in 1850: "The transport of goods, though presenting less striking phenomena (than passenger traffic) is attended with not less benefit to the country, and may soon, if duly cultivated, become the source of even more permanent and extensive profits to the railway establishments. But to realize these, it will be necessary that this branch of the business should receive profound study on the part of railway managers. The transport of goods is subject to more various and difficult conditions than that of passengers. If frequency of departure and extreme speed are not so imperatively demanded for it, the accommodation of the tariff, so as to render the transport compatible with the commercial condition of the local markets, is a subject out of which arise numerous and difficult questions for solution; and on the solution of these questions, and on the due regulation and graduation of the goods tariff, will depend altogether the extent and the success of this important branch of railway business."

Chief Justice Lawrence, of the Illinois Supreme Court, very clearly presents a fact of the most common occurrence on all railroads on which freight is moved, "for the purpose of shewing that a difference of price for the same distance of transportation, is not necessarily an unjust discrimination," as follows:

"That the naked fact that a railway company charges a larger sum for transporting freight of the same class over a given distance than it is charging for the same distance over another part of its road, or in the opposite direction, is not of itself conclusive evidence of an unjust discrimination, will be manifest on a moment's consideration. Take, for instance, the road with one terminus at Chicago and the other at East St. Louis. At one season of the year more freights are moving from Chicago towards East St. Louis than in the opposite direction. The consequence, of course, is that the supply of empty cars at the latter point will be in excess of the demand. There is a water route between these points, which also touches several intermediate stations upon the road. Now unless the railway company is permitted, under such circumstances, to induce shipments over its lines by lowering its

freights, it is evident that a portion of its cars will return empty. This would, of course, necessitate a higher charge for freight moving toward St. Louis than it would be necessary to impose if return freights could be secured by lowering the rates on the return trip. To forbid the company to lower the rates of return freights would thus benefit no one, and would work an injury both to the company and to the people along the line. At other seasons of the year, the larger amount of freight is moving in the opposite direction, and the operation must be reversed."

One more illustration of the difficulties to attend every arbitrary imposition of a tariff upon railroad companies, is furnished in the following recital by a veteran freight agent, speaking from his own experience :

"A railroad company ascertains that by reducing the rate of toll on a certain kind of merchandise to the minimum for which a fully loaded car can be moved over its road, a business that did not before exist, might be induced, involving a considerable amount of this kind of freight. For the sake of establishing such business, the company undertakes the transportation, and, so long as each car added to the train is completely full, a small profit accrues. But occasionally one car is found to be only partially filled, and if so hauled over the road at the rate per pound at which the freight is taken, it must be at a manifest loss to the company.—This freight is supposed to be of such a nature that it will admit of but few other sorts, perhaps none other, to be taken in the car with it.—Now it may be known to the freight agent where he can obtain enough more of the same sort of freight to fill the car full, but only by still farther reducing the rates so that no profit can accrue from this car, yet it will go through without loss to the railroad company if it goes safely. By thus doing he is enabled to continue sending such freight, and accommodate the owners of a business that may grow to be of very great importance to its locality and to the railroad. Here is an example, of not very rare occurrence, where two parties ship the same article in the same car between the same termini at different rates of toll, with not only no injustice to the party paying the higher rate, but really to his true advantage, because otherwise the railroad company could not continue to carry his merchandise at so low a rate as he was paying.

The railroad commissioners of Massachusetts, who were by a resolution of the Legislature instructed 'to consider the subject of

regulating railroad fares and freight by law, and report in the form of a bill or otherwise,' after a thorough discussion of considerable length, came to a deliberate determination 'that to apply one hard, unyielding law of charges to their system of railroads would be an experiment which the members of that Board were not prepared to recommend. That in their opinion it would be not only wrong in principle, but impossible in application. And they state in their fourth annual report that 'the whole subject has been thoroughly investigated by a joint select committee of both Houses of the British Parliament, and its conclusions were to the same effect.'" That committee said in part, "the attempt to limit rates and fares by the principle of fixing a maximum, has almost always failed in practice, and is almost always likely to fail, for the simple reason that the Parliamentary committees and authorities by whom such limits are decided cannot do otherwise than allow some margin between the actual probable rate, as far as they can forecast it, and the maximum rate; and cannot foresee the contingencies of competition, of increase in quantities, of facilities or economy in working, or of alteration of commercial conditions, which may occur in the course of years after such limits have been arranged by them."

It is respectfully submitted whether upon due reflection it will not become clearly evident to minds capable of regarding the question in its true aspects; to all but the hopelessly one-sided and impracticable natures, that neither the State nor federal authorities, nor the ablest experts in the immediate direction of railroads can impose any inflexible rates of toll upon them without inflicting serious, if not fatal injury, upon not only these most efficient agencies of a country's development, but upon a very large part if not the whole of the active business world? Does it not appear from such reflection that a truly unjust '*discrimination*' would thus be made against one business centre and another, here, there and everywhere almost, as well as against the railroads by any such unnatural and unconformable imposition?

In an uniform rate per mile, for example—leaving out of consideration the possible contingencies and relative expenditure of time obviously more favorable to the the shorter distance—the persons and freight moved distances of one hundred miles would have an unjust advantage over what had to be moved one thousand miles, by just so much as the less cost per mile of moving the latter might be. And if the tariff admitted of a fair profit on

the shorter distance, it might give the road an excess of profit on the greater distance. On the other hand, if the rates were predicated upon merely a fair profit to what should be moved the longer distance, the business of the shorter might have to be done at a constant loss.

The final result from such deprecated interference would be to limit the carrying business by railroads, and thus, by diminishing the amount of business done, effectually end the diminution of rates that everywhere keeps pace with the increase of business, aided by like expedients to those shown in the before given practical illustrations—such as 'wide awake' men avail themselves of in all successful private enterprises.

Would there not seem an equal propriety in constraining merchants to sell at uniform prices to all their customers at all times, or inhibiting carters, hackmen and other carriers from ekeing out their loads, when on their way to or from a station or any other point they found any one whom they could induce by a discount from the regular rates to become a contributor of anything that would aid in reducing the always burdensome proportion of dead weight that must be moved? The clamorous impertunity of hackmen at our city stations has become so exceeding an annoyance to travellers that measures ought to be devised for its entire abatement. This evil could be most readily reached and cured by a firm refusal from the municipal authorities to license any but the well known respectable portion of this body of necessary and useful citizens. But, while this is declared to be the existing theory upon which their licenses are issued, and quite a fair proportion of these men are respectable and perform their duties in a satisfactory manner, it is obvious that there are too many roughs holding evidence of the same legal right to places at our city stations as the deserving men whose business they injure and bring into disrepute by their rudeness. If railroad companies provided yard room within their own domain for hacks, they could easily abate the nuisance, by discriminating against the objectionable men, as is now very successfully done by the Portland Steam Packet Company.

But why should not every hackman be required by law to remain quietly upon his hack, where both the man and his carriage might be viewed together, and a satisfactory selection made by the traveller? or a hack ticket office provided within city stations, or a hack coupon be added to any ticket when desired, as is now

the partial custom in places? or some other and better way devised, so that not only the great annoyance of this importunity might be done away with, but also that the safety of travellers might be better assured than it now is in this respect? It is but citing a well known fact, that the present necessity of running this gauntlet of persistent men, and the apprehension of falling into the hands of an utterly reckless and unscrupulous one, is a serious discouragement of travelling to every unprotected female and timid person; and it is recognized by your Commissioners as demanding the attention of the properly constituted authorities.

It is respectfully submitted, whether further legislation is not demanded to restrain the cases of fraud so clearly set forth in the following communication from Chas. H. Foye, Esq., General Ticket Agent of the Portland & Ogdensburg Railroad? There cannot be a doubt that all trunk railroads on the great routes of travel have suffered losses of no small importance from the aggregate result of these fraudulent tricks.

PORTLAND & OGDENSBURG RAILROAD CO.

General Ticket Office,

PORTLAND, Me., December 10, 1874.

To the Railroad Commissioners of Maine:

* * * * *

Admitting the need and wise provisions of a portion of the act February 25, 1871, chap. 233 of Public Laws,—establishing the validity of railroad tickets, and virtually by extending the time in which passage may be claimed by holders, declaring them “good until used,”—yet experience has proved that the law, in its operation, bears heavily and in many cases unjustly upon railroad corporations in the absence of any provision against an abuse which has prevailed for a long time, and will prevail in spite of all precaution and care on the part of corporations and their officials, until the law shall be so amended or such new legislation provided as to protect the corporation from designed dishonesty.

The abuse complained of consists in the use and re-use of tickets by travelers—relying upon the indefinite provisions of the law and the helpless condition of corporations under its action,—in such manner as to escape detection and elude justice by a seeming compliance with the “rules and regulations,” until the practical result is reached that a ticket—no matter how many evidences of use it may bear—is good until the company issuing it can regain possession of it.

The purchaser of a regular ticket should have the right to commence his journey on any regular train best suited to his convenience; but his journey once entered upon, and his ticket presented on the cars, is a declaration that he intends making the journey designated upon his ticket. The ticket is sold with the understanding, primarily, that his passage will be continuous and without break from starting point to destination. Otherwise, the company selling the ticket defrauds itself of the difference between two or more short fares and one long or through fare, which, in some instances, is of considerable amount. To accommodate his convenience, however, most railroads provide a check—exchangeable for the original ticket—which allows the passenger to stop over at any desired point on the route, and resume his journey at will. This “stop-over check” then becomes a ticket for the remainder of his journey, to be treated in the same manner as other tickets when presented on subsequent trains. But under the law no person is obliged to ask for such a check; and it is not practicable for a conductor to collect tickets from his passengers until near the end of their journey, as their tickets are his only means of identifying the holders and their destinations. Nor does it help the companies to give a check for a ticket when presented, as, under the present law, such a check, or any check for passage would be held as good as a ticket.

In consequence of this indefinite arrangement, a party purchasing a through ticket at one end of the railroad does not deliver it to the conductor until he has passed all intermediate stations; he may, if he chooses, stop at any intervening point and legally retain his ticket; he may not reach the destination of his ticket for years, (may never have intended to travel so far, but purchased the ticket for speculation), yet holds it as good, and by carefully watching the conductor's routine in the scrutiny and cancellation of tickets, he may be able by cunning manoeuvring to ride several times, over portions of the route at least, with the same ticket. The way in which this is done is well-known among railway employees, and the trick has been learned by many of the traveling community to the considerable loss of railroad corporations.

There is but one remedy for this open door to fraud, and that is that the first cancellation of a ticket, i. e., the first punch by a proper conductor shall be a final one, debarring utterly any further use of a ticket so cancelled, except upon the day and train on which

it is punched. The law is just in making an *uncancelled* ticket good for its face; but the fact that a ticket has been presented and punched should be *prima facie* evidence that the party holding it started upon his journey with the tacit agreement to complete it without break, and that he did so complete it according to contract implied by the ticket. Should he start with other intentions or change his mind after starting, the railroads provide for the emergency by the "stop-over checks," and they should be protected by law from any attempt on his part to deal dishonestly, and defraud by the unworthy retention and use of a cancelled ticket.

Respectfully submitted.

CHAS. H. FOYE.

The following paper was contributed by a gentleman who—although not officially connected with any railroad at the present time—has improved his more than ordinarily good opportunities for observation, and his suggestions are entitled to the consideration of all who desire to add to the efficiency and economy of our New England railroad management:

"Among several things that I have noticed in the management of those railroads with which I have been well acquainted, I beg to name the following practices that seem to me to be evils that can be easily corrected, and which if overcome would tend to decrease the expenses of working railroads, enhance the receipts, add to the comfort of passengers, and facilitate the carriage of freight.

The first, is the speed of trains, or rather the time consumed by the trains in passing over the line of road. A quick passage of trains is a great desideratum, but it is well known that if trains are run at a high rate of speed the wear and tear of the working parts is very much increased. To accomplish a passage within a given time, the rate of speed while the train is in motion will of course have to be greater if long and frequent stops are made, than if the stops were shorter and less frequent. Therefore, to make a given time between termini and use a maximum speed, it is necessary that time should be economized to the utmost extent.

Let us now see if some improvement cannot be made in this respect, over the ordinary practice in running trains. Engines are now frequently run for a distance of 150 to 200 miles continuously, and very often for 100 miles. Wood and water would be taken twice or three times in running a distance of 100 miles. Ordinarily from ten to fifteen minutes are consumed for this purpose. To economise time for this I would suggest arrangements for

dumping on to the tender the load of wood or coal at one operation, and it could be done in a minute's time. Tender-tanks of larger capacity than now employed would be desirable when new engines are to be constructed, so that they may not have to be filled so frequently, and larger water pipes for supplying them would be an improvement. I would suggest that they be at least three times their present delivery capacity, so that the tender-tank may be filled in one-third the time now consumed. It may be said that the time occupied in supplying fuel and water to locomotives is often utilized by allowing the passengers to leave the train for refreshments. This I would dispense with altogether, by providing refreshments of a simple character on the train, thus allowing the passengers to take their refreshments at such times as they might choose, and give them ample time to enjoy it. Of course I am aware that it is not a new idea to furnish meals aboard trains, but it is not generally practiced, and it is quite a rare thing to find in use simple arrangements on passenger trains for supplying plain refreshments to travellers at moderate prices. The expensive hotel cars in use on some roads are not at all adapted to the wants of the public generally. They are too costly at the outset, and the idea of drawing such a heavy car for its temporary use as an eating saloon is ridiculous, and the expense of all this extravagant arrangement obliges the proprietors to charge very high prices for the food furnished, so high in fact, that they are beyond the means of the poorer classes.

Another idea I will also suggest which although not new, is an excellent one and would tend to economize time; that is to inculcate the practice of leaving trains by passing out the forward ends of the cars, and of entering by their rear ends. By this plan much confusion and delay would be avoided.

I think it will be seen by the above suggestions that a considerable time can be economized out of the usual practice, and if such changes should be adopted by railroads the maximum running speed could be much reduced in carrying out their present time tables; and I believe it would be more agreeable to passengers, as nothing is so annoying to the impatient traveller as the delays occasioned by the practices referred to.

Assuming that the present time-tables are satisfactory, it will not be denied that by thus decreasing the maximum speed of the trains a saving of expense would be effected in the repairs of both rolling stock and track.

Another source of great expense, in which economy has been totally disregarded by many railroads, is the consumption of fuel. By some railroads, whose straitened circumstances have obliged them to practice economy, it has been found that a great saving in the use of fuel can be easily effected by the proper arrangement of their locomotives, and a suitable system of measuring and accounting for fuel. This matter is worth the attention of all railroads, rich ones as well as poor ones.

In most cases the sleeping cars are not owned by the railroads where they are used, and the profits therefrom go to the coffers of outside companies. There is no good reason why sleeping cars should not be owned by the railroads. If they were, still larger profits might be derived from them. My own idea of this matter is, that every passenger car that runs on a night train should be a sleeping car, and that no passenger should be required to sit up all night without the chance of lying down for rest and sleep. The present system enables only the few more wealthy passengers to obtain a comfortable rest at night. The majority, including many women and children, are obliged to sit up throughout the night; and this for a single night is very trying, but when it is prolonged for several nights in succession, as is often the case where families are emigrating to the West, it is absolute cruelty. Passenger cars can be easily constructed of the usual length, that would provide sleeping accommodations for as many people as can be seated in the ordinary cars of same length, and the price for the use of the berths could be reduced to a very small sum, thus placing them within the reach of every one, and a considerable profit could then be derived from them.

Besides the above suggestions, I would urge the entire abolishment of the practice of issuing free passes. I know that this can only be done by the joint action of all the railroads. If this should be done, the receipts of the railroads would be considerably increased thereby; and certainly no interest needs fostering at the present time more than that of the railroads. If it is desirable on the part of a railroad to show favor to certain individuals, a system of half-price tickets might be substituted for the present practice of giving free passes.

Lastly, concerning the labor employed by railroads. There is no good reason why mechanics who work for railroads should not perform as much service as those who work for private concerns; but the fact is that no private establishment could exist long if

their employees worked in the manner of railroad mechanics. The fault is not so much with the men as with the system. The expenses of a railroad shop are paid out of the earnings of the railroad. The foreman of a railroad shop is not obliged to make both ends meet, as is the manager of a private concern. To be sure, a comparison can be made between railroad shops as to the cost of repairs, and some shops are certainly managed better than others, but none of them, as far as I have observed, practice economy as private establishments have to. Undoubtedly, any improvement in this direction would depend upon the managers of railroads, and I am sure that intelligent observation on their part would teach them the difference between the management of their shops and that of private concerns. I could name many of these differences, but the following will suffice for this article. Mechanics employed by railroads do not perform as much labor in a day as those employed by private concerns. This fact is notorious. Many useless or unprofitable men are also employed. This might not be noticed in ordinary observation, but close inspection and comparison would show it to be a fact. The foremen are often not strict in their attendance to duty. With some roads much money is wasted in extravagant ornamentation of their engines and passenger cars. Some of the managers of the richer roads may think themselves able to be thus extravagant, but does it not, after all, come out of the public? A rich road owes it to the public to be as economical as possible, and then give the public the benefit of the same by a reduction in rates.

I have no doubt that all of these ideas have occurred to many railroad men, but in answering your request I have written of those practices that have come under my observation, and which appear to me to be subject to improvement."

The following described case of reprehensible practice, (which is introduced for the benefit of both the railroads and the public), came to the knowledge of your Commissioners, and the facts as given below were procured from the writer, who is well known, not only as a man of probity, having personal knowledge of what he alleges, but as one who, from a very considerable experience in the management of the freight department of more than one road, understands fully both the rights of the public and those of the railroads.

"A case of bad management in the freight department of a New England road lately came under my notice. Some men being about

to engage in a small enterprise, called upon the railroad agents where their business was to be done, to ascertain the rate per car load on a certain kind of freight. The agents at each end of the route gave the same price. The freight was sent, but charged about one dollar per car more than the rate given. The full charges demanded were promptly paid. To the demand subsequently for the re-payment of what had been over-paid, the forwarding agent at first refused to respond, and would give but little attention to the matter; at one time denying that there was any agreement to carry at all. He gave as the reason for an over-charge that the tariff of the company required him to charge a higher rate on anything less than a full car load; (so that his charge on a car loaded short, with 16,000 pounds, actually would have been more than on a full car load of 20,000 pounds, the former being charged at third class, and the latter at fourth class rates.) This was probably true, for many freight trains are so carelessly made up as to develop such absurdities when strictly followed, but no one of correct business thought would commit such folly. In the case in hand, however, all the invoices were for car loads, and the mistake must have been the result of gross blundering. Finally an over-charge was admitted and—after a delay of some months—paid; but only paid when payment could no longer be put off. This is one of several such occurrences known; the rule to govern in them plainly ought to be that when money is paid in error it should be as speedily returned, and with as little annoyance to the aggrieved party as possible. What merchant could succeed if he transacted his business as this was done? Would not his commercial standing very soon be ruined? How can any railroad, whereof such practices are known, expect to retain business better than the merchant, if a fair dealing competitor can be found? Yet in the freight department of some railroads these errors are of frequent occurrence, and such a churlish, dogged unwillingness to correct them is manifested, that it is a settled opinion among business men, and of common remark, that 'it costs more to collect an over-charge than it comes to when obtained,' which is true if the amount is small." As an indication of a movement in the right direction, a copy of a circular is appended, that was issued during the past season by the energetic civil engineer of the Maine Central and Eastern railroads. Your Commissioners embraced the opportunity offered them to accompany the road officials in their examination of the several sections of the road referred to. The result confirmed the

opinion expressed in previous reports, that the adoption of a regular system of rewards or compensation for continued meritorious conduct in railroad service, would unquestionably prove the best inducement, short of giving them a direct interest in the profits that might be solicited from it, that could be offered for future zeal therein. But it is believed and submitted, that as far as practicable it should become the right of railroad employees to count confidently upon a steady advance of compensation for such faithful study of the company's interests, with an outward symbol worn so as to be manifest to the observation and recognition of all men; and that this should be as little as possible in the nature of a gratuity or donation, the object being to perpetuate the manly service of the thoroughly efficient, and to offer sufficient inducement to procure applications for employment from such men as can command advancement in most other pursuits.

MAINE CENTRAL RAILROAD,
Engineer Department,

PORTLAND, May 1st, 1874.

To _____,

FOREMAN SECTION NO. _____

Premiums will be paid to the three Section Foremen on each Division, who perform the most labor on their section, at the least expense. A careful examination of each section will be made the 1st of May, and a record taken of the condition of the track, side ditches, road crossings, and general condition of the respective sections. Another examination will be made the 1st of November, by the Road-masters and Chief Engineer, who will note the improvements and award the premiums. The premiums will be as follows, viz:

First Division—premiums of \$30, \$20, and \$10, respectively.

Second Division—premiums of \$30, \$20, and \$10, respectively.

Third Division—premiums of \$30, \$20, and \$10, respectively.

The improvements which will be especially noticed in awarding the premiums, are as follows, viz:

Alignment and surface of track,—side ditches,—road crossings,—clearing and burning brush and other combustible matter inside the fences,—the preservation of the Company's property from fire and theft.

THOMAS HOLT, *Chief Engineer.*

RAILROADS IN MAINE.

1. Androscoggin (see Maine Central).....	70 $\frac{1}{2}$	miles.
2. Atlantic and St. Lawrence (see Grand Trunk)...	82	"
3. Bangor and Bucksport.....	18	"
4. Bangor and Piscataquis.....	54 $\frac{1}{2}$	"
5. Bath Branch (see Maine Central).....	9	"
6. Belfast and Moosehead Lake (see Maine Central).	33 $\frac{1}{3}$	"
7. Boston and Maine.....	46 $\frac{1}{2}$	"
8. European and North American.....	114	"
9. Grand Trunk.....	—	"
10. Houlton Branch.....	3	"
11. Knox and Lincoln.....	49	"
12. Lewiston and Auburn Branch (see Grand Trunk).	5 $\frac{1}{2}$	"
13. Maine Central.....	127 $\frac{1}{2}$	"
14. Newport and Dexter (see Maine Central).....	14	"
15. Portland and Kennebec, including Somerset and Kennebec (see Maine Central).....	160	"
16. Portland and Ogdensburg.....	51	"
17. Portland and Oxford Central.....	27 $\frac{1}{2}$	"
18. Portland and Rochester.....	49 $\frac{1}{2}$	"
19. Portland, Saco and Portsmouth.....	52	"
20. Portsmouth, Great Falls and Conway.....	4 $\frac{1}{4}$	"
21. Somerset.....	20	"
22. St. Croix and Penobscot.....	22	"
23. Whitneyville and Machiasport.....	7 $\frac{1}{2}$	"
24. Portland (Horse).....	6 $\frac{3}{4}$	"
Total number of miles.....	967 $\frac{1}{3}$	

The Atlantic & St. Lawrence Division of the Grand Trunk Railroad, with L. & A. Branch.

Upon the eighty-two miles in Maine of this great international highway, there have been during the past year strikingly marked improvements, exceeding in some particulars those of any previous year. The track of the Maine portion of this road is now in very good running order throughout, most of it in a very superior condition, especially that portion between Portland and Lewiston, where steel rails have been laid upon large, sound ties, well packed in a new and heavy body of ballast, nicely surfaced and lined up.

This has unquestionably again become a grand good road, the substantial has been sought in every added construction, in renewals, and in fact all its appointments, and it is evident that no let up is

contemplated in its continued progress to entire completeness. The addition of a bow window to the newly built stations, projecting towards the track and permitting a more commanding view of the road each way, is a new feature, and has apparent advantages to recommend its general adoption.

The following named material has been put into the main line of this road during the past year :

Ballast, 51,712 cubic yards ; No. of ties, 47,600 ; steel rails, 39 miles.

Walker's grade bridge near Bethel has been rebuilt in iron ; the length is 84 feet. And there is now in course of erection an iron, in place of the wooden bridge at West Paris. With these completed, there are but the few wooden bridges existing upon this road named below—Pea Brook, Pleasant River, and Royal River at Yarmouth. This latter will, it is said, be rebuilt in iron during the coming winter. The Back Cove pile bridge has been renewed and is now in good order. The connection with the Portland & Rochester road at the Back Cove bridge, has been made.

In addition to the works on the main line, the Lewiston & Auburn Branch has been completed ($5\frac{1}{2}$ miles). This branch deviates from main line $29\frac{1}{2}$ miles from Portland, and thus places Lewiston 35 miles from Portland by this line. This branch has on it four iron bridges, viz : Androscoggin river, between Lewiston and Auburn, consisting of three spans—one span of 104 feet 6 inches, one span of 106 feet, one span of 154 feet 6 inches ; total 365 feet. The bridge carrying the Maine Central Railway over this branch track, one span of 44 feet 2 inches ; Taylor Brook, 35 feet ; Little Androscoggin river, 120 feet.

The Lewiston branch is laid with steel rails, and the stations at Lewiston and Auburn are completed, together with the freight sheds. At Portland, the new Atlantic wharf is about completed on the site of the one destroyed by fire in August, 1873. This new wharf is 450 x 325 feet, and is capable of berthing two ocean steamers in addition to the coasting business. The sheds on this wharf are in total 1,000 feet long by 50 feet in width, and the depth at average low water is 24 feet for ocean vessels, and 16 feet for coasting vessels.

On the 26th of September, the gauge of the Grand Trunk railroad between Montreal and Portland was changed from that of $5\frac{1}{2}$ feet to the prevailing one of 4 feet $8\frac{1}{2}$ inches. The following ac-

count of the process is taken from the "Portland Advertiser" of Monday, September 28th :

"Saturday at 9 o'clock, E. P. Hannaford, Chief Engineer of the Grand Trunk road, informed us that the track of that road had been changed from broad to narrow guage. That this was astonishingly quick work may be understood from the fact that it was not expected the change of guage would be completed before night. The whole distance was 291 miles, divided into one section of seventeen miles at South Paris, two of sixteen each at Norton Mills and Island Pond, twelve of fifteen each at St. Lambert's, St. Hyacinth, Upton, Acton East, Richmond, Windsor, Sherbrook, Campton, North Stratford, Groveton, Bethel, and Yarmouth, one of fourteen and a half at Bryant's Pond, one of thirteen and a half at Danville Junction, and one of six miles at Portland that included the company's yard here. Several of the section foremen commenced as soon as the last trains passed them, and had their work done by 11 P. M., Friday. The Berlin Falls section, under Mr. Cole, formerly in Portland, was changed in just two hours and fifty minutes. The Portland section, with forty men, under Mr. M. P. Murphy, assisted by Messrs. S. Smith and W. McSweeney, and a crew of forty men, were through in an incredibly short space of time, changing all the sidings and switches in the yard, beside the regular tracks. In fact, every section deserves great praise. Besides these changes mentioned, the guage from Richmond to Quebec, 100 miles, was also accomplished.

In order to achieve the change of guage as expeditiously as possible, Mr. Hannaford went over the whole line first, by hand-car, ascertained how many men would be needed, and discovered that twelve hundred men must be put on the sections. Six hundred were brought from the western portion of the road and added to the six hundred on this end of the line. Two gangs, averaging eight men in each gang, were put on either end of each section and worked towards the centre.

So quickly has the work been performed that it was not necessary to carry out the order issued by Postmaster Goddard, to send the Canada mails for a day or two via Boston. A train left this city at 1.20 P. M. for Montreal, with passenger cars and the mails, and picked up the workmen along the various sections. This is the first narrow-guage train over the Grand Trunk from Portland, and is under the charge of Conductor Woodman, who conducted the last broad-guage train. A continuous narrow-guage track is

now afforded from Portland, Me., to San Francisco, Cal., and from Portland to Boston."

The directors of the Atlantic & St. Lawrence Railroad Company are St. John Smith, Portland, Me.; John B. Brown, Portland, Me.; Charles E. Barrett, Portland, Me.; H. J. Libby, Portland, Me.; Alex. T. Galt, Sherbrooke, Ca.; C. J. Bridges, Montreal, Ca.; S. E. Spring, Portland, Me.; J. Hickson, Montreal, Ca. Hon. John B. Brown of Portland, is President of the Atlantic & St. Lawrence Company; Charles E. Barrett, Esq., is Treasurer. Hon. Richard Potter of London, is President of the Grand Trunk Company; Hon. Joseph Hickson of Montreal, is Managing Director and Treasurer.

Boston and Maine Railroad.

The management of this road is very successful, and its general condition excellent. This has been pronounced by travelers of wide experience, one of the very best railroads in the United States, and, taking it all in all, this commendation is incontrovertible. It is nicely and substantially constructed, and thoroughly equipped. The singular immunity from casualties, so long enjoyed by this corporation, while proceeding out of a generous expenditure on the part of its direction, has undoubtedly been very largely due to the peculiar power of developing good qualities in the operatives, as well as attracting and securing their warm personal regard that was possessed by the former superintendent. More than on any other railroad in Maine, has here been observed for years, a complete agreement and harmony between the minds of the employees and that of the superintendent. All were evidently working cheerfully and zealously together for the true interests of the corporation, under a most scrupulous regard for the spirit as well as letter of the rules emanating from that leading mind; and for the right and dues of each other.

While few are endowed with the well balanced mind and peculiar executive ability which at a glance comprehends all, and surely provides for the proper and seasonable performance of duty by each subordinate, without pretentious self-assertion of its own offensive vanity, but a quiet unassuming firmness that commands the situation and secures the lasting regard of the subordinates, always ready to spring forth in a respectful recognition of strength held in reserve—yet it is reasserted here, that such a system of rewards for meritorious service as well as penalties for faults committed, as has been indicated in former reports, and somewhat

fully discussed in the last, cannot fail to procure from the agency of the average man of to-day equally good results to public safety that have been, in the absence of such a system, due to inborn virtues of the ever exceptional and too often vainly sought manager.

Attention is called to the long, massive sticks of timber raised upon blocking to a level with the platform car, at various points upon this road, in readiness for instant use in any emergency, as an example worthy of being followed by all other roads. It is suggested that the present low price of the material would warrant the substitution of iron girders, of similar length, that might by an occasional application of paint be thus exposed perpetually without danger of decay.

In their report, issued on the 9th inst., the Directors say :

“The belt or pile structure on the east side of our wharf in Portland was found to be unsafe for the passage of locomotives. Accordingly, large and expensive repairs and improvements have been made thereon. Nearly the whole of the east side has been reconstructed with the best of oak piles, and the same has been thoroughly re-planked. Two substantial drops have been built at the end of the wharf, for the accommodation of the eastern steamers in the reception and delivery of passengers and freight. Nearly three hundred feet of sheds have been built over the same, for the purpose of covering our passenger trains running to and from the eastern steamers, and also for the accommodation of the new semi-weekly line of steamers between Portland and New York who lease a portion of the wharf.

The dock on both sides for a distance of some three hundred feet in length, has been dredged to a depth of sixteen feet on the east side and nine feet on the west, below mean low water. This increases considerably the facilities for business at this point.

In the annual report of last year, it was stated that by means of this wharf purchase, and the rail connection secured thereby, we were enabled to place our cars within the yards of the largest lumber dealers in Portland, and within the means of close connection with steamers for Halifax, St. John, Bangor, Mt. Desert, etc. This has been done during the past summer, and passengers have found our cars in close proximity to the steamer's landing. The business from this connection with the steamers in the winter season is of little account; but during the summer, we anticipate in the future a large and increasing business, especially after the opening of the Lowell and Andover Railroad.

At the close of business on the thirtieth day of September last, there had been expended, on account of the extension in Maine, including the wharf purchase, \$4,163,344.74, as follows :

Graduation and masonry.....	\$1,619,260	32
Land.....	1,191,823	19
Engineering and other expenses.....	161,152	06
Superstructure, including iron.....	655,256	95
Bridges.....	315,369	57
Stations and buildings.....	178,174	36
Fences.....	42,308	29
	<hr/>	
	\$4,163,344	74

With the exception of some few claims for land damages yet remaining unsettled on account of legal proceedings connected therewith, and two or three bridge structures for highways or streets that may have to be built, it is hoped and believed that the whole expenditures hereafter on the extension may properly be all charged to expenses.

The number of locomotives in the service of the company remain as at date of last report, 69. One new locomotive has been added during the year, but it takes the place of one worn out and broken up.

During the year we have added 2 new passenger cars, 2 long baggage cars, 6 freight cars, and one snow plow. We have now 122 passenger cars, including 3 parlor cars, and 1,406 freight cars.

As a true measure of economy, the track and road-beds have been kept in good condition; 16 miles have been re-laid with new iron, and $10\frac{3}{4}$ miles with steel rails, during the year. We have now on the whole line of road $60\frac{3}{4}$ miles of steel rails. In this connection it is gratifying to be able to state, that the steel rails first laid down on this road in the year 1867, at a point where an iron rail had to be renewed every year, are as yet but little worn, and will serve us for three or four years longer; at other points of less severe service they show no appreciable sign of damage or wear, and very few of them have ever broken. We cannot but believe that the expense of our road repairs must be greatly reduced in the future by the use of steel.

The large number of bridges on the line of our road calls for constant care and watchfulness. The most of those on the extension are of iron, and we are substituting iron for wood on the other portion of the road so fast as renewals become necessary.

Notwithstanding all our important wooden bridges are carefully watched, and every possible means used to secure and protect them from fire, yet they are a constant source of anxiety to the officers of the road."

The directors of the Boston and Maine Railroad Company are: Nathaniel G. White, Lawrence, Mass.; George C. Lord, Boston, Mass.; Amos Paul, So. Newmarket, N. H.; Nathaniel J. Bradlee, Boston, Mass.; Wm. S. Stevens, Dover, N. H.; James R. Nichols, Haverhill, Mass.; John Felt Osgood, Boston, Ms.; Samuel Spring, Portland, Me.; Nathaniel G. Farwell, Lewiston, Me. Nathaniel G. White, Esq., of Lawrence, is President; and James T. Furber of Boston, is General Superintendent.

Portland and Rochester Railroad.

There has been in the roadway of this corporation very marked improvement during the past year, most noticeable in the track, but extending to a renewal of such bridges as needed it, and a general betterment of the whole road.

Trains have been run with great regularity throughout the year, and the running department appears to have been managed in a business like and very judicious manner. The special improvements made during the year are as follows:

The Marginal Way has been completed sufficient for the purposes of the road, and a track laid and furnished its entire length from the Portland station to the Grand Trunk Railway, a distance of one mile. The section of track between Morrill's Corner and Cumberland Mills, formerly one of the worst sections in the road, has been raised twelve to eighteen inches with gravel, a portion of the old iron replaced with new, and the balance put in good order, making the entire section one of the best in the road. The only other section of the road in bad condition—in Hollis—is now undergoing like improvements, and will be completed this season. Shaker bridge, in Alfred, has been strengthened and repaired with one hundred oak piles of the largest size, and a corresponding amount of pine caps and stringers. Five miles of new fence have been built, ninety tons of new rails and 12,200 oak and cedar ties laid.

In concluding their report issued Oct. 7, 1874, the Directors of this road say:

"The future business of the road can best be estimated by a reference to its past earnings, and a comparison of such earnings

with those of other roads similarly situated. The business of the road in the past is as follows :

	1868-69.	1869-70.	1870-71.
Open to Alfred.....	\$64,190.73	\$74,426.18	\$85,569.90
	1871-72.	1872-73.	1873-74.
Open to Rochester	131,561.28	142,570.89	152,570.00

The above shows an increase on the opening of the road to Rochester of more than 53 per cent. over the preceding year, when it was only open to Alfred. Should only a like increase follow the opening of the road to Nashua and New York, the business for 1874-75 would be \$224,500, a sum sufficient, after allowing 70 per cent. for operating expenses, to pay the interest on the \$700,000 and \$350,000 loans and the interest on money advanced by the city to pay on July, 1874, and January, 1875, coupons.

The earnings of the Worcester & Nashua Railroad, which is about the same length as the P. & R., for the three years after its opening, were as follows :

EARNINGS.....	1848-49.	1849-50.	1850-51.
	\$116,429.80	\$144,438.60	\$153,791.68

(Opened 1848.)

Its earnings, according to the last annual report of its directors, which we have at hand, were, 1872, \$581,358.72.

There are more elements of business for a railroad on the line of the Portland & Rochester road now, than existed on the line of the Worcester & Nashua road at the time it was built. The Portland & Rochester crosses more and better water power between Portland and Rochester than exists on either of the lines between Portland and Boston, within the same distance, and better than exists on the line of the Worcester & Nashua, between Worcester and Nashua; and the local business on all these lines has been developed and is derived from the improvement of the water power, which was brought into use by the opening of the railroads. There are no more desirable water powers in the country than are crossed by the Portland & Rochester Railroad at Sacca-rappa, Saco River, Springvale and East Rochester, and they will not long remain unimproved after direct communication brings them to the attention of the capitalists of Massachusetts, who can appreciate their advantages."

The Portland & Rochester Railroad is now open to Nashua, where it connects with the Nashua & Worcester, and has an elegant through train for New York passengers.

The Directors of the Portland and Rochester Railroad Company are John Lynch, Rufus E. Wood, A. K. Shurtliff, H. J. Libby, Geo. E. B. Jackson, Geo. P. Wescott, Charles McCarthy, of Portland, Me.; E. C. Wallace, Rochester, N. H.; W. G. Ray, N. Y. City; Frederick Robie, Gorham, Me.; Joseph S. Ricker, Deering, Me. Hon. John Lynch of Portland, is President; Col. Frederick Robie, Clerk; W. H. Conant, Esq., of Portland, Treasurer; and W. H. Turner, Esq., of Portland, Superintendent.

Portland, Saco and Portsmouth Railroad.

In the management of this road, the Eastern Railroad Company having leased it, seems determined to spare no expense, both as to its way and equipment, in affording every facility for despatch of business, the safety and every comfort of travellers upon it. The history of the past year, in the regularity of its trains and freedom from casualties, is an earnest of promise that cannot fail to renew the confidence of the public.

While it is perceptible that the zeal and courtesy of its employees generally seem quickened in a positive degree, it would be neglectful, in any notice of this road, to fail in testifying specially to the very efficient manner in which the business of the station and yard at Portland is conducted. This is the more worthy of observation, because this is the terminal station of several important railroads, each doing a very considerable traffic in freight and passengers. And despite the fact that trains are leaving this station so nearly at the same time for widely different points, as to necessitate their being together therein, mistakes and confusion are of extremely rare occurrence; and, if they ever occur, are attributable entirely to the heedlessness of those who go astray, as there are always at hand more than ordinarily attentive and well informed officials to set them right. This company has now one of the most convenient of yards in Portland for business, soon to be free from any objection from highway travel by the erection, now in progress, of a long and substantial over trestle bridge.

The materials used on P. S. & P. division E. R. R., during the past year, have been as follows, viz:

Sleepers, 34,332, laid in track; new iron rails, 560 tons laid; new steel rails, 60 tons laid; side tracks laid, $1\frac{1}{2}$ miles; six miles of track has been raised with ballast. New buildings—new coal shed at Portland, 25 x 100 feet; new rail repair shop at Kenne-

bunk, 30 x 60 feet; wood shed at Conway Junction; new iron bridge at Biddeford, 606 feet long, 5 spans—3 spans 132 feet each and 2 spans 100 feet each; new bridge at Nonsuch river; retaining wall at Mousam river, Kennebunk; new bridge over tracks from Clark street to Portland bridge, in process of construction; improvements in freight depot at Portland.

Directors of Eastern Railroad Company—John Wooldredge, Lynn, Mass.; Thornton K. Lothrop, Franklin Haven, Frank Jones, B. F. Stevens, Boston, Mass.; H. L. Williams, Salem, Mass.; Enfield Johnson; Anson P. Morrill, Readfield. John Wooldredge, Esq., of Lynn, Mass., is President, and C. F. Hatch, Esq., of Boston, General Manager.

Portland and Ogdensburg Railroad.

This corporation continues to sustain fully its early acquired reputation as a well constructed, substantial and suitably managed railroad. Its fortunate position respecting gravel has been so well availed of that it is kept in excellent surface, and its trains move over it with remarkable smoothness. Its running department is maintained in an economical but unvarying state of efficiency. It may be said of its management that it is quiet, prudent and sagacious. The grading and masonry of the extension into New Hampshire of this road, is nearly completed through the White Mountain Notch, and to a connection with the Boston, Concord and Montreal Railroad at the Fabyon House, four miles west of the Notch summit. The track is already laid to within six miles of the Crawford House at the summit; giving this road now a continuous main track from Portland eighty miles in length; nearly three miles of it being upon the maximum grade required to surmount this divide of the waters of the Saco from those of the Ammonoosuc—at a rate of two and two-tenths feet in one hundred, or about one hundred and sixteen feet per mile. An interesting experiment was tried in November upon this maximum grade of the road with a locomotive named the Carrigain, built by the Portland Company for service upon the division ending at Portland, where the gradient is very much lower. The Carrigain worked, in a perfectly satisfactory manner, over this grade of one hundred and sixteen feet per mile, nine loaded cars, a gross weight of more than two hundred tons, besides the tender. Neither the

track nor the engine were in the best possible condition, the latter having come out of the shop about the first of May and run regularly through the season with the train from which she was taken on the day of this experiment, and the former had not only not been surfaced, but the ties were loosely laid upon the sub-grade, and the rails were in places covered with snow.

The directors of the Portland and Ogdensburg Railroad Company are Samuel J. Anderson, D. W. Clark, J. E. Donnell, Portland, Me.; D. R. Hastings, Fryeburg, Me.; H. N. Jose, W. F. Milliken, W. L. Putnam, Portland, Me.; J. S. Ricker, Deering, Me.; A. Spring, Portland, Me. Samuel J. Anderson, Esq., of Portland, is President; and Jonas Hamilton, Esq., of Portland, is Superintendent.

Portsmouth, Great Falls and Conway Railroad.

Although but a small portion of this road is located within the limits of this State, yet from the fact that this portion is a section of a long line of road extending from Boston to North Conway, New Hampshire, and a line that claims importance, from the fact that frequent and rapid excursion and express trains are run for the accommodation of summer pleasure travel, renders it highly necessary that even this apparently insignificant section of road should be kept up to the highest standard of safety. Taking this view of the case, the Commissioners have always given close attention to the condition of the road, and have at various times during every season made examinations and suggested such repairs and improvements as seem in their opinions necessary for the safety of the trains.

There are three considerable bridges within our limits, one on the Great Works stream, between Conway Junction and South Berwick, a long trestle bridge over the same, and the truss bridge over the Salmon Falls river; both of the latter in the immediate vicinity of Salmon Falls Village. The road-bed and track are in fair condition, but some new iron and sleepers will be required the coming year, and a portion of the road-bed needs more gravel. The bridges have been repaired and strengthened from time to time, as suggested or directed by us, and are now in safe condition. This road is controlled by the Eastern Railroad Company, and operated by them.

Consolidated European and North American Railway, and Bangor and Piscataquis Railroad.

The E. & N. A. Railway, under articles of agreement and consolidation of December 1, 1872, now embraces 114 miles of road in Maine and 88 miles in New Brunswick, and operates, under lease, but practically by purchase, the Bangor and Piscataquis road, 48 miles to Guilford, making 250 miles of railroad, 162 of which are in Maine.

It has built and extended its B. & P. branch during the past fall from Guilford to Abbot—six and two-fifteenth miles—on its way to Moosehead Lake, 22 miles farther on. Trains have just commenced running over this extension, and the road will probably reach the Lake within a season or two. There will then remain but a link of some 65 miles between it and a road in process of construction, coming east to the Boundary, via. Lake Megantic, from Lennoxville on the Grand Trunk. This link made, a connection will be formed which will open a route very direct between the Canadas and the Maritime Provinces, and which will save in distance and time, enough to compensate for a large outlay in its construction. For it brings Montreal and Quebec nearer—some 130 miles it is said—to St. John than does the route by the Grand Trunk via. Danville Junction. It must, therefore, if opened, become a great highway of travel and of the transportation of products and merchandise between the Upper and Lower Provinces of the New Dominion. And it would not now be safe to estimate the volume of that future traffic, for the Dominion is territorily larger than the United States, and has advantages of forest and land and sea-coast destined in time to make it a power of the first magnitude.

The opening of this route may be long delayed, or may be made in the early future. The map indicates a feasible route by the valley of Moose river to the boundary; and the partial reconnoissance which has been made of it confirms the impression of its feasibility, and shows the country through which it passes to be full of timber, and to have much good tillage land. If the route is practicable, it presents a project of much interest to Bangor and Eastern Maine, as well as to the Dominion. For, besides bringing Eastern Maine some 130 miles nearer Montreal and the West than by the Grand Trunk, it will for this very reason tend to change the course of trade. The products of the West—corn, pork, and flour, destined for Eastern Maine or the Lower Provinces

would then naturally come this way, and the products of New Brunswick and Nova Scotia, salt, fish, coal, or other merchandise, not seeking water communication, would also find the most direct route westward over it. Travel from the East, bound for Vermont and the West, would seek its quickest passage *via* the Piscataquis and the Megantic to a connection with the Passumpsit road at Lennoxville, and thence by the Passumpsit to Vermont, and by connecting roads to the West or by the Grand Trunk to Montreal and the West.

There is also another road being built, commencing at Quebec and extending southward, designed to connect with the Somerset road, in Maine, extended, or to find other outlet to the interior of the State and the Atlantic coast. This road will cross the Megantic, and thus give, if both are made, to the populous parishes south of the city of Quebec, and to Lower Canada, a choice of routes South, according as their destination or best markets may be, to Bangor or the Kennebec towns.

The developments of twenty years, which is a mere point of time in the life of a State, will unquestionably make great changes in the Dominion and in Maine. These projects of railroad extension may in the meantime be consummated, and the roads already begun be completed; when these new routes will become important additional channels of trade, and travel between the Canadas and the maritime Provinces, and between them and Maine.

The Bangor and Piscataquis branch is in very good condition. The long span of the Black Island bridge should be strengthened the coming season. The E. & N. A. Railway proper has been a little neglected the past season. It has not been kept up so well, graveled and ditched, and the track so well cared for as economy in the end and the true interests of the road, we think, required; though a very considerable expenditure has been made upon the road and its bridges. It needs, however, more ballast from Milford to Bangor, some new iron and in places new ties. Some of its bridges may require attention and strengthening in the spring. The present large business upon the road, and its much larger prospective increase, demand that it be kept up always in its condition and equipment as a first-class road. And the management no doubt intend that it shall be so.

The E. & N. A. Railway Company still retains the lands donated to it by the State, 700,000 acres in all, as we understand from the Land Office. The Land Agent informs us that the road claims

about 280,000 acres more, to which, however, he thinks it is not entitled under the Resolve of March 3, 1868. And in a case growing out of the seizure by the Land Agent of timber cut upon Township No. 11, Range 3, under license from the Railway Company, the Courts have given an opinion sustaining so far the views of the Land Agent, and deciding that said Township did not pass to the road under its deed from the State of May 13, 1868.

By Resolve of March 21, 1864, the right to cut the timber and lumber till 1874 upon ten Townships, containing 242,366 acres and being a portion of the said 700,000 acres, was reserved for the Common School fund. The same reservation was made in the Resolve of March 3, 1868, and the time for removing the timber was extended to 1884. The Land Agent has sold the right to cut this timber during the unexpired term.

The bonded indebtedness of the road is a mortgage to the city of Bangor, under date of January 20, 1869, for \$1,000,000 on that portion between Bangor and Winn; and a mortgage under date of March 1, 1869, for \$2,000,000 on the road from Bangor to Vanceboro', 114 miles, and upon the lands aforesaid donated by the State. This last mortgage is a second lien on the portion—55 miles—from Bangor to Winn, and a first mortgage upon the balance of the road to Vanceboro' and the lands. There are \$2,000,000 of debentures upon the 88 miles in New Brunswick.

The bonded debt upon the B. & P. branch is \$600,000 of 6 per cents., and \$122,000 of 7 per cents. There is a second mortgage liability of \$100,000 on the road from Bangor to Guilford.

The authorized capital stock of the Consolidated

E. & N. A. R. proper is	\$17,500,000 00
The amount called and paid in	4,249,966 50
Authorized capital stock of the B. & P. branch	2,000,000 00
Amount paid in on the B. & P. branch	356,900 00
Cost of both roads	10,950,665 43
Cost of equipment	752,769 12
Whole debt of both roads, less dues	7,018,516 51
Earnings	706,757 57
Cost of operating both roads	314,170 59

Average rate for passengers, about $3\frac{1}{2}$ cents per mile; for freight, about $3\frac{1}{2}$ cents per ton. Average rate of speed per hour for passenger trains, 22 miles; for freight trains, 13 miles.

Directors—G. K. Jewett, E. R. Burpee, Charles P. Stetson, Samuel P. Hersey, Arad Thompson, M. S. Drummond, James W.

Emery, William G. Case, N. Woods, Thomas R. Jones, James R. Ruel, A. Jardine, W. Robinson. G. K. Jewett, Esq., of Bangor, is President; E. R. Burpee of St. John, is Vice President; M. H. Angell of Bangor, is Superintendent; H. D. McLeod of St. John, is Assistant Superintendent; and Hon. N. Woods of Bangor, is Treasurer.

St. Croix and Penobscot Railroad.

This road commences at Calais and extends to Princeton—main track 22 miles; sidings 7 miles, 4 of it in New Brunswick. We have made two careful examinations of it during the year, and believe it safe for the kind and speed of trains run over it. Its business is largely the transportation of sawed lumber; its passenger traffic is comparatively light.

Mr. Sawyer, the Superintendent, gives his undivided attention to the care and management of the road, and has it completely in hand; he goes over it in a hand-car almost every week, to look after the details of matters which might escape a more rapid inspection. He has adopted a plan we have not noticed elsewhere, of numbering all the openings upon his road and placing the numbers in large raised figures upon iron plates, attached to a sleeper, at the approach of every bridge and culvert. So every opening is known by its number, its size and material being also always known; instructions for repairs or other directions about them to men upon the road can always be concisely and intelligently given. And besides, places between two numbers are easily designated in any orders to trains or to section men. A plan attended with trifling expense, and it must be with considerable convenience.

Fifty tons of new rails have been laid during the season; more are needed. The track has been finely raised in places; more should be raised. Many new ties have been put down, more are wanted; but the road is remarkably well kept up considering the rigid economy of its management.

Our attention was called to a new passenger car, made by Bradley of Worcester, costing only \$3,000, and weighing seven tons, above the trucks—neat, plain, strong, and as comfortable as one costing \$5,000 to \$7,000, for aught we could see. And we are always glad to notice economy in this direction; for, as we said last year, too much money is, we believe, often put into the mere show and ornamentation of cars, without adding to their strength or comfort.

The company have 4 engines, 4 passenger cars, 4 baggage cars, 230 flat and lumber cars.

The capital stock is \$2,000,000; amount paid in \$100,000. A dividend of \$3,000 was made February 2, 1874; the funded debt is \$222,700; floating debt \$7,000; the gross receipts \$75,312.75, of which \$7,089.63 was from passengers, and \$65,620.16 from transportation of property; cost of operating \$46,574.42; number of passengers 26,498, rate per mile about 4 cents.

No accident to person or property—a fact that cannot be too much commended, for accidents are always the result of neglect remote or proximate to the casualty; here, then, was no neglect in the supervision or in the management.

The company have not abandoned the idea of extending their road to Grand Lake stream, 12 miles, to secure the business of the tannery there, and with the ultimate view of a connection with the E. & N. A., at some point beyond; but the depression of business, and of the lumber trade in particular, that Calais and St. Stephens are much dependent upon, places this project in abeyance for the present, if not for some time to come.

Directors—Geo. M. Porter and John McAdam of St. Stephens, E. A. Barnard, H. M. Hill and W. W. Sawyer of Calais. George W. Porter, Esq., a merchant of St. Stephens, is President, and W. W. Sawyer, Esq., of Calais, is Superintendent.

Houlton Branch of New Brunswick and Canada Railroad.

This branch is a continuation of the N. B. & C. Railway from Debec station in New Brunswick to Houlton—8 miles—about 3 miles of it being in this State. It is a well made road—has no bridges or large culverts—its sleepers are good and placed thick in track; the rails are light. The freight and depot buildings at Houlton are commodious and convenient. The rolling stock is the same used upon the N. B. & C. road, and is suitable and adequate to the business of the branch.

The N. B. & C. Railroad is not within our jurisdiction, but we went over that portion of it between Houlton and St. Stephens in reaching the Houlton Branch and the St. Croix & Penobscot,—separated from it only by the St. Croix river—and for the reason of its thus close connection with the railroads of the State and our knowledge of it thus derived, we have pleasure in saying that it appears to be managed with skill and success. It is far from being a first-class road, or of being in perfect condition. Its re-

ceipts heretofore, we suppose, have not justified large outlays in repairs, but it avoids accidents and runs its trains with promptness and regularity, and its traffic is large and increasing. Mr. Osburn seems to have educated himself to all the exigencies of his position, and to have disciplined his employees to a prompt observance of his admirable "Rules and Regulations."

When we were at St. Stephens, Mr. Osburn had just completed a turn-table, which we should have been glad to present a drawing of. Its peculiar merit consists in its easy management and cheapness of construction. It appeared strong and durable. We noticed in use also upon some of his freight cars in the yard, a new lubricator of his own invention, which he was testing, and which we hope he may soon introduce to the railroad world. It has the advantage over the old journal box, of requiring less oil and no packing, and has no perceptible waste.

Directors—Hon. F. A. Pike, Calais; J. C. Madigan, Houlton; F. N. Todd, J. S. Murche, J. Chipman, H. Osburn, St. Stephens; B. O. Stevenson, St. Andrews.

Hon. F. A. Pike of Calais, is President of N. B. & C. Railroad. Henry Osburn, Esq., is Manager, and W. Stuart, Esq., Superintendent. Their offices are at St. Stephen.

Portland and Oxford Central Railroad.

An injunction was issued by the Supreme Court Nov. 18, 1873, as stated in our report last year, enjoining the road against the running of passenger trains. No application has been made for the removal of the injunction, and no repairs, that we are aware of, have been made with a view to such application. The rolling stock has been taken off, and the road apparently abandoned. Whether the bondholders intend by and by to rebuild it or to take up the rails, we are not advised. The bondholders, so far as innocent purchasers of the securities, are entitled to favorable consideration in the furtherance of their interests, so far as the equities of the case can give it to them.

The road from its very inception gave rise to much litigation, and to serious losses to the towns through which it passes, some of which contributed largely toward its construction without having received from it in return such benefits as they reasonably anticipated; and now, since its apparent demise, it is likely to entail upon its administrators questions of some difficulty, if not further litigation.

Have the mortgagees a right to take up the rails, and abandon? or have the public, which granted the charter, a right to insist upon a continuance of the road? and if so, how can they enforce such right? Or the towns and citizens who contributed toward its construction—have they any lien or interests in it which the legislature ought, or the courts can, protect?

The State, too, may have an interest in the derelict. The Railroad Commissioners were required by the law to examine the road, and if found unsafe to apply to the court for an injunction against its running passenger trains. The Commissioners performed their duty, and found it unsafe, and asked the intervention of the court to protect the lives of citizens liable to pass over it. But so persistent was the management in its refusal either to make the road safe or to assent to the enforcement of the law for the protection of passengers, that unusual expense was incurred by the Commissioners in procuring the injunction. This expense the State may audit and pay, as incurred by its command and under its direction, and when paid ought it not to enforce its reimbursement from the road thus in fault?

The Railroad Commissioners have no power conferred by statute over the railroads to compel them to pay for their examinations. It is voluntary on the part of the roads so far as the Commissioners are concerned. The only provision touching the matter is, that the Commissioners are required to give an annual certificate of the condition of the road, and this is to be filed by the corporation with the Secretary of State; and if not so filed, the road incurs a penalty of \$1000—half to the informer and prosecutor and half to the State. And this penalty this road may have been liable to, if any one had pleased to play the role of volunteer prosecutor; but then it had no funds to pay the penalty if imposed by the Court. And further, if this provision was intended for the benefit of the Railroad Commissioners, but we think it was not, the penalty provided in section 73, chapter 51, Revised Statutes, does not attach to the non-filing of certificates of intermediate special examinations made with a view of a complaint for unsafety, and an application for an injunction, for no such certificate is made or given; but only to the non-filing of the annual certificate of the condition of the road and the non-payment of the Commissioners therefor. So the Commissioners in this case, as in all cases like it which may arise upon other roads, were

without remedy for their services rendered or expenses incurred.

It was suggested at court, that the examinations of the Commissioners with a view to an injunction, and their expenses incurred in prosecuting their complaint against the road, might be taxed as in criminal cases in behalf of the State, to be paid by the county or State. And the proceedings have many of the characteristics of a criminal prosecution, both in the manner of their presentation and in the offence alleged. They are required to be managed in court by the attorney general or the county attorney, and they are based upon a grave charge by the railroad commissioners, that the railroad company are running cars over their road when so out of repair as to endanger the lives of passengers, and the charge when sustained is followed by an injunction which summarily stops the trains and thus arrests the danger, or if not obeyed which invokes at its beck the whole power of the State to enforce its mandate. But there was no precedent for taxing them as criminal costs—no case of the kind had before ever arisen in the State—and it was deemed wiser in the absence of precedent and of statute enactment upon the point to refer this new phase of railroad experience to the pleasure and disposal of the legislature. Cases of the kind might hereafter arise upon other roads, and it might not be unwise to provide for such contingency; and besides, it was idle to tax costs to a corporation which had no personality to imprison, and in this case, which had no funds in its treasury to seize and no property to levy upon.

The position of this road is anomalous and unfortunate; like too many other roads, its stockholders have lost their entire investment in it, and the innocent holders of its bonds have suffered a depreciation which we hope may not approximate a total loss, and yet the route is one passing through a good country and enterprising communities, where, if a road were rebuilt and well managed, the better, if not universal opinion of the neighborhood is, that it would be self-sustaining if not remunerative, and it certainly would confer large benefits to the towns through which it passes, aiding existing activities and bringing into life new enterprises.

The Hartford depot case has at length been decided by the court, sustaining the action of the railroad commissioners and the constitutionality of the law of 1871, chapter 204.

Whitneyville and Machiasport Railroad Corporation.

This is not a passenger road and we have not visited it, but have received a report from it under act of 1874, chap. 218. It is $7\frac{3}{4}$ miles long, was built in 1872-3, and cost \$100,000. It was built for the purpose of transporting lumber from Whitneyville to tide water, and has no passenger cars. Persons wishing to ride take seats upon the lumber, and are carried without charge.

The amount received for the transportation of lumber and a few goods, \$6,500. It has 46 single cars. Rate of speed about 8 miles an hour.

The proprietors of saw-mills at Whitneyville, the builders of the road, asked for an act of incorporation because the road crosses several public highways.

Cornelius Sullivan, Esq., is Treasurer.

Bucksport and Bangor Railroad.

This is a new road, extending from Bucksport to Brewer on the east side of the Penobscot river, and there crossing the river to a connection with the E. & N. A. R. in Bangor. Its length is 18 miles. It is not finished, but the European road, to which it is leased for 5 years under a business contract, have commenced to run trains over it. Its indebtedness by bond and mortgage is \$400,000.

Sewall B. Swasey, Esq., of Bucksport, is President; Edward Swasey, Treasurer; and Parker Spofford, Engineer.

Consolidated Maine Central Railroad.

Under the title of Maine Central Railroad is embraced at the present time, the Portland and Kennebec Railroad via Brunswick to Augusta; Somerset and Kennebec, from Augusta to Skowhegan; the branch from Brunswick to Bath; from Leed's Junction to Farmington; the original Maine Central from Cumberland Junction via Lewiston, Waterville and Newport to Bangor. The road from Brunswick to Lewiston and Leed's Junction is leased to the Maine Central, as are also the Belfast and Moosehead Lake and the Dexter and Newport roads.

The whole length of railroad owned or controlled by this company in this State is 355 miles. These roads are divided into two divisions. The first embracing that portion of the road from Portland via Augusta to Bangor and Skowhegan, Belfast and Moose-

head Lake, Dexter and Newport branches, under the Superintendence of L. L. Lincoln, Esq., whose office is at Augusta. The second division embraces that portion of the line from Cumberland Junction to Waterville via. Lewiston, and the branch lines from Bath to Brunswick, and the line from Brunswick to Lewiston and Farmington, under the Superintendence of Arthur Brown, Esq., whose office is located at Lewiston.

These divisions are sub-divided into three Road-master divisions, with very competent men in charge of each. To each of these sub-divisions is assigned a competent bridge builder and carpenter, with a sufficient number of men to re-build the bridges, stations, buildings, etc., and keep them in repair. The whole work is controlled by and carried on under the supervision of Thomas Holt, the energetic engineer of the road, whose office is established at Portland. Charles F. Hatch, Esq., is General Manager of the entire line, with headquarters at Boston. Under the system adopted by the present management, it is but justice to say that the road has been most successfully operated for the past year. The trains have been run with remarkable safety, regularity and freedom from accident, and we believe no person has been injured upon the road through any carelessness of officers or employees.

While it is the bounden duty of the State officers to watch closely the management and operation of all the roads, to criticise and condemn all derelictions from or neglect of duty, no matter in which department they may occur, whether in the highest position of the management or the section and switchman on the road, still it is always a more satisfactory and agreeable duty when we are able without the fear of being subjected to the charge of favoritism to speak in terms of commendation of an individual, organization or institution; to praise when praise is justly due, always so guarding our expressions that approval may not be mistaken for flattery. When credit is due it should be given, and the capacity of a management be measured by its success or failure. In addition to these, other considerations enter into and influence this question. If one road is safely and successfully operated, the reasons and causes should be known, that others may take note, and if capable of doing so profit by the experiences of the successful management.

*The system of train signals, and the rule requiring conductors and station agents to record on a register provided at each station

the arrival and departure of every train, enables the superintendent or train-dispatcher to learn by telegraph the position of each train upon the road, and thus control their movements from time to time as occasion may require, has undoubtedly proved a great safeguard. Holding all the employees strictly to written orders, and allowing on their part no exercise of discretion in reference to verbal messages or orders, is another wholesome and safe rule, and one that should be fully understood and strictly enforced. In our opinion, conductors, or those in charge of trains, would be clearly justified in declining to receive a verbal order, or moving a train one inch by such order, unless the order is repeated back by the receiver to the giver in the presence of a third person. There is occasional necessity for running a "wild train" as it is termed, or in other words, a train run on some special or sudden emergency, when for want of time it is impossible to send the proper signals ahead to notify other trains, section-men, etc. Whenever this condition of things occurs, the greatest caution should be exercised to guard against accident; the speed of the train or engine should never exceed a rate that will force it beyond the almost instant control of the engine driver; the whistle should be sounded when approaching curves, and a man with signal of danger sent ahead to notify other trains or hand-cars approaching from the opposite direction; also, the section-men when not having notice of such a train may be in the act of removing rails or sleepers from the track or repairing bridges. We know from personal observation, that these rules are strictly enforced upon the Maine Central. Although a train may run wild, it should never be wildly run.

Persons who have had occasion to travel over this road for the last year or two, cannot have failed to notice the vastly improved condition of the track and road-bed, the many new and permanent bridges both iron and wood, the neat and commodious station buildings, many of them entirely new, and the others repaired and remodeled. In making these renewals and repairs, the company are manifesting good judgment, and setting an example of true economy worthy of imitation by other companies. Wherever old, unsafe, temporary bridges or buildings have been removed, permanent and substantially built structures have been substituted, and no effort or expense has been spared to ensure safety and durability. This is the true policy for all roads, instead of the practice common to so many of temporarily patching and strengthening

old and nearly worn-out structures, retaining them in doubtful position, a constant source of anxiety, care and expense. We have said this is common to many roads, and it is so, not only in reference to bridges and buildings, but track, road-bed and rolling stock. Through a mistaken economy, or a criminal desire to reduce expenses and make, as they say, a "good showing" of receipts and expenditures for a certain time, or for a particular purpose, everything is worked down to the lowest point of safety, and disabled engines and cars, displaced and broken rails, rotten bridges and ties, discouraged and over-worked operatives, and perhaps serious accident, is the result of this neglect, miscalled economy, calling for increased and immediate expenditure generally under most disadvantageous circumstances, by reason of hurried necessity.

We think the Maine Central Railroad Company has displayed good judgment in removing the unwieldy and heavy Pullman cars from their day trains, and we have no doubt that this action will result in a safer and more economical working of the road; and if this movement could be carried still farther, and lighter and less expensive cars substituted for those now in use, we think that all the roads would derive great benefit from the change, and the expense of repairing and renewing the track and rolling stock would be very much reduced. The cars now in use weigh about eighteen tons, and cost from five to six thousand dollars,—some of them more. Now if a car weighing twelve tons and costing only about four thousand five hundred dollars can be made to perform the same service, there is manifestly a great saving, not only in the first cost of the car, but in the wear and tear of the road. This can be done and the safety of the trains in no way impaired, as a large proportion of the extreme weight of the cars now in use is occasioned by useless and glaring ornamentation, adding in no way to the strength and safety of the car or the comfort of passengers.

If an individual of limited capital should expend all his money in building a good, substantial house, and after securing a perfectly safe and comfortable dwelling, should proceed to mortgage the house or deprive his family of necessary clothing and food, expending the amount thus acquired in useless gilt and tinsel upon the walls of his house, we should at once say that the man was insane, or wanting in good judgment and common sense. And we fail to see why the rule governing the case of the individual is not applicable to the management of railroads, or any other busi-

ness requiring the exercise of either of the above qualities. For certainly a large proportion of our roads are in debt—paying no interest to those who have invested in the stock, many of whom it will not be denied are poor and needy.

The question as to the number of trains required for the proper and convenient transaction of the business of the roads, is one solely within the province of the directors or managers to investigate and decide, but it is important, requiring careful study and sound deliberation, for if by judicious arrangement of trains the traffic of the road can be maintained and accommodated by the use of two trains only, where three are now used, it is a great point gained, increasing the ratio of safety and decreasing the running expenses of the road. We refer to this as a matter worthy of and demanding the careful consideration and best judgment of our railroad managers.

During the past year the following new bridges have been built on the line of the Maine Central: Bath Branch—New Meadows bridge, 40 feet of Howe truss and 32 feet trestle; approach Sewell's creek, 2 spans Howe truss, 76 feet each. On main line, one span truss over Pearl street, Brunswick, 37 feet. At Cathance stream, 1 span of Post's patent iron bridge, 105 feet. At Gardiner, 2 spans of Howe truss, 64 and 44 feet in length. At Seven Mile Brook, Vassalboro', 40 feet of Howe truss and 361 feet of pile bridging. The bridge over the Kennebec river at Waterville, 4 spans of Whipple's patent iron bridge, 3 spans of 172½ feet in length, and one of 113 feet, making 634 feet in all. Between Waterville and Kendall's Mills, a new iron bridge has been constructed, consisting of 4 spans; 2 of 200, one of 116, and one of 102 feet in length, making in all 618 feet. This bridge is built upon the same plan as that at Waterville, both constructed by the same parties, Clarke, Reeves & Co., of Phoenixville, Pa., and both are models of strength and beauty in iron bridge architecture. At Pittsfield, a very excellent wooden bridge has been built, a Howe truss. At the Bleachery, Lewiston, 84 feet of trestle—making a total of 2,341 feet of new bridges erected this year. Four road bridges over the road have been built; one at Danforth street, Portland, two between Portland and Brunswick, and one over Hallowell street, Hallowell. Eight hundred ninety-three feet of bridging has been removed and earth embankment substituted, as follows: Shaw's brook, between Bangor and Hermon, trestle removed, and a superior arch culvert built of granite substituted,

and one hundred lineal feet of embankment made over it. Etna Bog, 400 feet trestle filled. Ticonic bridge at Waterville, shortened 24 feet. Capen Gully trestle at Vassalboro', removed and 230 feet of embankment made. Jay bridge, on Androscoggin branch, removed 112 feet, filled.

Masonry built during the year as follows: culvert at West Falmouth; cattle pass; buttresses to arch culvert; two trestle benches New Meadows bridge, on Bath branch. On the main line, abutments raised at the Richmond road; retaining wall at Augusta; turn-table at Gardiner; new piers and abutments Ticonic bridge at Waterville; the same at the bridge between Waterville and Kendall's Mills; abutments at Benton street bridge; pier at Pittsfield; granite arch at Shaw's Brook near Bangor; and three culverts built between Kendall's Mills and Skowhegan, and the abutments raised at Martin Stream bridge near Pishon's Ferry, on the Somerset and Kennebec. Water station at Waterville, trestle benches at Bleachery bridge, retaining wall near Gas Works, abutment Locust Street bridge, turn-table, engine house, all at Lewiston. Passenger station at West Waterville, culvert at North Jay, retaining walls at North Jay, and Wilton engine house pits at Farmington, and cattle pass at Winthrop; making a total of 7000 yards of masonry. When buildings are mentioned above we refer only to foundations, drains, etc.

The following buildings have been erected the past season: Passenger stations at Riverside and Getchell's Corner, Vassalboro', West Waterville and Fairfield; freight house at Portland; water stations at Brunswick and Waterville; engine house at Lewiston; turn-tables at Gardiner and Lewiston; coal sheds at Portland, Waterville and Bangor; wood sheds at Crowley's and Leeds Junctions, North Leeds, North Jay, Farmington and Skowhegan; wood and coal sheds at Auburn; and shop for repairing rails, at Brunswick.

The following named additions and repairs have been made to the road-bed and tracks: 2 78-100 miles of steel rails, 63 lbs. to the yard, and 30 28-100 miles of re-rolled iron rails, 60 lbs. to the yard, has been laid in the track, making a total of 33 6-100 miles; 12,100 rails, equal in length to 24 5-10 miles, have been taken up, repaired in the company's shops and replaced in the track; 47 5-10 miles of track has been raised with gravel from 8 to 18 inches; 2 91-100 miles of new side track has been added, and 113,746 ties

used upon the whole line; 34 6-10 miles of new fence has been built.

It will be seen by the above statement, that a great amount of material and labor has been expended upon this road this year, and wherever new structures have been built they are the best of their class.

The rolling stock of the road is in excellent condition, and additions have been made to it, as will be seen by the tabulated statement to be annexed to this. The department of repairs for rolling stock and machinery is in charge of John W. Philbrick, Esq., whose office is at Waterville.

BELFAST AND MOOSEHEAD LAKE BRANCH.—A considerable amount of labor and material has been expended upon this road during the past year. In many places the track has been raised on gravel; the embankments widened and brought up to their proper grade, and the ditches cleaned out.

The track has been extended at Belfast along the wharves and river front, and we learn it is the intention to extend still farther, thus adding greatly to the facilities for doing the business of transshipping freight from cars to vessels or vessels to cars; and as a large proportion of the freight of this road is made up of hay, coal, grain, lumber, and other heavy or bulky articles, the advantages of the new track must be apparent to all having business with the road.

The road is in good safe running condition, and although the business upon the line has not perhaps come up to the anticipations of its projectors and friends, yet we learn that the traffic is gradually increasing, with fair promise for the future.

The road is leased by the Maine Central Company for fifty years at a rental of \$36,000 per year. Original cost of construction about \$850,000; bonded debt, \$150,000. The returns of the Treasurer will be found in tabulated statements. The items of repairs, expenses, etc., are included in statement of Maine Central Company.

Chas. B. Hazeltine, Esq., of Belfast, is President; Asa Faunce, Esq., Treasurer.

DEXTER AND NEWPORT BRANCH.—From Dexter to Newport, 14 miles. This road is in good condition, and has been regularly and safely operated. No repairs worthy of mention have been made the past year, and little has been required to keep it in safe

running order. The rails are of unusual length (30 feet), manufactured at Pottsville, Penn., and are proving remarkably good, showing little or no lamination or breaking during a service of six years. The bridges, road-bed and buildings are well maintained, although some portions of the road-bed would be improved by graveling and raising the track.

Notwithstanding the opening of the Piscataquis road to points above Dexter, in the direction of Moosehead Lake, the business of this road is well sustained and remunerative. The road is leased to the Maine Central for a term of years; they paying 6 per cent. interest on the cost. The entire cost of the road, including discount on bonds, was \$300,000; Dexter and Corinna bonds, \$175,000; stock, \$125,000.

The items of earnings, cost of repairs, etc., are included in the returns of Maine Central Railroad.

Charles Shaw, Esq., of Dexter, is President; George Hamilton, Esq., of Dexter, is Treasurer.

ANDROSCOGGIN DIVISION.—Brunswick to Farmington, with branch to Lewiston, 70½ miles.

It will be seen by reference to the list of repairs of the Maine Central and its branches, that a considerable amount of labor and material has been expended on this road, and improvements made by removal of some of the old trestle bridges and filling the spaces with earth embankment, and by repairing other structures. This is well so far as it has been carried, and while we do not consider any of the bridges unsafe at the present time, we know that there are several points upon the road that would be very much improved by the substitution of good stone culverts with earth embankments over them for the high and perishable timber trestles now occupying those localities. The Twin bridges between Livermore Falls and Farmington, which have been a constant source of trouble and detention, might be entirely avoided by excavating a new channel for the stream a short distance. Great care is now and has been exercised in keeping these bridges in repair; but we think it for the interest of the company to dispense with them altogether, and fill their places as before suggested.

The track, with the exception of the section between Crowley's and Leeds Junctions, is in good running order and rides well. It has improved very much in this respect during the past year or two, as is the case of the other branches. The statements of the

business of the road is included in the statement of the Treasurer ; the items of repairs, etc., in the general summary of labor performed and material used in the Consolidated Maine Central road and branches.

In closing this report of the Maine Central and its branches, while the Commissioners are disposed to and do give the fullest credit for the very gratifying progress made thus far in the perfecting of the structures and road-bed, still much remains to be done the coming season. We specify a few items of repairs and renewals which in our opinion, will require attention in the spring: The bridge over the Presumscot river in Falmouth, that over the Little Androscoggin at Auburn, (possibly the main Androscoggin), and the trestle bridge over Emerson stream near West Waterville, should be removed, and structures of a better and different character substituted at the first and last named points. The road and bridges between Crowley's and Leeds Junctions are not in so satisfactory a condition as the other portions of the line, and must be repaired the coming season.

Sleepless vigilance, unwearied industry, energetic effort, governed by good judgment, with a faculty of deciding questions quickly and correctly, and a deep-felt sense of responsibility, together with strict observance of and undeviating adherence to all the rules and regulations in force for the government of the road, taking nothing for granted, abiding strictly by written orders and accepting no others, are the conditions upon which depends the successful workings of a railroad. That these conditions are the price of safety for the lives and property committed to their charge, should be fully understood and acted upon by every person connected with a railroad, from the President down to the switch-man.

Recapitulation of improvements and repairs. (Bridges.)

1.	New Meadows, east approach, Howe truss 40 feet, }		
	“ “ “ trestle 32 feet, }	72 feet.	
2.	Sewall's Creek, 2 spans Howe truss, 76 ft. each . . .	152	“
3.	Pearl Street, Brunswick, Queen truss	37	“
4.	Cathance, Post's patent iron, 1 span	105	“
5.	Gardiner Sluice, Howe truss, 2 spans 64 and 44 ft. .	108	“
6.	Seven Mile Brook, Howe truss 40 ft., pile 361 ft. . .	401	“
7.	Bleachery approach, Lewiston, trestle	84	“
8.	Ticonic, Whipple's plan, iron, 4 spans,—3 spans of		
	172½ feet and 1 span of 113 feet	634	“

9.	Kennebec, Whipple's plan, iron, 4 spans—2 spans of 200 feet, 1 span of 116 feet, and 1 of 102 feet...	618 feet
10.	Pittsfield, 2 spans Howe truss.....	130 "
	Total.....	2341 feet.

The following road bridges have been built over the track:—
Seabury road, Sodom road, Danforth street, Hallowell street.

During the past year 893 feet in length of bridges have been filled with earth embankment—Etna bog, 400 feet; Capen gully, 238 feet; Jay bridge, 112 feet; Shaw's bridge, (arch culvert built) 118 feet; Ticonic bridge, shortened, 25 feet. Total, 893 feet.

Masonry—Culvert at West Falmouth; cattle pass, Bath branch; buttresses to arch culvert, Bath branch; 2 benches, New Meadows bridge; Richmond road, abutments raised; abutment, Little River bridge, Androscoggin branch; turn-table at Gardiner; retaining wall at Augusta; benches, bleachery bridge, Lewiston; Gas Co. retaining wall, Lewiston; Locust street abutment, Lewiston; turn table, Lewiston; engine house, Lewiston; passenger station, West Waterville; culvert, North Jay; retaining wall, North Jay; retaining wall, Wilton; cattle pass, Winthrop; engine-house pits, Farmington; Ticonic bridge, Waterville; Kennebec bridge, Waterville; Benton street bridge, Benton; Pittsfield bridge pier, Pittsfield; Shaw's arch; Waterville water station; 3 culverts, Skowhegan branch; Martin Stream bridge, abutments raised.

Buildings—New passenger stations at Riverside; Vassalboro'; West Waterville, 20 x 65; Fairfield, 26 x 68; freight house at Portland rebuilt, 60 x 250. New water stations at Brunswick, 18 by 18; Waterville (brick), 30 x 30. Engine house at Lewiston rebuilt, 50 x 100. New turn-tables at Gardiner, 45 feet; Lewiston, 45 feet. New coal sheds at Portland, 22 x 200; Waterville, 20 x 140; Bangor, 20 x 60. New wood sheds at Crowley's, 23 by 100; Leeds Junction, 26 x 150; North Leeds, 26 x 72; No. Jay, 22 x 150; Farmington, 26 x 150; Skowhegan, 26 x 132. New wood and coal shed at Auburn, 26 x 75. New rail shop at Brunswick.

Tracks—2 78-100 miles of steel rails, 63 lbs. to the yard, and 30 5-10 re-rolled iron rails, 60 lbs. to the yard, have been laid during the year, making a total of 33 28-100 miles.

47 5-10 miles of track have been raised with gravel from 8 to 18 inches.

2 91-100 miles of new side tracks have been laid.

113,746 new sleepers have been used.

12,100 rails, equal in length to 24 5-10 miles of track, have been taken up, repaired in the Company's shops, and re-laid.

34 6-10 miles of new fence have been built during the past season.

Directors—A. P. Morrill, Readfield ; J. B. Brown, Lewis Pierce, Portland ; Geo. L. Ward, Jno. Wooldridge, T. K. Lothrop, J. P. Cook, Boston, Mass. ; Frank Jones, Portsmouth, N. H. ; G. M. Patten, Bath, Me. ; Darius Alden, Augusta, Me. ; Abner Coburn, Skowhegan, Me. ; Noah Woods, Lysander Strickland, Bangor, Me. A. P. Morrill is President ; Chas. F. Hatch, General Manager, Boston ; J. S. Cushing, Treasurer, Augusta ; L. L. Lincoln, Superintendent 1st Division, Augusta ; Arthur Brown, Superintendent 2nd Division, Lewiston ; Thomas Holt, Chief Engineer, Portland ; John W. Philbrick, Master Mechanic, Waterville.

Knox and Lincoln Railroad.

During the past year the Commissioners have made two special examinations of this road, all the members of the Board being present ; and one member of the Board has, in addition to the other mentioned examinations, devoted more time to the inspection. The large amount of bridging upon the line, renders it highly important that the inspections should not only be frequent, but close and searching in their character. At our first examination we found that the pile bridge at the Dike (so called) needed important and thorough repairs. Also the truss bridges at Nequmsett stream and Wright's Mill stream. Suggestions were made by the Commissioners as to the manner of making the repairs and strengthening these bridges, which we were glad to find were being adopted and carried out at the Dike bridge, and completed at the others. There are other structures that may need repairs the coming season, but generally the bridges are in good condition ; although some are peculiarly exposed to the action of the ice moved by the rise and fall of the tides. One of the bridges was injured very seriously last summer by the carelessness of the man in charge of a vessel, in not complying with the common and well-known rules for regulating the passage of vessels through draw-bridges. Owing to the well directed and energetic action of the Superintendent of the road, this did not result in long detention of the trains, but some remedy should be found and applied to prevent the occurrence of a similar accident, and force reckless or careless men in charge of

vessels to a compliance with the laws and rules governing such cases.

The great want of the road is gravel for ballast, and a great deal has been done in this direction ; but the scarcity of this material along the line, seriously impedes the completion of the road-bed. Much attention has been given to improving the drainage and ditching. This is a move in the right direction, as good drainage and ditching are prerequisites to a "safe and permanent road-bed." Many new ties will be required next year for the track, to keep it up to the standard of entire safety. Upon the whole, we believe the road to be at the present time in good condition, reflecting credit upon the managing officers of the company, who, by their extreme watchfulness, together with economical expenditure and well directed effort, have established its character as a well-governed and safe road ; as but few roads in the country can show so clear a record of freedom from accident, including both passengers and employees, as the Knox & Lincoln.

There is upon the line of the road 12,320 feet of pile bridging, 2,659 feet of truss bridging, 1,776 feet of trestle, and 160 feet of draw bridging. The entire cost of the road up to the date of last report is \$2,758,334.93. Entire length of road, including extension to tide-water, 49 miles. The business of the road is steadily increasing, as is shown by a comparison of the tabulated return made by the Treasurer to the Railroad Commissioners this year, and the report of the President for the year 1873. The rolling stock is in good order, and about the same in amount as reported last year, with the exception that one shifting engine has been sold to the Maine Central Company. The ferry at Bath has been well and safely managed, and results in little or no delay or inconvenience to the patrons of the road.

Directors—Oliver Moses, Edward Sewall, Bath ; Henry Ingalls, Wiscasset ; Edwin Flye, Newcastle ; D. W. Chapman, Damariscotta ; Joseph Clark, Waldoboro' ; Edmund Wilson, Thomaston ; Francis Cobb, John T. Berry, Rockland. Oliver Moses, is President ; Edwin Flye, Clerk ; L. S. Alexander, Treasurer, Bath ; C. A. Coombs, Superintendent, Bath ; E. R. Hamlin, Master Machinist.

Somerset Railroad.

From West Waterville to Norridgewock, 13 miles. This road was open for freight traffic in December, 1873 ; for passengers

January, 1874; and early this month the road was open for traffic from Norridgewock to a point about one mile south of Madison Bridge. Trains are now running to the last named point. We learn that it is the intention of the company to push the construction of the road to North Anson or Solon the coming summer, but as the location has not been definitely determined it is still a matter of doubt which point the road will reach. We have examined the road between West Waterville and Norridgewock twice during the year, and find it well constructed, and in safe condition for the passage of trains. The bridge over the Kennebec river at Norridgewock is built upon the lattice plan, and we consider it a fair structure. The iron rails are of lighter weight than those in use upon the other roads of the State, these weighing 50 lbs., while the other roads use rails weighing from 56 to 63 lbs. to the yard.

The Somerset road has been urged forward under many difficulties, and its friends and projectors have exhibited great determination in its construction. The road from Norridgewock passes through one of the most productive and richest agricultural sections of the State. Following up the beautiful valley of the Kennebec river, it passes near some of the most desirable and unfailing water powers, and it is not improbable that in the near future the road will be continued up the river, by the towns of Solon and Bingham, to a connection with the projected and already partially constructed Lake Megantic railroad.

The rolling stock consists of two engines, three cars. One of the engines is new, the other partly worn but in good order. The passenger car is new, of modern style and finish.

Total cost of the road from West Waterville to Norridgewock, \$519,042.28. Statements of indebtedness, and the items of interest will be found in tabulated return annexed to this report.

Directors—John Ayer, West Waterville; R. B. Dunn, Waterville; George O. Smith, Boston, Mass.; Samuel Cragin, Edward Rowe, Norridgewock; W. H. Brown, Anson; Nicholas Smith, Bingham; Frank Hill, Exeter; Benj. Flint, Edward Gray, Samuel Bunker, Anson; Nathan Weston, Madison; John Carney, Carratunk. John Ayer, West Waterville, President; A. R. Small, Treasurer.

ACCIDENTS.

Maine Central Railroad.

February 20, 1874. The 1.30 P. M. train from Portland for Augusta, while crossing Spring street, Woodford's Corner, struck a wagon containing Mr. Myrick Emerson of Stroudwater, an old gentleman of about 70 years of age. It is supposed Mr. Emerson's horse took fright just before reaching the crossing, as he dashed across, escaping injury. It was impossible to stop the train before it reached the station at Woodford's, when the body of Mr. Emerson was found dead, lying on the cow-catcher. No blame was attached to the employees.

October 8. Mr. Wm. Marriner, employed in the Maine Central freight yard, Portland, was attempting to unshackle some freight cars, when the heel of his boot caught in the track. He was thrown down under the train and several cars passed over his legs, crushing them both in a fearful manner. He was taken to the station and both legs amputated. He was 26 years of age.

October 7. A man driving a jigger in Richmond, attempted to cross the track, when the jigger was hit by the engine and smashed up, and the man thrown some distance, sustaining serious if not fatal injuries. His shoulder and several ribs were broken.

February 19. R. Wheeler, an old man of 70 years of age, and deaf, was struck by the Farmington train while attempting to cross the track with a horse and sled, about three miles north of Leeds Junction, and instantly killed.

February 20. George Smith, a freight train conductor, had his right arm crushed while shackling cars at South Gardiner.

July 31. As the shifting engine of the Maine Central was running round the curve near Centre street, Bath, it encountered a hand-car, upon which were seven men, coming in at full speed. All jumped from the car but one Martin McDonough, who was at the time turning the crank. He was very badly bruised about the head, shoulders and back.

April 3. Mr. Enoch Elliot, while walking on the railroad track a short way from the station was run over by the Bath train and instantly killed. He was about 75 years of age. The Coroners' Jury exonerated the company from all blame, and found that Elliot was carelessly walking on the track.

February 22. Hiram Silver, about 24 years of age, was instantly killed at Bangor, near the Maine Central depot. He attempted to cross the track in front of the train, but his foot slipped and he fell and the cars struck him.

November 12. Sidney Keith, an engineer, attempted to jump from the locomotive to the platform, which was covered with frost, slipped, and his right foot was caught under the wheel and badly crushed.

January 16. The night express train from Boston was thrown from the track near Newport station, and ran along for a short distance, tearing up the rails and badly frightening the passengers. Frank Jackson, a brakeman, was thrown on to the ground with great violence and injured internally. Charles Estes, also brakeman, was thrown off and his ankle sprained. None of the 49 passengers on board were injured.

March 31. Construction train from Burnham, when backing into Waterville, struck a team on crossing north of Waterville bridge. The driver of the team, Mr. Stevens, was instantly killed. Verdict of jury, that all precautions were used that could be, and no blame attached to employees of road.

September 24. A passenger on train from Lewiston to Brunswick jumped off the train at Lisbon, and on attempting to get on afterwards, was thrown down and had his leg crushed, caused by his own carelessness.

October 10. Passenger train from Waterville to Skowhegan struck a team at Currier crossing; horse killed, and a man in the wagon seriously injured.

March 30. Capt. Gross attempted to drive across the track at Harding's Station, below Brunswick, when the engine struck the wagon and threw him some distance, badly injuring him.

Portland Railroad Corporation.

In answer to the 23d interrogatory in the road's return to the Railroad Commissioners, the Treasurer says: "One caused by falling out of a car." And in answer to 24th, "it did partly, the person is not retained."

Boston and Maine.

July 21. A workman by the name of Hans Johnson, on the gravel train, was thrown under the cars by the sudden stopping of

the train. The train passed over him cutting off his right arm and badly mangling the right leg. The leg was amputated, but the sufferer died in a few hours.

Portland, Saco and Portsmouth.

April —. Nelson Hardenbrook, a caulker, was struck by a locomotive on Commercial street, Portland; one leg was broken off near the hip and one arm fearfully mangled; he died.

Grand Trunk.

June 22. Israel B. Adams, about 45 years of age, was walking on the track of the road. The engineer saw him and whistled down brakes, but was not able to stop the train. The Coroner's Jury returned a verdict that Israel Bradbury Adams came to his death by his own carelessness while unlawfully walking on the track of the Grand Trunk Railroad, and exonerated the company from all blame.

September —. — Needham of West Bethel, brakeman, fell off the cars; his legs were broken, and he died immediately.

Portland and Rochester.

December 26. A young man named Green tried to jump on a passing train at Cumberland Mills. He slipped, and his foot was run over and so badly crushed as to necessitate amputation.

European and North American.

May 4. Albert P. Chipman, a brakeman, jumped off the train to shackle on a car as the train was backing slowly towards the bridge on the west side of the Kenduskeag, and by some means tripped and fell face downward across the track. The train, though moving slowly, could not be stopped until eight of the wheels had passed over his body, near the hips. He lived but three minutes when taken up. The Coroner's Jury found that "the deceased came to his death by accidentally falling under a train of cars while in motion, and that no blame is attached to the officers or employees of the road."

August 30. Charles B. Skinner, baggage master, was assisting conductor Lunt in shackling cars; a car started, and a projecting timber struck young Skinner in the neck and instantly killed him.

George L. Spaulding of Great Works, was badly injured by an overhead bridge between Lincoln and Lincoln Centre.

December 19. A very serious smash-up near the Basin Mills, about two miles above Veazie. The down freight train, conductor W. Maling, due at Bangor at 11.30 A. M., was delayed and could not make up its time. Superintendent Angell telegraphed him to pass the up train from the city at Veazie at 11.45. Superintendent Angell should then have directed conductor Lunt of the 11.45 up train to switch off at Veazie and let the down freight pass him. This he says he did do; but unfortunately the order was verbal, and Mr. Lunt did not so understand him; hence he kept on without going on to the turn-out at Veazie, and the two trains collided with terrible force, and destruction of engines and cars, about two miles above. Some of the employees on the trains were slightly injured, but miraculously none of the passengers were hurt. Conductor Maling, though behind time, had the right of way, and was therefore without fault. Superintendent Angell either was greatly negligent in the manner of giving his order, or conductor Lunt was greatly heedless in the manner of receiving it—indeed, one or the other was fearfully at fault; for lives and property were placed at hazard by the inattention. The railway company, to be sure, are liable for all damages arising by reason of the collision, whether the negligence was on the part of the Superintendent or conductor, for both were its agents. But had a life been lost, who could atone for that to surviving relatives and friends? Both were retained in the service of the company—it was difficult, we suppose, to decide that both were in fault, or that one was wholly so, and the other not at all—and both were distinguished for care and attention to their respective duties always before; and in this case, no doubt, intended, both of them, conscientiously to do their duty. But the order unfortunately was not in writing, as it should have been, nor was it repeated back, if given orally, as it should have been. Hence a misapprehension, and hence the catastrophe.

Portland and Ogdensburg.

September 22. G. C. Smith, engineer, a young man about 22 years of age, of fine character and much respected by the railroad company, as we understand, was instantly killed by an explosion of the boiler of his engine, the "Saco." The finding of the Coroner's Jury was "that deceased came to his death by accident,

on the morning of the 22d day of September, 1874, at Deering, in Cumberland county, on the line of the Portland and Ogdensburg Railroad, and that his death was caused by the explosion of the boiler of the locomotive engine 'Saco,' of which he was then in charge as engineer; and that from the evidence in the case the jury are of the opinion that said explosion was due to a latent defect in the iron of the boiler, which could not have been discovered by any of the ordinary tests which are applied in such cases, and that from the evidence, it farther appears that said accident was not due to any improper management of the engine, or to any unusual strain to which the boiler was subjected, but rather to the continuous strain and concussion of the boiler, which gradually resulted in what is termed an internal grooving of the iron."

As the train of the P. & O. road, with the half-fare excursionists on board was coming in a few miles beyond Cumberland Mills, a man about 35 years of age was on the platform and was making believe apply the brake, when he lost his balance and fell between the cars. The wheels cut off both legs near the hips, and the body was found dead upon the track upon return of men to ascertain the nature of the injury.

Abstract of Returns from the several Railroad Corporations, as required by Chapter 51, Section 30 of the Revised Statutes, as amended in Chapter 218.

NAME OF ROAD.	DESCRIPTION OF ROAD.									
	Length of Road in operation. Miles.	Length of single track. Miles.	Length of double track. Miles.	Length of sidings and spur tracks. Miles.	Time when laid.	Length laid with steel rails. Miles.	Weight of rail per yard. Pounds.	Length laid with joints and of what sort. Miles	Length laid with chair joints. Miles.	Length laid with Whitman's imp. cross ties. Miles.
Androscoggin.....	70½	-	Included	in Maine	Central.	-	-	} All; 29 with steel bal. iron & wood.	-	-
Atlantic and St. Lawrence.....	149—82 in Me.	149	24	24	Orig. '48 to '53	29	65		-	None
Bangor and Piscataquis.....	48½	48½	-	2	-	-	56	48½	None	None
Bath Branch.....	9	-	Included	in Maine	Central.	-	-	-	-	-
Belfast and Moosehead Lake.....	33	33	None.	-	-	-	-	} Trimble joint all but 10 miles.	-	-
Boston and Maine.....	192¼--44 in Me.	155¼	37	67	1836 to 1873.	61.60	60		10	None
Bucksport and Bangor.....	18	-	-	-	-	-	-	-	-	-
Dexter and Newport.....	14	14	-	1	1868	-	55	14½	½	-
European and North American.....	205½-114 in Me.	205½	-	12	1868 to 1871.	-	56	205½	None	None
Grand Trunk.....	1377	-	350	-	-	-	-	-	-	-
Houlton Branch.....	3	-	-	-	-	-	-	-	-	-
Knox and Lincoln.....	49	49	None.	3	1870 to 1872	None.	56	49	None	None
Leeds and Farmington.....	-	-	Included	in Maine	Central.	-	-	-	-	-
Lewiston and Auburn.....	5½	-	-	-	-	-	-	-	-	-
Maine Central.....	355	355	None.	40½	-	2 9-10	56 and 60	} Button bolts and bars, 273	82	3
Portland (Horse).....	6½	6½	3-8	-	1863 and '64.	-	33, 38 & 40		-	-
Portland and Kennebec.....	100	-	Included	in Maine	Central.	-	-	-	-	-
Portland and Oxford Central.....	27½	-	-	-	-	-	-	-	-	-
Portland and Ogdensburg.....	78—51 in Me.	78.7	None.	-	-	None.	56	78	None	1
Portland and Rochester.....	52—49½ in Me.	52-49½ in Me.	None.	6½	-	None	56	52—49½ in Me.	None	None
Portland, Saco and Portsmouth.....	50 96-100	50 96-100	-	-	1842	-	60	-	-	-
Portsmouth, Great Falls and Conway.....	4½ in Me.	-	-	-	-	-	-	-	-	-
Somerset.....	13	13	None.	600 ft.	1872	None.	50	13 m. 600 ft.	None	None
St. Croix and Penobscot.....	22	22	None.	8	'50, '51, '55, '56	None.	52 and 56	4	18	None
Whitneyville and Machiasport.....	7¼	7¼	-	-	1842 and '43	-	-	-	-	-

Abstract of Returns from the several Railroad Corporations—Continued.

NAME OF ROAD.	CAPITAL STOCK.		COST OF ROAD.				
	Capital Stock.	Amount called and paid in.	Whole cost of road.	Am't expended for purchase of lands.	For grading.	For engineering.	For bridging.
Androscoggin.....	-	-	-	-	-	-	-
Atlantic and St. Lawrence.....	5,000,000	5,000,000	-	-	-	-	-
Bangor and Piscataquis.....	2,000,000	356,900	1,101,236 78	-	-	-	-
Bath Branch.....	-	-	-	-	-	-	-
Belfast and Moosehead Lake.....	950,000	725,000	-	-	Incl. masonry }	-	-
Boston and Maine.....	7,000,000	6,921,274 52	9,308,431 82	2,379,248 50	2,645,371.27 }	446,165 06	882,759 45
Bucksport and Bangor.....	-	-	-	-	-	-	-
Dexter and Newport.....	125,000	122,000	300,000	-	95,000	-	-
European and North American.....	17,500,000	4,249,966 50	9,849,428 65	-	-	-	-
Grand Trunk.....	-	-	-	-	-	-	-
Houlton Branch.....	-	-	-	-	-	-	-
Knox and Lincoln.....	2,000,000	364,400	Not completed.	116,500	1,612,200	45,500	273,500
Leeds and Farmington.....	-	-	-	-	-	-	-
Lewiston and Auburn.....	-	-	-	-	-	-	-
Maine Central.....	5,000,000	3,601,400	11,249,651	-	-	-	-
Portland (Horse).....	157,600	157,600	175,000	20,000	-	-	-
Portland and Kennebec.....	-	-	-	-	-	-	-
Portland and Oxford Central.....	-	-	-	-	-	-	-
Portland and Ogdensburg.....	2,000,000	1,046,621 31	2,393,687 57	76,854 41	1,158,385 59	119,589 65	129,453 39
Portland and Rochester.....	636,111 86	-	Not known,	Books and	papers	destroyed	by fire.
Portland, Saco and Portsmouth.....	2,000,00	1,500,000	1,648,937 34	157,104 86	437,701 32	48,730 46	108,830 83
Portsmouth, Great Falls and Conway.	{ Orig. 600,000 }	{ Called 500,230 }	-	-	-	-	-
Somerset.....	{ - 2,500,000 }	{ 291,802 30 }	519,042 28	Incl. grading.	308,300 94	12,191	20,000
St. Croix and Penobscot.....	2,000,000	100,000	569,000	{ 13,119 91 }	{ 55,814.81 }	{ 1,468 72 }	{ 8,051 08 }
Whitneyville and Machiasport.....	100,000	100,000	-	{ 1st 6 miles. }	{ 1st 6 miles. }	{ 1st 6 miles. }	{ 1st 6 ms. }

Abstract of Returns from the several Railroad Corporations—Continued.

NAME OF ROAD.	COST OF ROAD.						THE AMOUNT AND NATURE OF	
	For masonry.	For iron.	For passenger cars.	For freight and other cars.	For locomotives.	Total expenses of equipment.	Indebtedness.	Dues.
Androscoggin.....	-	-	-	-	-	-	-	[debt
Atlantic and St. Lawrence..	-	-	-	-	-	-	\$3,484,000	funded
Bangor and Piscataquis.....	-	-	-	-	-	110,200 07	887,218 10	-
Bath Branch.....	-	-	-	-	-	-	-	-
Belfast and Moosehead Lake.....	Stations,	-	-	-	-	-	-	-
Boston and Maine.....	\$1,057,156 11	1,897,731 43	335,724 67	473,134 36	529,545 18	1,338,404	.21	997,252 47
Bucksport and Bangor.....	-	-	-	-	-	-	-	-
Dexter and Newport.....	-	107,167 26	-	-	-	-	-	Town Loans,
European and North American.....	-	-	-	-	-	642,569 05	6,231,298 41	175,000 00
Grand Trunk.....	-	-	-	-	-	-	-	100,000 00
Houlton Branch.....	-	-	-	-	-	-	-	-
Knox and Lincoln.....	134,600	330,000	All cars.	75,000	50,000	125,000	{ 2,395,000 city & }	{ town bonds. }
Leeds and Farmington.....	-	-	-	-	-	-	-	-
Lewiston and Auburn.....	-	-	-	-	-	-	{ 7,753,892 bonded	debt, inc. inst. scrip
Maine Central.....	-	-	-	-	-	1,087,972 86	{ P. & K. R. R.;	1,357,333.81 ft. dbt.
Portland (Horse).....	-	-	2,300	-	-	-	1,000 note; 686 note.	-
Portland and Kennebec.....	-	-	-	-	-	-	-	-
Portland and Oxford Central.....	{ incl'd in }	Incl'g ties, &c.	-	-	-	-	{ 282,539.18 bills }	{ 71,130 98 bills }
Portland and Ogdensburg.....	{ grading. }	900,404 53	All cars.	140,149 38	79,864 87	220,014 25	{ pay. & accts. }	{ receiv. and accts. }
Portland and Rochester.....	Not known,	Books and	papers	destroyed	by fire.	-	{ 700,000 mort. city	Port.; 450,000 2d do.
Portland, Saco and Portsmouth.....	61,048 18	364,975 80	-	95,548 62	-	95,548 62	{ 350,000 7 per ct	of equal lien.
Portsmouth, Great Falls and Conway.	-	-	-	-	-	-	{ 450,000 1st m. bds.	pay. '91; 250,000 sld.
Somerset.....	78,730 70	99,819 64	5,500 00	1,300 00	12,500 00	19,800 00	{ 23,654.07 Co. nts.	3,200 accts.
St. Croix and Penobscot.....	{ 3,558 22 }	{ 31,107 73 }	All cars.	30,044 72	Unknown.	Unknown.	{ 222,700 funded }	{ 7,212.44 due by }
Whitneyville and Machiasport.....	{ 1st 6 mls. }	{ 1st 6 mls. }	-	-	-	-	{ debt; 7,000 ft. }	{ individuals. }

Abstract of Returns from the several Railroad Corporations—Continued.

NAME OF ROAD.				AM'T OF RECEIPTS.		AM'T RECEIVED FOR TRANSPORTATION.			
	No. of through passengers.	No. of way passengers.	Rates of fare.	From passengers & freight originating along the line of road.	From passengers & freight brought to the road by other railroads.	Of Passengers.	Of Property.	Of Mails.	From other sources.
Androscoggin.....	To Jan. '74	To Jan. '74	-	-	-	Up	to	January,	1874.
Atlantic and St. Lawrence.....	37,104	120,116	1 63-100 c.	-	-	255,988 60	934,963 47	39,478 05	16,816 72
Bangor and Piscataquis.....	-	-	-	-	-	-	-	-	-
Bath Branch.....	-	-	-	-	-	-	-	-	-
Belfast and Moosehead Lake.....	-	-	-	-	-	-	-	-	-
Boston and Maine.....	109,842	4,640,303	1 88-100 c.	1,997,180 44	233,626 20	1,410,530 85	820,275 79	21,360 20	169,632 43
Bucksport and Bangor.....	-	-	-	-	-	-	-	-	-
Dexter and Newport.....	-	-	-	-	-	-	-	-	-
European and North American.....	32,503	242,453	3½ c.	-	-	301,917 88	320,605 14	32,009 19	52,224 36
Grand Trunk.....	-	-	-	-	-	-	-	-	-
Houlton Branch.....	-	-	66 53-100 c'l	-	-	-	-	-	-
Knox and Lincoln.....	35,403	70,836	1 65 72-100 t. }	65,528 23	78,668 83	105,802 28	38,394 78	6,000	8,472 26
Leeds and Farmington.....	-	-	-	-	-	-	-	-	-
Lewiston and Auburn.....	-	-	Through 2.44 }	-	-	-	-	-	-
Maine Central.....	149,504	-	Way .90 }	1,071,086 12	890,892 57	915,073	1,046,905 69	33,911 58	94,498 48
Portland (Horse).....	-	-	4½, 5, 6½, 8, 10 }	-	-	47,612 02	-	-	6,272 10
Portland and Kennebec.....	-	-	-	-	-	-	-	-	-
Portland and Oxford Central.....	-	-	-	-	-	-	-	-	-
Portland and Ogdensburg.....	-	-	About 4 c.	160,055 80	-	69,420 82	90,634 98	3,600	7,836 98
Portland and Rochester.....	-	-	3 c.	-	-	58,417 16	93,874 11	5,058 08	1,039 41
Portland, Saco and Portsmouth.....	164,864½	86,001	2½ to 3½	161,072 49	319,435 90	202,176 81	290,943 32	16,110 65	9,365 04
Portsmouth, Great Falls and Conway..	-	-	-	-	-	-	-	-	-
Somerset.....	2,754	409	5 c.	-	-	2,607 75	3,819 47	-	125 00
St. Croix and Penobscot.....	All	26,498	4 c.	72,709 79	Nothing.	7,089 63	65,620 16	2,100	532 96
Whitneyville and Machiasport.....	-	-	-	-	-	-	-	-	6,500

Abstract of Returns from the several Railroad Corporations—Continued.

NAME OF ROAD.	NUMBER OF			CARS.				NUMBER OF MILES RUN BY				
	Depots.	Engine houses.	Engines.	Passenger.	Baggage and Mail.	Freight.	Others.	Passenger trn's.	Freight trains.	Mixed trains.	Other trains.	Average rate of speed of each.
Androscoggin	-	-	-	-	-	-	-	-	-	-	-	{ Passn'r 19 }
Atlantic and St. Lawrence	33	6	46	All	All	All	560	180,624	671,443	31,375	-	{ Freight 11 }
Bangor and Piscataquis	9	2	4	-	2	71	-	Included	in E. &	N. A.	-	-
Bath Branch	-	-	-	-	-	-	-	-	-	-	-	-
Belfast and Moosehead Lake	-	-	-	-	-	-	-	-	-	-	-	{ Express 30 }
Boston and Maine	79	11	69	All	153	All	1,628	940,575	432,631	-	51,492	{ Passn'r 24 }
Bucksport and Bangor	-	-	-	-	-	-	-	-	-	-	-	{ Freight 24 }
Dexter and Newport	-	-	-	-	-	-	-	-	-	-	-	{ Passn'r 22 }
European and North American	34	6	24	19	12	474	-	234,940	171,118	-	-	{ Freight 13 }
Grand Trunk	-	-	-	-	-	-	-	-	-	-	-	-
Houlton Branch	-	-	-	-	-	-	-	-	-	-	-	{ Passn'r 22 }
Knox and Lincoln	9	2	5	All	All	All	69	64,653	34,359	-	14,195	{ Others 15 }
Leeds and Farmington	-	-	-	-	-	-	-	-	-	-	-	-
Lewiston and Auburn	{ 75 pas	-	-	-	-	-	-	-	-	-	-	{ Passn'r 25 }
Maine Central	{ 76 frt.	17	61	57	30	1,457	6	486,930	341,583	159,630	281,538	{ Freight 15 }
Portland (Horse)	1	-	82 horses	All	All	All	26	190,422	-	-	-	5
Portland and Kennebec	-	-	-	-	-	-	-	-	-	-	-	-
Portland and Oxford Central	-	-	-	-	-	-	-	-	-	-	-	{ Passenger 22 }
Portland and Ogdensburg	15	4	7	16	4	142	1	60,936	20,448	40,150	25,959	{ Mx. 11, ft. 10 }
Portland and Rochester	14	3	6	7	4	151	14	85,997	50,710	All	3,092	20
Portland, Saco and Portsmouth	14	4	-	-	-	206	-	182,833	180,246	-	95,523	{ Express 28, }
Portsmouth, Great Falls and Conway	-	-	-	-	-	-	-	-	-	-	-	{ Ac. 20, Fr. 12 }
Somerset	1	1	2	All	All	All	3	-	-	5,512	-	20
St. Croix and Penobscot	4	3	4	4	4	230	-	-	8,750	36,404	2,000	14
Whitneyville and Machiasport	-	1	2	-	-	46	-	-	-	-	-	8

Abstract of Returns from the several Railroad Corporations—Continued.

NAME OF ROAD.					Am't charged for depreciation of road and other property.	Number of persons injured in life or limb. Cause of injury, and whether passengers or employees.	Whether such accident arose from carelessness or negligence on part of employee, if so is person still employed?
	Whole number of stockholders.	Number who reside in the State.	Amount of each dividend.	When made.			
Androscoggin	-	-	-	-	-	-	-
Atlantic and St. Lawrence	260	127	{ 3 pr ct.	1st July.	Nothing.	-	-
Bangor and Piscataquis	-	-	{ 3 pr. ct.	1st January.		-	-
Bath Branch	-	-	-	-	-	-	-
Belfast and Moosehead Lake	211	206	-	-	-	-	-
Boston and Maine	4,146	211	{ 280,000	May 15, '74	Nothing.	killed 7 passen'rs, 15 { 1 employee,	Inj. 4 passen'rs 11 { 1 employee
Bucksport and Bangor	-	-	{ 280,000	Nov. 15, '74.			
Dexter and Newport	157	148	{ 36.60	March 2.	Nothing.	All other items 2 employees.	included in M. C.
European and North American	351	222	{ 36.60	Sept. 2.			
Grand Trunk	-	-	-	-	-	-	-
Houlton Branch	-	-	-	-	-	-	-
Knox and Lincoln	250	250	None.	-	Nothing.	-	-
Leeds and Farmington	-	-	-	-	-	-	-
Lewiston and Auburn	-	-	-	-	-	-	-
Maine Central	594	471	{ 5 per cent.	1865 and 1874	Nothing.	-	-
Portland (Horse)	115	105	{ 3 per cent.	1870 and 1873			
Portland and Kennebec	-	-	{ 2 per cent.	1869.	-	1	Not retained.
Portland and Oxford Central	-	-	{ 4 per cent.	1872.	-	-	-
Portland and Ogdensburg	226	219	-	-	Nothing.	2 { 1 passenger. 1 employee.	-
Portland and Rochester	158	145	-	-	-	-	-
Portland, Saco and Portsmouth	1,534	97	{ 75,000 00	January 1st.	Nothing.	4 employees.	3. Carelessn's; disch.
Portsmouth, Great Falls and Conway.	-	-	{ 75,000 00	July 1st.			
Somerset	121	120	-	-	-	-	-
St. Croix and Penobscot	67	28	3,000	Feb 2, 1874.	Nothing.	-	-
Whitneyville and Machiasport	-	-	-	-	-	-	-

Under the act of 3d March, 1874, all the railroads of the State have made their returns to the Commissioners, with the exception of the Portland and Oxford Central, and the Houlton Branch, and have severally answered the enquiries proposed in the blanks furnished them by the Secretary of State; so far, perhaps, as was practicable for them to do so. And we have presented the information thus obtained of their operations in tabular form on the preceding pages, that it may be convenient of reference to railroad men. It will also be interesting to the statistician.

It has been suggested that these enquiries be extended further, so as to require a return of the general tariff of the roads, and a statement of special contracts, if deemed advisable by the Legislature. Complaint is sometimes made of unjust discrimination against localities or individuals in the rates fixed by the roads. The Legislature undoubtedly has a right to reach and punish any abuse of granted privileges. And a remedy can be easily provided against the abuse by imposing upon the Railroad Commissioners the duty of investigating any charges of misfeasance, and if upon such investigation they are found apparently true and of sufficient importance to warrant it, the Commissioners might be authorized to hear, upon notice to the road and all parties interested, the case as alleged. And if, in their opinion, the charge of oppression is sustained against the road, to so find and certify, and upon such finding, the party complaining to have the right by appeal direct to the Supreme Court in action at law for reclamation against the road.

We are happy to learn, within a few days, that the Boston and Maine and Maine Central railroads have amicably adjusted their differences, and that the Eastern will probably acquiesce in a similar arrangement. This removes the hindrances that have heretofore blocked the free passage of travel and freight between these roads, so that all the roads in Maine now connect with each other so far as the guage will admit, (and it is believed that the European and North American road will soon change its guage to the prevailing one), and are open as navigable waters for any to enter and use, going whither they please upon them with their merchandise as well, and subject only to reasonable rates of pilotage and

towage. There are, besides, incidental advantages to be anticipated from this compromise of adverse interests, and in the economy of resources that will follow it, and which we hope will soon be manifest in that harmony and concert of railroad action that shall give to all parts of the State further and better, and where none now exists, new railroad facilities.

And if, to the regret of some, the House and the "lobby" of the Legislature shall, in its future sessions, miss the genial faces of the representatives of these roads coming to Augusta to watch each other in every move upon the chess-board of railroad legislation, still the two Houses proper will have their term left more to themselves, and may be comforted with the reflection that if they lose something in hospitable companionship, they will save something in time to devote to a careful consideration of other matters of appropriate and, it may be, as urgent legislation.

S. H. BLAKE,
A. W. WILDES,
JNO. F. ANDERSON, } *Railroad*
Commissioners.

AUGUSTA, December 31, 1874.