Public Documents of Maine:

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

PUBLIC OFFICERS AND INSTITUTIONS

FOR THE YEARS

1871-72.

AUGUSTA:
SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.
1872.

REPORT

OF THE

RAILROAD COMMISSIONERS

OF THE

STATE OF MAINE,

FOR THE YEAR

1871.

AUGUSTA:
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REPORT.

To the Governor:

The Railroad Commissioners respectfully submit their Annual Report:

The Commissioners have spent much time the past season in the examination of the railroads of the State and of their rolling stock. We have examined every railroad carefully, and with the exception of the "Houlton Branch" and the St. Croix and Penobscot, several times, and the trunk lines many times, and have advised repairs and renewals from time to time wherever in our judgment the preservation of the road rendered it necessary or its prospective unsafety justified them as precautionary. Upon two roads we have given the managers statute notice that their roads were unsafe, at the time of examination, for passenger trains over them.

We have jurisdiction over the tariff for passengers and freight, upon crossing and intersecting roads in case of difference between them; also on petition of responsible parties, the duty is imposed upon us to decide whether public convenience and necessity require the erection and maintenance of new depots, and the more delicate, and very often very responsible, authority, is entrusted to us of confiscating real estate for the use of a railroad for "side tracks and depot buildings." And we have heard and decided questions arising under each of these heads of jurisdiction, not to the satisfaction of all parties in interest, but with the best judgment vouchsafed to us, and after most careful and patient examination. And some of these questions show how important is railroad transportation to certain of the productions of the State, and others illustrate how closely and unobservedly the railroad has interlaced itself around the industries of the State, like the root of a tree around logs and stones in its outreaching after sustenance and support.

Androscoggin Railroad.

This road extends from Brunswick to Leeds Junction—27¾ miles, with a branch track to Lewiston—5 miles. It has taken a lease, however, of the Leeds and Farmington road—38 miles—for fifty years from December 1, 1865, and has extended it across the river to the village at Farmington—¾ of a mile; and the entire line is now known as the Androscoggin road—71½ miles. It has been leased to the Maine Central Railroad Company and passed into their control July 1, 1871.

The track of this road, 9th November, is in good condition, well ballasted and ditched, with the exception of the 11 miles between Crowley's and Leeds Crossing. This 11 miles has been neglected in its track and bridges. The Sabattisville bridge, to which we have every year called the attention of the Superintendent, still remains a weak wooden structure. It has been repaired with a view of strengthening it, and may be safe for business during the winter, but ought not to remain longer than the early spring without large repairs, perhaps equivalent to reconstruction. The bridge near West Farmington, and the one at Wilton, are both high, the timbers small and not well braced. They are no doubt safe with the light trains which pass over them always driven with great care. But should a wheel get off the track in passing over them, or serious jar occur from other mishap, the consequences might be disastrous to bridge and train. They should have stone abutments, and the reach narrowed by embankments should be spanned by a permanent truss structure.

This road has never been brought uniformly up to grade; its depressions should be elevated, and its summits reduced, and the track brought into line. The road, like so many others, was too cheaply built, and though very well cared for has not outgrown the defects of its original construction; and the freshet of 1869 and the washouts of last October, have retarded its improvement. Some of these washouts have not been re-filled, but temporary bridges have been placed across them, which as soon as practicable should give place to permanent embankments. In one of our examinations of this road we recommended the putting down of a guard rail upon the sharp curve of the Sandy River bridge, and double spiking the outside rail, and additional bracing to the bridge. Perhaps the track of the road was never, however, in better condition than it now is, the section above Crowley's before alluded to, excepted.

The rolling stock consists of 8 locomotives, 8 passenger cars, 3 mail and baggage cars, 2 saloon cars, 58 box cars, 58 platform cars, 8 cattle cars, 14 hand cars, 12 shove cars, 4 snow plows, and 1 rotary steam-pump car, and is in very good order.

The earnings of the road for the year ending June 30, 1871, were $232,930.05. Expenses of operation $130,549.44. This is an increase of $28.00 in the business of the road over the preceding year, and an increase since 1860 from $34,033.51 to $232,930.05 in 1870–1. And it well sustains the report of the directors of August 22, 1871, in according "their full measure of praise therefor" to the "efficiency and harmonious action" of the Superintendent and the other employees of the company, for it is a great increase without any marked change or growth in the country contributing to the road. The road, as before stated, has been leased to the consolidated Maine Central, and if the same judicious management shall be continued, increased facilities which it will be in the power of the new control to grant, will attract new business and yield still greater net receipts.

The convenience of travellers requires a new station-house at Leeds crossing, and the Maine Central can hardly afford to allow the discomforts sometimes felt by passengers there in changing from one road to the other, to be much longer continued.

The bonded debt of the Androscoggin proper, portion of the road, is $425,000, and of the Leeds and Farmington portion $633,000—now guaranteed by the Maine Central. John H. Kimball, Esq., of Bath is President. Arthur Brown, Esq., continues Superintendent.

Portland, Saco and Portsmouth Railroad.

This road has 52 miles of main track, extending from Portland to Portsmouth, N. H. The road is under contract of lease to the Eastern Railroad, and furnishes locomotives to haul the passenger trains of the Eastern and Boston and Maine over it. It has the fortunate peculiarity of having no bonded debt and the good reputation of having always paid dividends upon its stock. It is the oldest road in the State. Its equipment consists of 20 engines, 175 freight cars, 5 freight saloon cars, 1 passenger baggage car, 1 smoking car, 2 eight-wheeled cars for exclusive use of Eastern Express Company, 25 snow plows. The rolling stock has been kept in good repair at the company's machine shop.

The repairs for the season have been the laying of something over a mile of side track—838 tons of re-rolled rails with fish-joint

and 16,231 sleepers. A new engine house has been built, and a turn-table put in, at South Berwick Junction, and a new station-house put up at Elliot. The track and bridges have been kept in a fair condition of repair, and the bridge at Portsmouth has been strengthened.

We have examined this road several times during the season—regarding it our duty to do so, as it is a trunk line, and have been gratified by the promptness with which repairs suggested by us have been ordered by the Superintendent. The repairs suggested at Dunston river bridge, Saco river bridge, West's passway, pile bridge at North Berwick, road bridge at North Berwick, and bridge at South Berwick Junction, Shorey's brook and Portsmouth bridge, have all been made, we are advised, excepting at the road bridge at North Berwick, and there the bridge has been made secure and a new one is in preparation to be put in next spring.

The road is very well ballasted and drained; but if it were to be brought up to a much higher standard of excellence, the expenditure might well be justified, we think, under the encouraging assurances of the President in his report of 31st May last of "the increasing amount of freight transportation which the opening of new lines of railroad east of us brings to this road." The road, too, needs a larger and more commodious depot at Portland. And a patient public will wait another year's assurances of better accommodations with an anxiety which we hope the road will soon relieve, by the erection of station buildings becoming the locality, and reasonably convenient to travellers.

The earnings of the road for the year ending May 31, 1871, were $628,430.58, and expenses and renewal account $445,869.80, leaving net $182,560.78.

Gov. Goodwin has retired from the Presidency which he had honorably filled for twenty-two years, and Thornton K. Lothrop, Esq., of Boston, has been elected in his stead.

F. Chase, Esq., of Portland, continues Superintendent.

European and North American Railway.

The European and North American Railway is now open from Bangor to St. John. The portion of it in the State of Maine, from Bangor to Vanceborough, is 114 miles, the portion in New Brunswick, from Vanceborough to Ferry at St. John, is 91½ miles, making the entire length of the road 205½ miles. There is then, from St. John eastward, a railway completed some years since to

Shediac upon the Gulf of St. Lawrence, 108 miles. This is the route to Prince Edward's Island, taking steamer at Shediac across the gulf. But the direct and through route for Nova Scotia and foreign travel will be to Moncton, on the Shediac road, and thence by way of Amherst and Truro to Halifax, upon the International road. And this road is completed from Moncton to Amherst; there is then a gap of 74 miles to Truro. From Truro to Halifax, 61 miles, the road is made, and has for some time been in operation. This link between Amherst and Truro, of 74 miles only, remains unfinished; upon 29 miles of it, however, the rails were to be laid this fall—probably now done—and upon the balance work is actively progressing and the funds provided, so that its completion another season is assured. There will then be railway communication direct from Bangor to Halifax, 467 miles, and by steamer thence seven or eight days to Queenstown.

This road must become in time of peace one of the highways of the world. It is in the line of the shortest route between London and San Francisco, and freight or travel can make the circuit of the world over it quicker than by any other route.

Its effect upon the development of the great natural resources of the Maritime Provinces and upon the million of people who dwell there and upon the adjacent islands, is in the future. It will certainly, however, bring them more in communication with us, and more intimate business relations may awaken enterprise and remove estrangement. American and Provincial travel and traffic will go over it to and fro like the shuttle in the loom, and there may be woven from the woof and warp of commerce and mutual interest closer social and political relations.

That portion of the road from Mattawamkeag to Vanceborough, 36 miles, just opened, is not fully completed, though it is in condition that cars run over it very smoothly for a new road. The cuts require to be widened and the embankments brought up to grade, the ditches deepened, wooden culverts taken out and stone ones put down in their stead, and more and better gravel put upon the track; and there should be stone abutments to the bridges. The sleepers are not so large and good as might have been expected from the proximity of the road to the fine cedar of Aroostook, and there should have been 2,640 to the mile instead of 2,240 only, as we believe there are. The 400 ties and the 1,600 spikes saved to the mile had better been in. The bridge masonry on this new portion is good.

The bridge at Mattawamkeag should be covered—it has already began to rot, and the one at Kingman was intended only as a temporary structure, to be replaced by a Howe truss with stone abutments; but we directed additional braces and girders in the meantime. The circumstance that the road from Mattawamkeag to Vanceborough is all the way in the woods, and the consequent difficulties in the way of its construction, and the desire upon both sides of the Boundary to hasten its opening, were among the reasons, no doubt, of its imperfect structure in parts, and of its being left for the present, unfinished, in other places. But construction trains are at work—October 10, 1871—upon it, and early another season it will be completed in all the details of finish and equipment, thoroughly and permanently, as demanded by the great business and travel sure to go over it.

From Bangor to Mattawamkeag the road is in the main in excellent condition. Some track stringers over culverts should be of larger timber. The trestle work approaches to the bridges at Orono and Oldtown should be replaced by masonry and truss bridging or by embankments protected by rip-rap. We advised, at our last examination, additional track timbers and blocking to the Sunkhaze bridge and additional floor timbers to the Lincoln bridge.

The rolling stock consists of 10 locomotives, 13 passenger cars, 6 baggage cars, 30 box cars, and 102 platform cars, which are new and good, besides 3 engines and 30 freight cars that belonged to to the Oldtown road, the track of which is now taken up.

The bonded debt of the portion of the road in Maine is $1,000,000 to the city of Bangor for bonds issued in aid of its construction, January 20, 1869, and secured by first mortgage of the road to Winn, 56 miles, and of $2,000,000 of its own bonds of March 1, 1869; 6 per cent. gold payable March 1, 1899, secured upon the road from Bangor to the State line (subject to the mortgage aforesaid to Winn) and its equipment, and upon the lands donated by the State. These lands are held in trust by Hon. H. Hamlin and J. Edgar Thompson, under deed of March 1, 1869, to secure this $2,000,000 bonds,—the proceeds of sales of lands to be appropriated in the purchase of bonds, if they can be had at par; if not, then in United States, State or municipal securities as a "Sinking Fund" for that purpose. The "control and management" of the lands are under the "superintendency" of Hon. Noah Woods, and J. A.

Purington, Esq., of Oldtown, is "Immigrant Agent" for their sale to settlers.

The guage of the road will probably be narrowed as soon as the consent of the Legislative Council of New Brunswick may be obtained. A reconnoissance has been made with a view to a narrow guage road into Aroostook to connect with the European and North American Railway at or above Moluncus.

G. K. Jewett, Esq., of Bangor, is President. J. M. Lunt, Esq., Superintendent.*

The opening of this road was celebrated at Bangor with municipal festivities and military display on the 18th of October, and by a dinner given by the railroad company on the 19th at Vanceborough, which is on the border between the two governments. The President of the United States, the Governor General of the Dominion, and the Governors of Maine and New Brunswick attended these festive ceremonials. And there was eminent propriety in these acts of courtesy. For this road is international in its character. It extends from the heart of Maine, one of the States of the Union, to the commercial metropolis of the Maritime Provinces, a portion of the Dominion. It was, then, becoming in the President of the United States, and in the Governor General of the Dominion, by their presence at a ceremonial deemed proper upon the opening of a new inter-communication between the two peoples, to give assurance, that recent estrangement had happily subsided, and by the pledge of their word and their hopes, assurance of the continuance of a reciprocity of national kindnesses, without prophecy of interruption in the future. And it was graceful on the part of the Governor General of the Dominion, as the representative of his Sovereign, and of the Governor of New Brunswick, to to come here to tender, under American roof, words of amity and hospitality, and to counsel acts of national forbearance and good neighborhood.

Further, this road is a work originating in the policy of material development. And it is material development that to-day is particularly distinguishing American enterprise and contributing to the expansion of American resources. It was, then, becoming in the President of the United States and in the Governor of Maine to give the encouragement of their presence at festivities commemorative of the completion of a work, which, with others like

* Mr. Lunt has now resigned, and M. H. Angell, Esq., has been appointed to his place.

and kindred to it, is yielding to the country a royalty of employment and prosperity, beyond Princely precedent, and which assures it greatness of empire, beyond prediction of seer or enthusiast. It was a fitting recognition, on the part of the President of the United States and the Governor of Maine, of the industries which sustain the Republic.

Portland and Rochester Railroad.

This road has been completed to Rochester, N. H., and regular trains commenced running through upon it 31st of July last. The old part of the road from Portland to Saco river, originally not very thoroughly made, had become worn and out of repair, and we noticed sometime since with pleasure that the President of the road had recommended such repairs upon this portion of the road "as will be equivalent to reconstruction."

We had urged last year a renewal of a large portion of this track, and upon our inspection of it on the 20th instant we were gratified to find that 900 tons of new rails had been laid upon it this season, being about ten miles out of the eighteen, and 12,163 new ties placed in track. In our earlier examination of this road we had suggested new track-stringers upon the pile bridge at Shaker meadow, and certain additional work upon several of the smaller bridges, all of which we believe has been done, and well done. But we regret to state that Saco river bridge has not been strengthened by arches, as recommended, or by other mode. This bridge requires its abutments extended into the river to lessen the span, and arches or other support to strengthen it. The pile bridge near Portland needs repairs. The new part of the road is in good condition. The business, we are informed, has greatly increased since its opening to Rochester, and the directors are encouraged by most gratifying assurances of its prospects in the future.

The gross earnings of the road for the year ending August 31, 1871, were $85,569.90. The expenses were $54,952.46; net earnings $30,617.44; being an increase in gross earnings of $11,143.72.

The rolling stock consists of 6 locomotives, 11 passenger cars, 3 baggage cars, 51 flat cars, 27 box cars, and 2 snow-plows, and is in good state. The bonded debt is $1,050,000.

This road, with its connections, opens another avenue to Boston and the West, and has its advantages for local and through travel that inspire confidence in its usefulness and success. Indeed, it is claimed that when its connections are all formed, that it will save

some twenty miles in distance between Portland and New York, —besides avoiding the inconvenience of transit through Boston. If this be so, its directness of route between so large cities and between the East and West, must tell surely and strongly in its favor, and insure it, and soon, a large volume of travel.

Hon. John Lynch is President. Hon. Fred Robie is Managing Director. Thomas H. Turner, Esq., is Superintendent.

Boston and Maine Railroad.

So much only of this road is within Maine as lies between Salmon Falls and South Berwick Junction—2½ miles. The track and rolling stock are both in good condition. The rolling stock, as appears from Report of Directors of Nov. 8, 1871, consists of 50 locomotives, 88 passenger cars, 23 baggage cars, 1,055 regular merchandise cars, besides gravel and other cars not used for general merchandise. And from same report it appears the earnings of the road for the year ending May 31, 1871, were $1,964,922.56, and being in excess of the earnings of the preceding year of $98,-860.86. Leave was granted by the Legislature of Maine at its last session, to the Boston and Maine Railroad Company, to extend their road into Portland, and the company have voted to accept the charter, and have located the extension and commenced its construction.

Mr. Cogswell retired from the Presidency of the road in November, and Nathaniel G. White, Esq., of Lawrence, was chosen in his stead.

William Merritt, Esq., of Boston, continues Superintendent.

Portland and Oxford Central Railroad.

This road extends from Mechanic Falls, where it connects with the Grand Trunk, to Canton, 27½ miles. From Hartford to Canton the road is run over, perhaps safely at a very low speed, but has never been completed. Only a small portion of the road has been fenced, as the law requires, and the rolling stock is old and worn. It has not been well kept up, and requires new equipment and very considerable expenditure, if not for the safety of passengers, certainly to make it inviting to travel and traffic.

We have had much anxiety for two years past about "Pottle Bridge" upon this road, but have been assured from time to time in answer to our admonitions, that the company were intending immediately to rebuild it. On the 23d of August last we examined

it, and found it so weak and rotton, that we deemed it unsafe for passenger trains to pass over, and gave the company the statute notice of unsafety, requiring them to make certain specified repairs within fifteen days, and in the same notice advising the President to altogether cease running trains over it until the repairs were made, though we did not assume to have any authority to so order. The bridge was absolutely unsafe in our opinion, and we should have stopped the running of trains over it at once if we had had any right as commissioners to do so. But the managers of the road, on the contrary, regarded the bridge as safe, and continued to run trains over it, disregarding our advice in this respect, but soon commenced the stone abutments of a new bridge, which, if completed according to the design, will be a safe and permanent structure.

After the expiration of the time in which we required the repairs to be made, as provided in chapter 51, section 74, of the revised statutes, we again examined the bridge, and found passenger trains running over it daily, although the repairs ordered had not been made; and though the bridge had been in the meantime materially strengthened, yet we did not then consider it safe. We therefore applied to the Supreme Judicial Court at Paris, on the third Tuesday of September, Chief Justice Appleton presiding, for an injunction against the passage of trains with passengers over said "Pottle Bridge," and the court enjoined the respondent corporation, its officers and servants, by an order that "the managers of its railroad be ordered, and they hereby are ordered, to desist and refrain from running its cars, with passengers, over and across the bridge named in petition of Railroad Commissioners, until the said Railroad Commissioners issue their permission to said corporation to run its cars, with passengers, over the above named bridge, or until otherwise ordered by this Court."

We state this case a little in detail, as it may be suggestive, we think, to the legislative mind of needed amendments to the present law upon the subject.

On 15th May last, many citizens of Hartford, upon the line of this road, presented a petition under statute of 1871, chapter 204, asking the establishment of a depot at Hartford Centre. Upon this petition we ordered notice, and upon return day heard the petitioners and respondents, and decided that public convenience and necessity did require a depot as prayed for, and accordingly

ordered its erection within thirty days. The railroad company did not make the depot as ordered by us, and we applied to the Court to enforce a compliance with our order as provided in section 3, act of 1871, and of section 75, chapter 51 of the revised statutes. The corporation appeared and objected to enforcement of order, for the reason that the law of 1871, chapter 204, was as they alleged, in conflict with rights granted by their charter, and claiming a right to be heard before the Court upon the question of public convenience, and necessity of the depot.

The Court *pro forma* ruled that answer of respondent was insufficient as to the unconstitutionality of the statute of Feb. 24, 1871, and ordered that prayer of Commissioners be granted, to which respondent excepted; it further "being agreed if the ruling is sustained, the Court are to determine whether respondent has a right to a hearing before this Court as to the question of the necessity and convenience of the erection of the depot prayed for."

However the Law Court may determine, it probably was not the intention of the Legislature to trouble the Court with a hearing upon the necessity of depots by way of appeal from the Commissioners, and if the law authorizing the Commissioners to order depots where public convenience and necessity require, is not binding upon the earlier railroad charters of the State, it may be regretted that rights were improvidently granted without due guaranty for the enjoyment of the uses anticipated by the public.

Permission has not been granted to the company by the Commissioners to run passenger trains over "Pottle bridge" at the time of this writing, nor have they been applied to therefor.

F. B. Smith, Esq., is President and Manager.

Dexter and Newport Railroad.

The length of the Dover and Newport Railway from its connection with the Maine Central at Newport, to Dexter, is about 14 miles. The road was opened Nov. 26, 1868, and has since been run with great regularity of trains. No important detention, in mean time, we believe, nor any accident of consequence has occurred. It has been operated by the Maine Central under a lease for 30 years, at a rent of $18,000 per year, and has no rolling stock of its own.

The track is in good condition; an abutment of a bridge over

the Nason stream, injured by a jam of logs last spring, has been repaired—and additional culverts have been built.

The town of Dexter loaned its bonds in aid of its construction for $125,000, the town of Corinna for $50,000, and there has been issued stock to the amount of $125,000—making $300,000 in all—upon which sum it is that the Maine Central pays interest. And it is creditable to the company and the contractors that a good road was made, and at a cost within the engineer's estimate. The depot buildings at Dexter are convenient and suitable.

It has been proposed at times to extend this road into the Piscataquis valley. Such an extension would divide the business and limited travel of Piscataquis county with the B. & P. R. R., but would not add much to the stimulus of development already excited by that road and its proposed continuance to Moosehead Lake. The money which the extending of this road to Piscataquis would cost, if invested instead in some manufacturing establishment at Dexter or Dover, would probably induce more new industries and yield better returns to stockholders than the proposed extension.

Charles Shaw, Esq., of Dexter, is President; Isaiah Owen is Conductor and Local Agent.

New Brunswick and Canada Railway.

A "Branch" of this road extends 3 miles into the State of Maine to Houlton. This "Houlton Branch" we examined on the 12th of October. It was opened in 1870. The subgrade road-bed is well made; the sleepers are good in quality and size and placed thick enough in the track. The road is not completed in its ballasting and ditching, but a construction force is at work upon it. The iron is of too light weight, but apparently of good quality and is of the fish-plate pattern. The general construction and alignement are good. The depot at Houlton—apart from its location—is well calculated to convene the business of the place. The rolling stock used is that of the N. B. & C. Road and seemed to be adequate to the demands upon it.

The opening of E. & N. A. Railway must add very largely to the business of the N. B. & C. Road and "Branch." Houlton is an enterprising, wealthy and growing town, and deserves better railroad facilities from some source in another direction. Her border position gives her vantage ground in trade and markets, which she cannot be asked to yield, but the State will not fail to

act wisely in a reasonable effort to retain the business that of right belongs to it.

Henry Osborne, Esq., of St. Andrews, is Manager; W. Crangle of St. Stephens, is Superintendent.

Maine Central, Portland and Kennebec, and Kennebec and Somerset Railroads, consolidated.

MAINE CENTRAL. This road has been extended from Danville Junction to Cumberland, 17½ miles—making its length of track from Bangor 127½ miles. The road-bed of the old portion is in very fine condition. It is well graveled, the ditches have been cleaned out, poor and worn-out sleepers have been replaced by new and good ones. About 800 tons of new rails have been put in track and about 45,000 sleepers, the past season.

The new portion of the road appears to be very well made—the three principal bridges are iron—the masonry is good, and when another spring, the track shall have been brought into better line and surface, and the ditches cleared out, it will be a very excellent piece of road. The station buildings are neat and convenient, and well adapted to their respective localities.

Early last spring the Commissioners understood that important changes were to be made in the running of trains over this road which would require increased watchfuless and care, both on the part of the company and of the Commissioners. Heavier rolling stock, with Pullman parlor cars attached on the day trains and the Pullman sleeping cars on the night trains, was to be used. The night train was a new experiment, and the speed of all the trains was to be increased. We saw, therefore, that the road was to be subjected to increased service not contemplated in its original light construction, and which in our opinion some of its bridges were not in proper condition to sustain. Having the above considerations in mind, we early in the season made a very close examination of the track and bridges, and suggested to the managers the importance of immediate attention to the safety of the road under the increased burdens imposed upon it. In compliance with our suggestions repairs were made, but more important ones advised were neglected until after the disaster of August 9th, soon after which very thorough repairs were made, and reconstruction of bridges begun.

We gave verbal notice of the necessity of repairs, and afterwards, on the 17th of July, advised by letter that the truss bridge

at Newport was rotten in the upper chord, and that the Damascus bridge should be rebuilt, and the bridge at Hampden road crossing strengthened. But these specified repairs were not commenced until nearly a month after the notice, which was given both to the President and the Superintendent, and nothing was done to either until after the accident of August 9th. Immediately after this event four substantial truss bridges were erected, viz: at Hampden road crossing, Hermon Pond, Damascus and Newport.

As some question has arisen in regard to the notice of 17th July, before alluded to, it may not be improper to state, in justice to others than the Commissioners, that Judge Rice, President of the road, requested that notices requiring repairs should be sent to him as well as to the Superintendent, in order, as he stated, that he might know that they were attended to. Letters, therefore, of the 17th of July, were addressed both to Mr. Noyes and Judge Rice, and both were left at the office of the Assistant Superintendent, Mr. Lincoln, at Augusta. Judge Rice received his letter on the 18th of July; and the copy left at the office at the same time for Mr. Noyes, he stated, that he did not receive until the 24th of July; but he was mistaken in this matter, for Mr. Colby, the bridge Superintendent upon the P. &. K. road, received a letter from him containing extracts from this notice of the 17th of July, under date of July 20th. It is due to the Assistant Superintendent's office at Augusta, to make this statement, because it has been censured for not forwarding the notice to Mr. Noyes earlier.

The bridges between Bangor and Waterville are now in a satisfactory condition with the exception of the bridge at Clinton and the one over the Kennebec river at Kendall's Mills. The bridge at Clinton was badly damaged by the freshet of October and notice was given the Superintendent to repair, which has been done in a temporary manner, with the intention, as we are informed, of building a new bridge the coming spring.

The bridge at Kendall's Mills is a high structure, of about 2,000 feet in length, and is built upon three different plans, in trestle, Howe's and McCullum's trusses. The peculiar situation of this bridge upon the line of the great trunk route through the State, and its great length and height above the bed of the river, and the fact of the great volume of travel over it, have made it an object of anxiety to the Commissioners and at times of distrust to the public. It should be as strong and safe and permanent, no matter

what the cost may be, as stone abutments and granite piers and short spans can possibly make it; and earth and stone embankment should take the place of the entire trestle work on the islands. The Howe truss portion of the bridge remains as originally built. The McCullum truss was built in 1861; nearly all the trestle portion of the bridge has been renewed from time to time and a large part of it within three years. We have made many and careful examinations of this bridge, and by verbal and written communications have advised the company to strengthen the trusses with arches throughout their entire length. Since our notice in October a new arch has been put into the eastern span and new rails laid in the track on the bridge, as we advised, but we still think that arches should be put into every span and the iron arch braces into the McCullum spans as originally intended and called for by the plan.

The bridges between Waterville and Danville Junction, we believe are in a safe condition for the present; but arches should be added, we think, to the one across Winthrop pond, and the Lewiston bridge should be opened and fully examined and the roof re-covered. Repairs have been suggested upon the abutments of the bridge over Emerson stream near West Waterville, and upon the pile bridge at Belgrade stream. New station buildings have been erected at Winthrop and Burnham.

Portland and Kennebec. This road extends from Portland to Augusta, 62¼ miles, with a branch to Bath of 9 miles. For the same reasons stated in our report of the Maine Central between Bangor and Waterville, our examinations into the condition of this road have been frequent, and we believe thorough. These examinations were commenced early in the spring, and have been continued from time to time, as the great importance of this line and the interests involved seemed to demand. Repairs and improvements have been made, all contributing to the safety and security of persons and property. About 1,100 tons of new rails have been laid on this and the Somerset and Kennebec road, 10 miles of track raised on gravel, and 55,000 new sleepers put down, and other renewals made. In our several examinations we called the attention of the Superintendent to many of the bridges upon the road, and they have been repaired or rebuilt. The long bridge over the Androscoggin river at Brunswick has been fully inspected and repaired throughout. And the track between Port-

land and Augusta is, we think, in better state than ever before. The road has been subjected to unusual service the past season, for the reason that, in addition to its local trains, all the through passenger and freight trains between Bangor and Portland and Boston have been run over it.

SOMERSET AND KENNEBEC. The length of track of this road from Augusta to its present terminus at Skowhegan, is 37¾ miles. Upon examination of this road it was found that repairs were required upon the bridge over the Kennebec at Skowhegan, the bridge at Martin stream, Fairfield, upon water-way one mile above Kendall's Mills and upon trestle bridges at Seven and Two Mile brooks. The bridge at Skowhegan has been partially repaired, but we think not so fully as is necessary. The other bridges named have been put in a condition of safety, but more extensive repairs and improvements will be needed in the spring. The bridge over the Kennebec at Waterville was carefully examined by us several times during the season, but as the Superintendent and his bridge carpenters were also making a close inspection into its condition our proposed notice of needed repairs was deferred at his request until after their investigation and its result was known. On the 16th of October we notified the President, Judge Rice, that in our opinion the bridge should be strengthened with arches throughout its entire length. One span only has been arched. We still think the three remaining spans should be secured in the same manner.

This bridge was built in 1854, and is therefore 17 years old, and we are of the opinion that not only this one, but all upon the line of the Maine Central and other routes in the State, where they have been built this length of time, even if they do not exhibit any signs of weakness or rot, should be thoroughly overhauled and strengthened.

The rolling stock of the "consolidated" roads aforesaid, consists of 44 locomotives, 40 passenger cars, 14 mail and baggage cars, 10 freight saloon cars, 662 freight cars, 54 hand cars, 38 shove cars, 12 snow ploughs and 4 flange scrapers. This may not be exactly accurate.

In reference to the repairs upon the "consolidated" roads the past season, perhaps it would not be very far from the fact to say, that upon the track and bridges enough had been done to make good the wear and tear and not much more.

We noticed upon these roads in several places "Whelman's Improved Railway Sleeper." This sleeper is made by inserting

into the tie, where the rail when laid crosses and rests upon it, a section of oak plank, the grain of the oak running in the same direction as that of the cedar. The natural qualities of the oak give it ability to resist the tendency of the rail to crush into the tie and also to hold the spikes strongly. The cedar tie thus improved, it is claimed, has the elasticity so essential to railway superstructure without the weakness of the cedar.

The bonded and scrip indebtedness of "consolidated" roads is $5,154,700.

Judge R. D. Rice is President, Edwin Noyes, Esq., of Waterville, Superintendent,* L. L. Lincoln, Esq., Augusta, Assistant Superintendent.

Portsmouth, Great Falls and Conway Railroad.

This road commences at Brock's Crossing, upon the Portland, Saco & Portsmouth Railroad in South Berwick, and crosses the Boston & Maine at Salmon Falls into New Hampshire, and then recrosses the Salmon Falls river into the town of Sanford and thence after running about ¾ of a mile crosses the river again into New Hampshire. Its entire length of track in the State is about 4¼ miles. It is under the management of the Eastern Railroad Company. At our examination early in the season we found that the bridge over Great Works river had not been strengthened as suggested at a previous examination of it, and we made a written request that trestles be placed under the chords, temporarily, until a new bridge could be built, which was done. Upon a recent review of the road, the Superintendent informed us that a new bridge was being framed to take the place of the old one.

The road is now opened to Conway, N. H., a distance of about 65 miles. This road was built in the interest of the Eastern Railroad and a large increase of business is anticipated from it. The rolling stock is furnished by the Eastern Road, is in good condition and adequate in amount.

Geo. W. Brown, Esq., of Boston, is President; A. A. Perkins, Esq., is Superintendent.

St. Croix and Penobscot Railroad.

This road is a merger of the Calais and Baring and of the Lewy's Island railroads into one organization, under a new charter. It extends from Calais to Princeton, 22 miles.

* Mr. Noyes has now resigned, and J. M. Lunt, Esq., has been appointed in his place.

The road has not been well kept up, and needs very general repairs. The track is in very fair condition from Baring to Princeton; the trains over this portion of the road are not so frequent or so heavy as upon the lower part of it, and the rails are less worn and the sleepers sounder. From Baring to Calais the ties are too many of them rotten and worn, the rails laminated, and the culverts giving way. We made one examination on the 11th of October, and were assured by the Superintendent that these matters should all be at once attended to. We had not before examined this road, it being specially exempted from our jurisdiction until the revision of the statutes in 1871.

The bridges across the St. Croix we found in bad condition. Mr. Sawyer informed us that he had made repairs upon them from time to time, such as in his opinion to make them safe, and that he constantly watched them. They are wooden structures, rotten, weak and not well supported; and we gave the Superintendent, who is manager of the road, notice that the Baring bridge was unsafe and should be strengthened at once, and as soon as practicable, fixing the time to build anew. The bridge at Sprague's Falls, in Baileyville, we also required in our notice to be rebuilt, unless upon trial it was found it could be strengthened in the way we advised or in some other manner so as to make it safe. We directed repairs upon the other bridges and upon the culverts. The company propose to extend their road another year to Grand Lake stream, 13 miles, toward a connection with the European and North American Railway.

The equipment of the road consists of 5 engines, 2 baggage cars, 205 freight and rocker cars.

The bonded debt is $237,700, with a sinking fund at close of 1870 of $18,900.

The earnings in 1870 were		$83,429 59
Running expenses		47,898 64
Net		$35,530 95
The receipts were, from passengers	$9,738 72	
Freight	70,277 21	
Mail service	2,000 00	
Rent	1,313 66	
		$83,429 59

The business of 1870 was larger than that of any preceeding year, and the increase has been uniform from year to year.

Half of the bridges across the St. Croix are in New Brunswick, and four miles of the track is entirely within Provincial territory. The Superintendent informed us that the passage of American troops over this road during the rebellion created some uneasiness in the minds of the Provincials, but any sensitiveness that sympathy for one party in the controversy may have given rise to has long since subsided, and the kindly influences of good neighborhood and reciprocal interests have long since healed all wounded feelings, and the difference between the people of St. Stephens and Calais in their social and business relations is now as invisible as is the boundary line in the thread of the river that divides the two towns. And yet, it might have been wiser, apart from governmental considerations, regarding the cost of the two bridges in original construction, and the repairs and renewals wooden structures always necessitate, to have located the road entirely upon the western bank of the river within American territory. Indeed, we have hardly viewed a road where it has not appeared to us that either more skilful engineering or a more careful examination of the present and prospective sources of the business of the road would not have led to a modification of its location. Too much pains can hardly be taken, we think, or too great expense of reconnoisance incurred, in fixing upon the route and its terminus, and in locating the every intermediate rod of a proposed new road.

The time fixed in our notice for the rebuilding the Baring bridge has not yet expired. But in the mean time the Superintendent, Mr. Sawyer, advises us under date of the 18th inst., that he has rebuilt it from the English side to the long span, a distance of 350 feet, and strengthened the long span by chaining two spars of proper strength, one on each side of the track, and extending from pier to pier, and that "we shall rebuild as soon as the material is ready." He also writes that he has placed new track stringers upon each end of Union bridge as we desired, and has on hand the stringers for the entire bridge, which he is putting in as fast as the weather will permit. The Sprague Falls bridge, he says, he has "thoroughly repaired," and gives the details very satisfactorily, and that he has repaired the culverts and cattle passes and added several hundred new sleepers, "and in fact have done all, and I think more, than you required at the time you were here."

We have no doubt, therefore, but that the road is now in very safe condition, and are gratified at the promptness in which the needed repairs have so far been made, and at the assurance that

they will be completed as soon as practicable and in a manner to insure safety to passengers and confidence in the road. It will become our duty to re-examine the road after the time fixed for making the repairs has expired.

G. M. Porter, Esq., a merchant of St. Stephens, is President. W. W. Sawyer, Esq., of Calais, is Superintendent.

Knox and Lincoln Railroad.

This road extends from Bath to Rockland. It was opened for regular trains Nov. 6; it was not then, however, completed. But there were three construction trains at work upon it Nov. 7th, when we went over it, which with favorable weather would place it in good condition for winter. The extension at Rockland of about a mile to the tide water, is a necessity to the success and convenience of the road, and will be made another spring. The length of road will then be from Bath depot about 50 miles. The station buildings are neat and appropriate. A large building to to accommodate passengers and freight under one roof, is being built at Rockland, but too far we think from the centre of business.

The road-bed is narrow, but as new deposits of gravel are opened and put upon it, it will become wider and be improved—but will require, however, a great many yards of gravel to bring it to the proper width and grade. The ditches will be deepened and cleared out as far as practicable this fall and is the more necessary as there is so little ballasting upon the track.

The road when completed will have been much the most costly in the State, very greatly exceeding the original estimates of Mr. Reed, the engineer, upon whose survey and plans the work was undertaken. There are nearly $3\frac{1}{2}$ miles of pile and truss bridging, some of which was very expensive, and 5 bridges have draws for vessels to pass through. There were 120,000 yards of rock cutting, some of it remarkably hard, instead of 50,000 yards as at first computed, and a great excess of earth excavation over original estimates.

The road, unfortunately for its easy construction, runs across rivers and streams instead of along their banks and through their valleys. But the projectors had courage. The road passes through rich, populous towns, that liberally lent their credit in its aid, and is now nearly completed, and as Mr. James Lawrie, consulting engineer, says in his report to the directors, "It will compare favorably with other New England railroads."

The rails are of English make, 56 pounds to the yard, of approved pattern, secured by splice plates of 17 pounds weight.

Passengers do not leave their seats in the cars in crossing the ferry at Bath in going either way, and the ferry boat works admirably. The business upon the road has increased from day to day since its opening and its prospects are most assuring to the directors, particularly in the remunerative item of passenger travel.

The company intend, we are glad to learn, to make their own cars, and we were shown a passenger car made in their shop, plain, but neat and comfortable and in good taste.

The rolling stock is new and good, and consists of 5 engines, 5 passenger cars, 20 box cars, 30 flats cars, 4 baggage cars, 7 shove cars and 8 hand cars.

The bonded debt is—1st loan, $1,270,000; 2nd loan, $475,000; 3d loan, $650,000; total, $2,395,000. But only $275,000 of the last loan has been issued, making bonded liability at present $2,020,000.

Oliver Moses, Esq., of Bath, is President; E. R. Emerson, Esq., is Chief Engineer, and C. A. Coombs, Esq., is Superintendent.

Belfast and Moosehead Lake Railroad.

This road when chartered was intended to reach Moosehead Lake via Newport direct, but a contract for lease, when done, was entered into with the Maine Central and its route was deflected westward to connect with the lessee road at Burnham, instead of at Newport. After its completion a difference arose as to the manner of its construction, between the two companies, and it did not fully pass under the control and possession of the Maine Central until May, 1871. It has since been operated by the Maine Central under lease for fifty years, at a rent of $36,000 per year. The length of the road is 33⅓ miles; it cost about $850,000; its bonded debt is $150,000; its liability beyond is upon stock.

The road has proved permanent in construction and it has not been affected the past season by the severe storms and freshets that have so seriously damaged the road bed of some of the older roads in the State. A construction train has been upon the road a short time since the Maine Central took possession, clearing out the ditches and raising such embankments as had settled, but no additional gravel has elsewhere, we believe, been put upon the track, nor any new sleepers put in, and the track is now in good

alignement and surface and the road-bed and bridges in good condition.

The rolling stock is furnished by the lessee corporation and is increased or diminished as circumstances require. At one of our examinations of the road complaint was made on the route that freight cars had not been supplied in sufficient numbers. If the location of this road was unfortunate, we hope it may still prove remunerative to the lessees and conducive to the growth of Belfast.

C. B. Hazeltine, Esq., of Belfast, is President, and John Mace is conductor and local agent.

Bangor and Piscataquis Railroad.

This road has during the season been extended from Dover to Guilford, 8 miles; making it 48 miles from its connection with the European and North American Railway at Oldtown to its present terminus.

The original construction of this road was slighted by the contractors, and it was not completed when taken off their hands by the company. The track had been only partially graveled, the culverts had not been well secured, and the track stringers over them were and are now too small—and other defects of construction existed in sub-grade and superstructure. But the company a year ago did as much as their means and time enabled them to do, toward finishing and perfecting it. The masonry was good. This season the efforts and means of the company have been so directed to its extension that the old part, though kept in a condition of entire safety, will need another season considerable expenditure to bring it up as its managers intended, to the character of a first-class road.

The bridges have been covered the past summer, and at the suggestion of the Commissioners new and larger track stringers have been put down. We also recommended that crib-work be put around the piers under the long span of the Black Island bridge, in order to distribute the weight over a greater surface and relieve the pressure upon them, and we think the company will act with wise precaution in so doing the present winter.

New station buildings have been erected at East Dover and Lagrange, and a suitable depot is under construction at Guilford. Passenger and freight trains now run to Guilford.

The forests upon the west branch of the Penobscot are brought forty-eight miles nearer Bangor—supplies for the woods are car-

ried so much quicker and cheaper than before—and the timber lands of the "West Branch" are thereby enhanced in value.

The equipment consists of 4 locomotives, 2 passenger cars, 2 baggage cars, 24 box cars, 3 hay cars, 41 flat cars, 1 snow plow, and 8 hand cars, and this rolling stock is in good condition.

The liabilities are $600,000 to city of Bangor on road from Oldtown to Dover to secure for bonds lent in aid of its construction, 6 per cents.—and $120,000 to city to secure for bonds in aid of road from Dover to Guilford, 7 per cent.—and a secured mortgage to protect the road's own bonds for $100,000.

It is proposed to extend the road to Moosehead Lake as soon as practicable. The road is under judicious management, and the development of industries upon its route is adding to its business.

Hon. Isaiah Stetson, of Bangor, is President. Luther H. Eaton, Esq., is Superintendent.

Portland and Ogdensburg Railroad.

The work on this road commenced September 7, 1869. In August, 1871, it was opened to Conway, N. H., sixty miles, for travel and traffic. The capital stock of the corporation is $1,137,900. The road is generally well made, but has not in all places been reduced to grade. In the haste to avail itself of the summer pleasure-travel to the mountains, the surface inclinations were in some instances followed, as an immediate saving of time and expense. But construction trains have been since employed, which will cut down the summits, and with the material so obtained lift the depressions and widen the banks.

The rail is a four inch H rail. The portion between Portland and Lake Sebago is of the manufacture of the Portland Rolling Mill, and the balance was imported by the company and is of very excellent quality. It is of very nearly the pattern that recent German tests indicate to have the greatest strength to a given weight per yard. We notice the company are making the experiment of using Whitman's "improved railway sleepers" to a small extent, (this being a piece of oak let into a cedar tie under the rail,) which has so far commended itself to the favorable consideration of the company.

The rolling stock consists of 5 locomotives, 13 passenger cars, 1 composite, post-office and smoking car, 2 post-office, express and baggage cars, 2 caboose cars, 40 box cars, 10 hay cars, 1 crane car, and 40 flats.

The statement of the earnings of the road for the year is as follows:

September,	1870	16¾	miles	$1,533 62
October,	"	16¾	"	2,095 03
November,	"	24½	"	3,926 26
December,	"	33½	"	4,163 37
January,	1871	33½	"	4,642 94
February,	"	33½	"	5,264 40
March,	"	33½	"	5,019 28
April,	"	33½	"	5,255 44
May,	"	36¼	"	5,934 33
June,	"	49	"	8,438 62
July,	"	55	"	14,425 76
August,	"	60	"	17,048 15
September,	"	60	"	13,501 70
				$91,248 90

The total number of miles worked for the year is 485¾, averaging about 35 miles as a basis of operated line for the above earnings.

In an examination of this road, and a testing of the bridges with a locomotive, we found there was too much deflection in the truss and advised strengthening, which has been done.

It is proposed to extend this road through the Crawford notch of the White Hills, to a continuation at the Connecticut river, (about fifty miles,) with what is called the Western Division of the Portland and Ogdensburg Railroad, which is now building to connect at Swanton, Vt., with the lines already constructed to Ogdensburg and Oswego.

A statement of the condition of the work on the Western Division, as made in October, was as follows:

"The road embraces three corporations, the Essex County Railroad, extending from the Connecticut to the Passumpsic rivers, Montpelier and St. Johnsbury, from the last place to West Danville, and the Lamoille Valley Railroad, thence to Swanton. Eleven miles of the Essex county road will be graded by November 20th, and the iron laid from West Concord to St. Johnsbury, eight miles. The Montpelier and St. Johnsbury road is completed and the track laid, fifteen miles; six miles remain to be ballasted, and will be done this fall. On the Lamoille Valley road the grading from West Danville to South Hardwick is completed and track laying pro-

gressing at the rate of half a mile a day, and will reach South Hardwick by the 20th of November. This will open forty-four continuous miles of road. The grading of the road-bed from Swanton, going eastward, is completed eight miles, and by December 1st will be done, ready for the track, thirteen miles. Track laying has commenced at this end, and weather favoring, will reach Sheldon early in December. Between South Hardwick and Sheldon much work has been done, leaving only thirty-seven miles to be prepared for the iron, and much of this distance is now being worked with a force sufficient to complete the grading by June, 1872. Of the entire line extending from the Connecticut river to Swanton, a distance of one hundred and eighteen miles, there will be completed this fall fifty-four miles, leaving for completion in 1872 sixty-four miles, of which ten miles are graded now, and work proceeding at a rate which will ensure the completion of the entire road in 1872."

This road when completed from Portland to Swanton will make a very direct route to the heart of the great West.

There was a petition to us to view a new depot established on this road at Baldwin, under act of the Legislature of 1871, upon which we ordered notice and heard the petitioners and railroad companies, and ordered the erection and maintenance of depot as prayed for.

Samuel J. Anderson is President. John F. Anderson, Chief Engineer. Jonas Hamilton is Superintendent.

Atlantic and St. Lawrence Railroad.

This road was chartered by Maine, and it retains its corporate name and keeps up its organization, but is practically merged, by lease for 999 years, in the Grand Trunk Railway of Canada, and is operated by it. Eighty-two miles of it are in Maine; it thence passes through corners of New Hampshire and Vermont, sixty-seven miles, to Island Pond, making one hundred and forty-nine miles in all of this Portland division of the Grand Trunk.

We had occasion, in 1868, to ask the interference of the court to stop passenger trains upon this road, as being unsafe. We were then assured by the Directors that the specific repairs asked for should be at once made, and that a new policy in relation to repairs was to be inaugurated. And the company has well kept its faith with us and the public, we think, for the road has been improved every year since, until it has become perhaps equal to

the average of other lines of railway in the State—its bridges are better.

The Grand Trunk is one of the great thoroughfares from Maine to the West, inviting by its directness and the fine scenery upon its route immense freight and travel over it; and we are gratified, therefore, to learn, though out of our cognizance, that the road has in Canada, as well as in Maine, had large expenditures upon it the year past in new rails and new rolling stock and in renewal and repair of track.

From the engineer's department we learn that from January 1 to 24th October last, 8½ miles of re-rolled rails and 44,300 new ties were put down in the main track in this State, and about 5,000 more in the sidings. Nearly 2½ miles of new iron has since been put down. During the summer a Howe Truss bridge over the Royal river at Yarmouth has been rebuilt, 120 feet span and a large amount of money expended in the renewal of the Galt wharf and its sheds, and in repairs upon the company's other property at Portland.

In October there was a washout between Pownal and North Yarmouth,—the break extending about 150 feet in length by 40 feet at its greatest depth,—occasioned by the incapacity of the culvert to carry the water. This was through inefficient construction when the road was built, and we mention it here to induce upon railroad managers in the State, so far as we can, the policy of requiring culverts always to be large and strong. Economy in the end, as well as safety, demand it.

No portion of the rolling stock of the Grand Trunk is appropriated exclusively, we believe, to its Portland district, but cars for transportation of lumber are owned by individuals, and are carried by the company, from mills on the route in Maine and beyond, to Portland. The Grand Trunk has, however, for its general use, so much of it passing over the Maine division as may be necessary, a large equipment of rolling stock, not all of it of the best character, and has added to it the past season 21 engines, 200 platform cars, and 900 changeable guage cars and 20 Pullman sleeping cars.

Upon the Portland division of the Grand Trunk there are still remaining too many defective sleepers and too much worn and laminated iron, and the ballasting and drainage have never been well attended to. If the safety of travellers does not require more gravel upon the track, the economy of maintenance cer-

tainly does; for rails cannot last long that are not kept firm in place and uniform in line and surface, nor where the friction is increased by a loose track.

The Grand Trunk is largely using steel rails. Mr. Brydges, the managing director, writes Oct. 25th, 1871, that "we shall have in the main line between Island Pond and Toronto by the end of this year about 140 miles of steel rails. We have decided after this year to put no more iron rails in the main track. We have contracted for the next three years for 14,000 tons of steel rails yearly from England, the whole of which will go into the main track. This in addition to what will be laid in by the end of this year will make the whole length from Island Pond to Sarnia of steel rails, with but a very small deficiency. We should lay steel rails on the American portions of our line, were it not that the very high duty renders it impossible to encounter the expense."

We regret that there are difficulties in the way of the experiment of steel rails in Maine, and when too so fair a trial could be had as this 82 miles of the Grand Trunk in this State would afford.

The Hon. Michael Porter, President of the Grand Trunk, in his report in behalf of the directors, Dec. 31, 1870, says, "The laying of steel rails with a view to future economy will increase in the meantime the charge for renewals, as the extra cost of steel rails as compared with new English iron rails is about £4 per ton, and as compared with Toronto re-rolled rails, about £2 10s per ton. In three or four years, however, from the present time, the company will be receiving the benefit of this extra outlay for putting down steel in place of iron rails." He adds, "and the steel rails which were laid in the track during the past season have given great satisfaction. They were exposed to the severity of the coldest winter which has been experienced in Canada during the past twenty years, and with the three exceptions in first laying mentioned in the engineer's report, not a single steel rail has broken or shown any signs of fracture or wear." And the experienced engineer referred to, E. P. Hannaford, Esq., of Portland, says: "Three rails cracked in the track during September before being finally surfaced, since which none have broken or shown signs of failure."

Mr. Coggswell, President of the B. & M. Railroad, also says in his official report of Oct. 19, 1871, "The steel rails heretofore laid down upon our road have thus far proved satisfactory. But in order to keep the track in good condition under the greatly increased traffic the outlay for rails continues to be very great."

The use of the steel rail upon the New York Central and Pennsylvania Central, has also proved satisfactory, we are advised. If the steel rail shall prove by fair trial as much superior to the iron rail, as the steel tires have over iron tires, and as the Grand Trunk now thinks it will, and upon roads where the business is heavy more economical in the end, we shall hope to see the early adoption of it into use wherever the greater cost can at first be borne. For it is quite apparent that the rail now in use with us is too light and inferior in quality for heavy and rapid trains over it.

Fifty-three and one-half miles of Bessemer steel rails were laid on the Grand Trunk in 1870, on sleepers with oak blocks under the joints. It seems to us that these oak blocks must be an improvement upon the naked tie, and we commend the trial of them further by the roads of Maine.

At one of our examinations of this road some defects were discovered in the temporary trestle bridge at Yarmouth, Whitman truss bridge, iron girder bridge in Bethel, and the Peabody river bridge. Notice of these defects was given to the proper officers of the Company and the needed repairs have been made.

C. J. Brydges, Esq., of Montreal, is Managing Director of the Grand Trunk of Canada, and C. E. Barrett, Esq., of Portland, is Local Treasurer.

Miles of Railway in Maine.

Portland, Saco and Portsmouth	52 miles.
Portsmouth, Great Falls and Conway	4¼ "
Boston and Maine	2½ "
Portland and Rochester	52 "
Portland and Kennebec	100 "
Bath Branch of Portland and Kennebec	9 "
Androscoggin	71½ "
St. Croix and Penobscot	22 "
Belfast and Moosehead Lake	33¼ "
Grand Trunk	82 "
Maine Central	127½ "
Newport and Dexter	14 "
Portland and Oxford Central	27½ "
Bangor and Piscataquis	48 "
European and North American	114 "
Portland and Ogdensburg	60 "
Houlton Branch	3 "
Knox and Lincoln	48½ "
Total	871 "

Miles of Railway opened in 1871.

Portland and Rochester	16 miles.
Portland and Kennebec	1 "
Maine Central	17½ "
Bangor and Piscataquis	8 "
European and North American	56½ "
Portland and Ogdensburg	27 "
Knox and Lincoln	48½ "
Total	174½ "

And there are under construction 73 miles.

The railroads of the State were originally some of them too cheaply built, and some of them were too well built. They may compare favorably with the other roads in New England, but they have not all of them that permanence of structure and completeness of finish which the travel, every day increasing, over them has a right, we think, to exact. They were made cheaply because of limited means and a desire to hasten earlier receipts. But now additional travel demands additional guaranties of security, and with the more reason as the diversion from its customary ways has not always been voluntary. For the old modes of conveyance are retiring from the more frequented thoroughfares and the traveller has not now always the choice between the stage-coach and the cars, but has left to him, often, only the alternative of the railroad or the uncertainty and delays of private conveyance. The railroad moreover attracts from its cheapness and speed, and the common highway repels by its slowness and expense. And these two forces move the travel of the country on to the railroads.

Now this new mode of cheap and agreeable travel exists by the pleasure of the people, and its chartered immunities are a boon granted by them through the Legislature, and it exists always upon the condition of its assuring the utmost safety and convenience that human skill can provide or that capital can give it. If therefore, through defective construction, accidents are made liable at any time, this condition precedent to the right of the enjoyment of these immunities is wanting, and it becomes the duty of the Legislature as the conservator of the public weal, to see to it that the condition is fulfilled or that the immunities are withdrawn. If a road be perfect, there will be accidents enough upon it, arising from the imperfection of human agency in its management—apart from defects—but if the road be made perfect, one and the

greatest cause of disaster will have been removed; for defective construction, like inherited disease in the human system, will always show itself in weakness and decay, if unusual strain is put upon it. Railroads, therefore, for every reason of creation and duty and interest, should be thoroughly and well made, without latent defect or imperfect construction, so as to have capacity thus in reserve to perform safely extraordinary tasks in emergency, or to resist without injury extraordinary disturbance by the elements.

And the object should be, we think, to remove the cause of the disaster, not to punish its occurrence—to remove the thing that casts the shadow, that there may be no shadow. Why not then prohibit the existence of the cause by stern Legislative enactment? The Legislature may as well prohibit too small culverts or too light rails, or too weak bridges, or other defects, as to regulate any other of the affairs of the citizen in order to protect the public, and it has power to enforce its mandate by withdrawing the right to chartered immunities or by confiscating receipts to the repair and amendment of the road. But the Legislature has never yet exercised this right of acting directly upon railroads, and of requiring them to be "safe and convenient," as it does common highways, nor delegated the power to "surveyors" or any other body of men to make them so.

"The Railroad Commissioners have no such power. They cannot interfere to repair or order repairs, and it is only in case of present unsafety existing at the time 'of any examination' that they have any power, and then it is not to repair or order repairs or stop the trains, but to give the managers of the road notice that their road is 'so out of repair as to be unsafe for travelers,' and to fix 'the time in which the repairs shall be made.' And the greater the dilapidation of the road, the longer will be the time requisite for its repair, and the longer will its unsafety be continued—the trains in the mean time continuing to run over it. And then after the lapse of this fixed reasonable time, if the repairs have not been made, it becomes the duty of the Commissioners to apply to the court to order repairs; again, in a reasonable time to be fixed by the court, but with power on the part of the court in case of refusal to do so, to enjoin the running of passenger trains over the portion of the road found to be unsafe."

But the accidents of the past season, for which the railroad companies were in fault, were not all occasioned by defects in the road. Some of them arose from the want of proper oversight by managers and the inattention of employees. And this latter cause of disasters the Legislature has attempted to prevent. It holds over the director or employee in fault the terror of imprisonment for death or casualty occasioned by his neglect. But railroad em-

ployment is to some extent peculiar—it requires intelligence and experience like other responsible positions; an observance of regulations and an obedience to orders with the exactitude of military service; but the employee on a railroad, if he would jeopard the lives of others by any rash act of revenge or wickedness would also ordinarily by the same act place in peril his own life as well, if not that of others, his friends, or against whom he had no enmity. In case, therefore of disaster upon a railroad, it hardly ever—never it may be—is the case that it was designed by the employee. So that, though lives are lost and the community shudders over the catastrophe, and censures in terms of deserved severity the conductor, who hurled his train against another, in terrific collision, or the engineer who plunged it with lightning speed upon a weak bridge—yet neither the conductor nor engineer designed harm to anyone—they risked their own lives as well. The conductor forgot only for a moment that the coming train was entitled to the road, and the engineer desired to make up time, forgetting but for a moment that there was a bridge ahead or that it was weak. They may both have been killed with others—and there would then remain no victim for sacrifice to appease the offended law—or they may have escaped with hurts and wounds and then none regret their criminal unmindfulness more than they do themselves, and none condole with the bereaved friends of the killed so sincerely as they do, and at length and soon, a sympathetic community relents, does not forgive, but excuses; and the disaster fades from view in the glare of new events or is forgotten amid the daily routine of the world. And would it then, after the wound upon public sensibility has become partially healed, be worth while or wise to punish the conductor or engineer thus innocent of criminal intent, though guilty of criminal negligence? And if not—then of what avail is this legislation?

We present this view of the existing legislation upon employees that the minds of reflecting men may be turned to the consideration of a subject, affecting all who travel and which every new disaster intensifies. And the question worthy of all consideration is, Can any policy in railroad management or legislation, better than the present be devised to make directors more vigilant and employees more mindful of duty? And any contribution of thought or suggestion, or experience in aid of such improvement may be of incalculable advantage—for who can set down in dollars and cents the value of a single life saved—to itself or to the State?

The present theory of railroad legislation as bearing upon this point, if it have any theory, is, to make the employee vigilant through fear of punishment. Its stimulus to duty is the threat of imprisonment in case of disaster occasioned by neglect. May not other elements of character be appealed to, as potent it may be, as fear, to move the mind and hand of the operative, quick and right, and the more to be relied upon, because voluntary and according with his interest? May not the stimulus of rewards, commensurate with the mind and skill required for duty never neglected, be made operative? May not the incentive of sure promotion for a given period of service without fault or mistake and a higher compensation when proficiency entitles to it—with a legal right to it—of honorable mention and social and business position attained through skilled labor, be made also persuasive to vigilance of oversight and mindfulness of performance?

We venture these thoughts upon these two causes of railroad "accidents," which are under the control of human agency—defect of track and unmindfulness of employees—but we venture them only as suggestive, leaving it to the legislative mind to consider how best these defects may be removed and how best the employee may be made to remember, never to forget; and after all, the executive officers of railroads, as the committee of the directors of the Eastern Railroad Company in their report upon the accident at Revere on the 26th of August last, well say, will always "carry about with them daily the weight of hundreds of human lives; and they are themselves subject to human infirmities. The consequences of the slightest omission on the part of any one of them may be as disastrous and as appalling as this calamity, and in spite of all precautions, such omissions or mistakes may happen."

The great rains of the 11th and 12th of October washed the railroads of the State badly, carrying away embankments and culverts. The rise of water was sudden and high and the culverts were not large enough for its flow, and the consequence was that both culverts and embankments gave way to the force of the current—thereby detaining trains or occasioning great danger to them, particularly the night trains, and necessitating great expense in repairs, all of which might have been avoided by a little additional cost in original construction by making the culverts larger, and protecting the embankments better by rubble wall, or other support. A railroad cannot be built too well for the safety of passengers, nor too thoroughly for the interest, in the end, of

its owners. Defect in its construction is oftener the real cause of disaster than the apparent casualty to which it is attributed.

In some of the washouts of the 11th and 12th of October the culverts and construction were not of recent make. The culvert just below Hallowell, that gave way, and threw the night express train off the track on the 15th of November, was an old one. But it had been allowed to fill up so much that the water did not have free passage through it. This was the fault of the road-master and the section-men. If the culvert had been larger, it might have cleared itself, but small as it was it had answered the purpose for years and would have done so probably at this time, if the road-master had attended to it from time to time as was his duty, and seen to it, that it was clear. This instance illustrates the vigilence and care incumbent upon the road-master and section-men, and it shows that they did not attend to their duty. Section-men during a heavy rain should be constantly passing over their sections, to examine the culverts, to see that they are free and that no drift is within reach to enter to choke them up, and to examine every vulnerable point of the track or bridge, to see that nothing gives way.

ACCIDENTS.

Maine Central. On the 9th of August, there was a serious disaster at the Hampden road bridge on the Maine Central, about one mile below Bangor station. It occurred at 7.30 P. M. to the incoming train. Mr. Percival of Waterville, brakeman, an estimable young man was instantly killed, and Thomas Gallagher, a passenger, who was standing outside on the platform, was hurled down the embankment and covered with the fragments of the wreck; he was taken out alive and removed into a house, but died soon after. Nineteen others were injured seriously and several slightly.

We examined into the cause of the accident at the time of its occurrence and made the following statement of it:

"By the Revised Statutes, chapter 51, section 78, it is made the duty of the Railroad Commissioners, 'when a serious accident occurs on a railroad, and any person is thereby injured, to immediately proceed to the place, examine into the cause thereof, make a full statement of the cause and results of the accident in their annual report, and in any other manner they may think the public good requires;' and in this case we think the severity of the accident renders it proper in us to make a statement of the cause of

the accident, so far as we can now judge, in anticipation of our annual report, when a fuller narrative of the case may be made.

"The accident happened on the 9th inst., at 7.30 P. M., upon the in-coming train from the west. The engineer testifies, that 'we were running from 23 to 25 miles an hour, being down grade. I shut off steam about one and a half miles beyond the bridge, a little further back than usual, as we were a little behind time and running fast," &c. Persons on the river, and looking on, think the train was running faster than 25 miles an hour. The train was heavy, with a Pullman car in the rear. The 'brakeman had begun to set the brakes at the bridge.' In this condition of things the train, upon a down grade, and at a speed of 25 miles an hour, struck the bridge, and one truss fell, precipitating five cars of the train off the bridge and embankement, causing the death of two persons and serious injuries to others. Had the train been running at 12 miles an hour over the bridge,—the rate of speed fixed by order of Assistant Superintendent Lincoln, of the 14th inst., since the accident,—it probably would have gone over safely, as the freight train did just ahead of it the same afternoon. But the bridge ought to have been strong enough to easily bear a speed of 25 miles an hour, or, as Mr. Noyes said before the inquest, 'of 25, yes, 35;' or, as we think, it ought to have been strong enough to sustain the train in passing over it safely at the greatest capacity of any engine in use upon the road, even to 60 miles an hour. For the lives of passengers should not be liable to be jeopardized by any speed that the desire to make up time, or other cause, might necessitate.

"The bridge was over a public highway—the chords were 67 feet 6 inches in length—the width of bridge seats 4 feet 6 inches—the length of bridge between bearings 58 feet 6 inches. The chords were composed of three strands—the strands of the lower chords were: centre one, 7 by 11 inches, outside ones, 5 by 11 inches; to chords, centre strand $7\frac{1}{2}$ by 9, outside ones 5 by nine. The truss was 8 feet high, braces 6 by 7, and counter braces 5 by 6; iron truss rods $1\frac{1}{4}$, $1\frac{1}{8}$ and $1\frac{1}{2}$ in diameter. The bridge was a deck, Howe truss, about 14 feet above the travelled road.

"The easterly truss broke at centre of a panel, a little past the middle of the bridge, leaving the western truss standing. The falling truss appears to have sided over, as if receiving a literal blow. The timbers as broken disclose at the fracture internal dry rot, principally in the centre strand. The outside of the chord timbers

give no indication of the concealed rot, that we can discover. But the chords as now broken and exposed to the eye, disclose the utter unfitness of the bridge for the service required of it. It may be true that the bridge was subjected to extraordinary strain—the brakes may have been improperly set up, and thus dragged the train; or a wheel may have slipped the rail, or some 'extra jar or jolt,' as suggested by Mr. Gibson, the company's bridge-man, or other as yet unknown cause may have been primary or contributive to the disaster—but still the fact remains, that the bridge was not, as now disclosed, in a fit condition for the passage of such a train at such a speed, whether other causes originated or contributed to the casualty or not.

"And the fault for such deficiency was upon the road. For it is the duty of the corporation that the road, when trains are run upon it, be at all places and at at any cost, in a condition of absolute safety. And neither its duty nor its liability is in any way lessened, nor its responsibility avoided because others failed to discover a defect—that had no business to be there. The duty was upon the corporation, and the whole duty, and it could not divide it with others if it would. The fault in fact, as in law, was upon the company from the beginning and always, and though the visitorial power of the State, established for this and divers other purposes may have failed to accomplish one of the objects of its creation, it nevertheless leaves the burden and the duty where it was before, and all liability for neglect. The accident, then, was occasioned by a defect in the road, and the fault and blame are upon the company, whose duty it was that no defect should exist.

"And it is for this purpose, that no defect shall exist, that the company have a corps of officers, assigned to the special duty of keeping the road in perfect condition. In the present management of the road it appears that the Superintendent, Mr. Noyes, has the entire charge of the repairs upon the road and of new works, and is relieved of the charge of the trains, now assigned to Assistant Superintendent, Mr. Lincoln; that he, Mr. Noyes, may give his undivided attention to the repairs and keeping up of the road. He is, therefore, primarily responsible for its always being in a condition of safety for such trains as Mr. Lincoln may see fit to pass over it. And he, no more than the corporation, can shift his duty upon others, or divide its responsibilities. And for this purpose, too, it is that he has under him men in whom he says he has con-

fidence—road masters, to see that the track is in order, and bridge masters, to see that the bridges are always safe.

"In November, 1870, when the guage was narrowed, two of his men examined this Hampden road bridge, and reported it 'one of the stiffest on the road,' and in April last Mr. Gibson examined it and reported it safe and all right. He has examined it three or four times, he testifies, this year, and discovered no defect. Dea. Scamman, an expert in bridges and of long experience, has recently examined it, as Mr. Noyes testifies, and he, too, reported it safe. And Mr. Noyes says in his testimony that he believes both bridge masters have fully done their duty. And Mr. Noyes himself, in May of this year, was under the bridge when a heavy freight train passed over it and could see no deflection, and afterwards he came over with a 27-ton engine to test the bridges upon the road, this among the others, and running the engine back and forth over it, it betrayed, he says, no signs of weakness. Now this would seem to be the ordinary and usual way of testing bridges—the mode adopted by Scamman and Gibson and Mr. Noyes, so far as he went, and from other testimony of experts in bridge-making taken before us, it would seem to be the only proper way when such tests indicate no weakness. Mr. I. A. Gordon, who built the bridges upon the Grand Trunk and who has had twenty-one years' experience in bridge-making and recently in railroad making, says under oath that:

"'In examining a bridge we always look at the keys and packing blocks to see that there is no indication of its giving, or of joints spreading, and by running an engine over, backwards and forwards, and standing on the bottom chords, and if the bridge appears permanent, little or no lateral motion and merely a slight deflection in running the engine over, we regard it all right; but if these things are any of them otherwise, then we examine further by pounding and boring and go to work to strengthen it by arches or trestles. This dry rot,'" he says, "'is very deceptive, it exists in green timber and in standing, growing trees, and does not usually show itself upon the outside until the tree or stick is nearly rotted through, nor do I think,'" he says further, "'one can always discover rot by pounding—the knots and shakes affect the sound.'"

"And we share in the regret that the Company no doubt deeply feel, that these tests of practical and scientific mechanics did not disclose the latent defect. In 1869 this bridge was examined by

Messrs. Corser and Wildes of our board and with an engine to test its strength, when it shew no unusual deflection and the chords gave no sign of straining or opening; and again they examined it in 1870 and 1871, but without the aid of a testing engine, the Company being unable to furnish one. In June, 1871, Col. Wildes (Mr. Gibson, bridge-master, being with him) carefully examined it, inspecting the joints, pounding with a hatchet and probing with a knife thoroughly as he then thought, but he discovered no sign of rot or weakness; but upon going under the bridge and noticing the effect of a passing train, he detected, as he thought, too great deflection and requested verbally and then by letter, that the bridge be strengthened by arches, which Mr. Noyes testified before the Coroner's inquest he was intending, before he received such notice, to do soon.

These are the leading facts in the case, and they show, we think, to this extent, care and solicitude for the safety of the road on the part of the employees of the company, and on ours as well, that would, this catastrophe not happening, be commended as wise and vigilant.

"The bridges upon the Maine Central were originally built in reference to much lighter rolling stock than is now in use upon it, and are not so large and permanent structures as would now be erected for the present service upon the road. The Commissioners, aware of this fact, but by no means apprehensive of any immediate danger to authorize a statute notice of "unsafety," have heretofore at different times recommended the strengthening of the bridges by arches. But in justice to the present Assistant Superintendent, Mr. Lincoln, who has now the charge of the running of the trains, it may be proper to say, that in the division of labor under the present management, the duty of having the road in repair was not upon him, but devolved upon Mr. Noyes, to whom the time-table was submitted and by him approved, and, as we are advised, without intimation that the trains should be slowed over this bridge.

"It may not be out of place to say in reference to the Commissioners, that is only one of the many duties imposed upon them by statute, to examine the 'track, culverts and bridges' of the roads, and that in respect to these they must find them 'so out of repair as to be unsafe for travellers' before any right of legal interference attaches on their part. They have no power over them to repair or amend—to stop a train or order it stopped, or

to ask for an injunction against its running, except in the single case where the pre-requisite of 'unsafety' exists, and then it is only after notice to the managers of the road of its condition of 'unsafety' and the lapse of a reasonable time for the repairs to have been made, that they can enforce their notice of 'unsafety' and needed repairs, by application to the court for an injunction. This is the statute notice, the only notice that has legal force, and to be given in case of immediate, present unsafety. The notices that one member of the Board is in the habit of giving, advising repairs, is only precautionary. The statute notice that a road is out of repair so as to be unsafe to pass over, requires the examination and co-operation of the whole Board. These precautionary notices given by Messrs. Wildes and Corser, are not at all a part of the duty imposed upon them by statute, but deemed highly proper as tending to guard against that condition of present danger, when a statute notice of 'unsafety' would become the duty of the Commissioners. Hence the officers of a road can in no case excuse a neglect of repairs or the erection of such new and stronger structures as heavier and faster trains may require, for the reason that they have not received a notice of warning from one of the Commissioners to that effect. It is their business, not the Commissioners', to see to it that the road is always in condition to perform safely the service they, themselves, require of it.

"This Hampden road bridge was never regarded as 'unsafe' and no statute notice therefor, was ever given—but Mr. Corser last season, and Col. Wildes this season, have both advised the company that the bridge out to be strengthened by arches.' Had the weakness of the bridge from internal rot been discovered by them, of course the statute notice of unsafety would at once have been given. Whether any casualities have been avoided by our visitorial power, and these precautionary notices, verbal and written, from time to time, we cannot know—but the apology that has been made for the road, that it may have relied upon our examinations of the track, to excuse its imputed neglect, is as unauthorized in law as it is untrue in fact, and we believe will be repudiated by the company as unworthy the high character its road has always heretofore sustained for care for the safety and lives of its passengers.

S. T. CORSER,
A. W. WILDES,
S. H. BLAKE,
} *Railroad Commissioners.*"

There are several other facts—bearing in mind meanwhile the brief history of the case as stated above—which may tend to shed light upon the proximate cause of this most unfortunate catastrophe. By the schedule time on the 9th of August, the in-coming train was due at Bangor at 7.10 P. M., upon the arrival of which the out-going train was to leave, but the in-coming train did not lose the right to the track until 7.40 P. M., after which the out-going train had a right to start. This arrangement, however, soon after the Hampden road accident, was changed and the night train waited the arrival of the in-coming train, though later than 7.40 P. M.

"The engineers had written instructions," Mr. Lincoln says, "not to make up lost time, but to use all their schedule time, which was 2h. 10m. from Waterville to Bangor." But the train this night was 35 minutes late at Kendall's Mills; it had, therefore, 5 minutes less than its ordinary running time to reach Bangor in, at 7.40 P. M., and failing to arrive at 7.40 P. M. it would have lost the right to the track and must wait on the way for the out-going train to pass.

Now we do not know that the engineer was running fast at the bridge to make up time in violation of his written instructions, but some lost time had been gained after leaving Kendall's Mills and he says, as quoted above, "I shut off steam about 1½ miles beyond the bridge, a little further back than usual, as we were a little behind time and running fast." The train then at any rate, was running fast and it struck the bridge with the momentum acquired on the down grade from the summit beyond.

Mr. Gibson, the mechanic in charge of the bridges upon the road, and who had examined this bridge about the first of July, and saw it the next day after the accident, says, "in my opinion some extra jar or jolt broke the bridge; I don't think it could have been done by simply running a train over it." And the engineer says, "the brakeman had begun to set the brakes at the bridge, and then we were running at same rate as usual," in which latter fact he may have been mistaken.

May not, then, the "extra jar or jolt," necessary in the opinion of Mr. Gibson to break the chord which gave way and let the train down, have been occasioned by the sudden setting of the brakes at the bridge? The locomotive was heavy, the Pullman car was in the rear, the train was long, the speed was great—it required

but a slight check to impart a great force—and one, unfortunately, we think, in this case, that was the primary cause of the disaster. But whether this or other force was the motive cause of the disaster—to the regret and sorrow of all—the chord gave way, carrying death and wreck in the fall. It was not strong enough for the service exacted of it—*but it should have been.*

Lewis Belongey of Brunswick, a workman on a pick-up train, was thrown from a car at Desden, March 9th—one leg and one arm were badly crushed.

As Owen Durgin and son were crossing the track of the Maine Central railroad, April 8th, near Woodford's Corner in Deering, with a pair of horses and jigger, an engine on a passing train struck and upset the jigger. Mr. Durgin and his son were thrown off. Mr. Durgin escaped with a few bruises. The son fell upon the track; the wheels of the engine passed over his right arm below the elbow, crushing it so that amputation was necessary.

As the mail train from Skowhegan was passing Oak Hill station, May 3d, Mr. David Harrington, in handing the mail to the mail agent who was standing in the car door to receive it, fell or was thrown down upon the platform and knocked off the platform down between it and the rail. He was dead when taken up, after the train passed on. His age was 72 years. The speed of the train was hardly checked in passing the station, and it was certainly imprudent for so old a man to attempt to pass the mail-bag into it when going at its ordinary rate of twenty or more miles an hour. We have not the means of deciding whether it was the Post Office Department or the railroad company that was in fault. But it would seem that if it was the duty of the train to receive the mail-bag at this station, it was a part of its duty to stop or slow sufficiently to do so with safety to the post-master or person in charge of the mail.

As the passenger train from Bangor and Skowhegan was crossing the county road, May 22d, leading from Portland to Saccarappa, the engineer saw a man walking on the track beyond said crossing towards the engine, with his head down. The whistle was blown, but the man did not look up; the alarm whistle was sounded, the brakes were applied, but the train could not be stopped until after the engine had struck and killed the man. Deceased's name was John Mulligan, single man, about 45 years of age. He was under the influence of liquor, it was supposed, at the time.

The freight train from Danville Junction to Waterville, May 29th,

was thrown from the track near North Belgrade station; Eugene Guliver, fireman, was instantly killed and Robert Austin was seriously injured; cause of accident, expansion of rails. Accidents of this kind could be prevented by careful attention to the rails in extreme heat.

A Mr. Cram, brakeman on a freight train, May 29th, had one of his arms badly crushed while shackling cars at Newport.

As the mail train from Bangor and Skowhegan for Portland was proceeding at the usual rate of speed, June 26th, at a point one and a half miles east of Freeport station, about 2.10 P. M., the forward axle of the tender broke. Six cars were thrown from the track—two baggage cars, one smoking car, three passenger cars. The three rear cars, including the Pullman parlor, remained on the track. George Chase, baggage-master, was instantly killed. Albion Barron, brakeman, in setting his brake, when the cars came together got his leg caught between them. The limb was crushed and mangled in a fearful way. It was impossible to force the cars apart. Dr. F. N. Otis of New York, who chanced to be on board of the train, amputated the crushed leg with a common knife and saw. Barron died in about six hours after the accident. Augustus Larrabee, brakeman, had his leg broken. George Tarbox, express messenger, had his thumb broken. G. O. Durgin was slightly bruised. No passenger was seriously injured.

The accident, as already stated, was caused by the breaking of an axle of the tender. The iron was of good quality, but it appears to have been cut to the depth of three-quarters of an inch all round, by some mysterious process, close to the wheel, and the seam was so minute that the edge of a sheet of letter paper could not enter it. Now by what means was this effected? One theory is that some very small fragment of iron had gradually worked into the axle, in its many revolutions, until one-half its strength was gone; another theory is that the continued lateral strain upon the iron had gradually separated the particles of the circumference so as to give the fracture the appearance of having been made by a very fine tool. The tender was not sufficiently supplied with wheels. Now, when tenders are required to carry a much greater amount of wood and water than formerly, it is necessary to give them an increased support below. They should have at least eight wheels. On some roads ten-wheeled tenders are common. The invariable use of safety-bars is also recommended; straps of iron which are bolted to the timbers of the truck-frame and pass under

the journal-boxes, so that in the event of an axle breaking near the wheel it will drop upon the bar and not upon the ground.

Two trains collided, June 27th, about 5.15 P. M., on a curve in the railroad one mile and a quarter below Hallowell ; the up train and the one having the right of track, was the accommodation train from Gardiner for Augusta ; it consisted of the engine and one passenger car, and left Gardiner on time, 5.00 P. M. The down train was from Augusta for Portland—time for leaving Augusta as per time-table, 4.30 P. M., but did not leave until 5.00 P. M.—waited for the adjournment of the Democratic State Convention. This train should have kept out of the way of the train from Gardiner. Charles Evans, engineer of the train from Gardiner, seeing the danger, sounded the alarm whistle, reversed his engine, and his train was nearly at a stand still when struck by the engine on the down train. Evans and his fireman jumped from their engine and escaped unhurt. Daniel Berry, engineer, and Wilson Cavill, fireman on the down train from Augusta, stuck to their engine. Berry was caught between the engine and tender and lived only about five minutes ; Cavill was taken out and carried to his home in Augusta, but died from the injuries received from the collision. Others were seriously bruised. The coroner's jury found Charles Merrill, conductor of the down train, the party in fault and exonerated the railroad company from blame. Certainly the company did not intend this disaster, but whose fault was it that an incompetent conductor was placed in charge of a train ?

Josiah H. Tilton of Skowhegan, July 1st, had one of his feet crushed at that place by a passenger train, which was being switched on to a side track. The forward car struck him throwing him down and one wheel passed over his left foot, crushing it so badly that amputation was necessary, and was performed by Drs. Stevens and Wilbur.

John Sylvester, about fourteen years old, attempted August 3d, to get upon a freight train as it was passing Woodford's Corner, in Deering, when by some means his left foot got under the wheels. A portion of his foot was so badly crushed that amputation was necessary.

While the 6.00 A. M. freight train from Skowhegan was standing at Vassalboro', August 7th, with two passenger cars attached, and about forty passengers, a special freight train that was following ran into the rear passenger car. Hon. T. S. Lang, who chanced

to be on board the train, saw the train approaching, gave the alarm and most of the passengers escaped from the car before the engine ran into it. Eli French had his foot seriously injured, Geo. P. Wadsworth of Boston, was badly scalded on the head and neck and hand; J. J. Walker of North New Portland, was hurt on the side by jumping from the car; Wm. Warren of Skowhegan, was slightly scalded about the head by escaping steam; Mrs. Sophia Lashus of Waterville was hurt by the fall from the car. The special freight train was greatly in fault, and Mr. Lincoln did right in discharging J. G. Fairbrother, the conductor, and John I. Nichols, the engineer.

James Mitchell of Deering, brakeman on the mixed train, August 21st, while attempting to pass from the engine to the rear of the train, between Freeport and Yarmouth, fell or slipped from the top of the car. The train was stopped and run back. Mitchell was found dead in the ditch by the side of the track.

Oliver Clay, about ten years old, in attempting, August 31st, to get on to the train after it had started from Bath, fell and was run over. He lived only two hours.

Mr. Samuel W. Huntington, in attempting to get on to the car of a freight train at Hallowell, September 29th, after the train had started, was thrown against the platform and seriously injured.

Horace Moody of Skowhegan, brakeman on freight train, while engaged in shackling cars at Gardiner, October 1st, was badly jammed between the bunters and seriously injured.

Mr. Benjamin Rowe, a deaf mute of New Gloucester, was knocked down, October 21st, and seriously injured, by a construction train on the Maine Central extension.

Albion Burrill, an employee of Waterville, was so terribly crushed between two cars, October 26th, that he was attempting to shackle at Detroit, that he died instantly.

The night express train from Bangor for Portland, November 15th, consisting of baggage car, smoking car, passenger and two sleeping cars, was thrown off the track about two miles below Hallowell at about 11.40 P. M. A culvert had got choked up so that the water could not run through it, and by reason of this stoppage of the water the gravel was washed from under the track and thereby the accident occasioned. Several persons were slightly injured.

On December 18th, Jerome Spaulding, a boy about 14 years old, residing at Bangor, was at Carmel and attempted to get on

to a platform car of a freight train after it had started from the station, and fell upon track. The wheels passed over his right arm and shoulder, crushing bone and flesh and injuring him seriously.

As the local freight train from Waterville was passing under the bridge near Lewiston station, at 9.00 A. M., November 22d, Samuel O. Gray, brakeman, who was tending the brake on the top of the car, was struck on the head by the bridge and fell between the cars on the track. Several cars passed over his body, crushing it in a shocking manner. He was killed, probably, by the blow from the bridge. His neck was broken. Deceased was about 35 years old.

There is a statute of Massachusetts, approved May 26, 1869, providing that no bridge shall thereafter be constructed over any railway at a height less than 18 feet, excepting by written consent of the County Commissioners, and that every railroad corporation shall erect suitable "bridge guards" at every bridge over its road less than eighteen feet in height. A "bridge guard" patented by C. L. Heywood of Boston, has been used on several railroads in Massachusetts and elsewhere, and in the opinion of Superintendents, as we are informed, has proved a great protection against accidents. If the bridge at Lewiston had been furnished with a suitable "bridge guard" the life of Gray might probably have been saved.

Grand Trunk. As No. 10 freight train was approaching West Paris station, February 13th, Zibon Andrews, brakeman, went between the tender and the first car. In attempting to pull the pin he slipped and fell on to the rail; the car passed over him, cutting off one of his arms and one leg. He was taken to the station; several physicians were called, but they decided that amputation would not save him. He died at 11 o'clock the same night.

As No. 4 passenger train was approaching Danville Junction station, February 21st, and had uncoupled from the Maine Central train, the engineer, J. H. Nichols, saw two men walking near the track towards the station; the alarm whistle was sounded; one of the men stepped on to the track just in front of the engine. The engine was reversed immediately, but not in time to avoid injury to the man. The engine and four cars passed over him, breaking one of his arms and one leg. His name was Patrick Haley. He belonged in Lewiston, where he was immediately taken. The broken arm and leg were amputated by surgeons of Lewiston.

Thomas Doyle, employee, was shackling cars on Commercial

street in Portland, July 17th; one of his feet caught in a brake; he was thrown down by the side of the rail, and the flesh and muscles from the knee to the ankle were badly crushed and torn.

A special engine, that was running from Portland to Gorham about six o'clock on the morning of August 1st, ran into a hand-car going in the same direction; there were on the hand-car five men. One of them, David Robbins, was instantly killed, and G. C. Swan was seriously injured. The other three escaped unhurt. The collision was on a curve one mile above Bryant's Pond station. The engineer could not see the hand-car in time to prevent the disaster. This engine was running, as railroad men phrase it, "wild;" that is, without being signalled by a preceding train, but on a special order to keep out of the way of regular trains. The section-men, therefore, had no warning of its approach. The question may be, whether the exigency of the case justified the running of this engine without the usual signalling.

The passenger train from Island Pond had arrived at Pownal station, August 12th, and was standing on the side track, when David I. Lawrence, who had delivered the mail in his charge to the agent on board of the car, stepped back on to the main track, without noticing that the passenger train from Portland was coming. He was struck and thrown some distance by the engine, and was taken up insensible, with the blood oozing from his head.

Frank W. Lapham of Bryant's Pond, going up on a night freight train, August 16th, jumped from the rear car when the train was in motion, between Bryant's Pond and Locke's Mills, and was seriously injured.

Cornelius Mahoney, who could not show a ticket when the conductor called for it, and refused to pay his fare, was put off the train, September 1st, at Falmouth station. He was intoxicated at the time, and was placed at a safe distance from the track; but after the train had left he started up the track towards Yarmouth, where he resided. After walking a mile or more he fell or laid down between the rails and went to sleep, as is supposed. The engineer of a following train saw a man lying between the rails, but there being a curve in the track at that place, he did not notice him in time to prevent the injury. After the train was stopped it was found that one hip was crushed, one arm cut off, and that he was otherwise injured.

As the 1.10 P. M. train from Portland was passing round Fish

point at Portland, John Bonner, newspaper boy, jumped from the car and was seriously injured in his face.

European and North American. Charles C. Everett, fireman on the engine "Winn," running freight train between Bangor and Mattawamkeag, was killed at Lincoln, May, 1871. Two cars loaded, were being pushed by the engine to the side track, and Everett at the time was oiling his engine; the cars being pushed jumped the track at a road crossing, and he, being in front of his engine, was caught between the cylinder of the engine and the end of the car, both the engine and the car were off the track and it was impossible to extricate him till he was so much exhausted that he died soon after being taken out.

Portland and Rochester. William Splan, an employee on a construction train, had one of his feet severely mangled at Springvale, May 15th.

On the arrival of the mixed train at Saco River station, September, 30th, 4.00 P. M., as Mrs. J. W. Junkins, a passenger, was attempting to step from the rear platform of the rear car, the train suddenly started, precipitating her and her little boy upon the track and dragging her some distance. Mrs. Junkins had one arm broken and the little boy was badly bruised.

Knox and Lincoln. John Bark, laborer, fell between two cars, September 4th, near Damariscotta, and was seriously injured.

Mr. Huges, employee on a construction train, fell under a car, September 25th; one of his legs was cut off, and he was otherwise injured. He died soon after.

Nathaniel Glidden, a deaf man aged 84 years, was struck, October 6th, by a passing train near the station at Nobleborough, and instantly killed.

Portland and Ogdensburg. The train from North Conway, due at Portland at 6.30 P. M., November 4th, carried the usual signal indicating that a special train was following; but the section men, though thus notified in the usual way that a special engine was coming, put their hand-car on to the track, and five men got on board and started up the track. After proceeding a short distance the light of the coming engine was seen, but Joseph Chouinor, the employee in charge, said the light was in a building in the distance, but in a moment the engine was upon them. The men attempted to jump from the car, but Chouinor was struck by the engine and instantly killed; one of the other men, not an employee of the road, had a leg broken, the other three escaped unhurt.

A construction train composed of platform cars—the one most distant from the engine loaded with stone with quite a number of laborers on it, was backing down below Sebago Lake station, and collided, June 28th, with a special train from Portland for Sebago Lake station. There was a curve in the track where the accident occurred. Six of the laborers were seriously injured. Conductor S. H. Stevens of the special train, and M. G. Dow, mail agent, and several others on it were slightly injured. This accident was occasioned by reason of indefinite instructions in pencil from the road-master to the conductor of the construction train, and then not communicated to the engine driver.

Freeman Sanborn, brakeman, while shackling cars, August 22d, at Hiram, his arm got caught between the bunters and was seriously injured.

John Clark of Baldwin, aged 81 years, was knocked down, September 2d, by the engine of the up freight train. He soon died from the injuries received. When the alarm whistle was sounded the old man looked around but did not attempt to get out of the way.

Androscoggin. A bar of railroad iron got out of place on a car March 9th. One end of it struck against a bank by the side of the track, forcing the other end into the conductor's car and seriously injuring George H. Knapp, Conductor.

Henry S. Jones of Augusta, was knocked down and run over and instantly killed, April 14th, by a car that was being shunted near the Androscoggin Railroad station at Lewiston. He was deaf.

Boston and Maine. Charles W. Simpson was run over and instantly killed at the gravel pit between Salmon Falls and South Berwick Junction, by the 6.00 P. M. express train from Boston, July 4th.

Portland, Saco and Portsmouth. Wilbur G. Andrews, an employee of the road, at Biddeford, was moving a baggage truck with baggage and a sewing machine on it, February 6th, to the place where the baggage car stops. The sewing machine slid off on to the track. Andrews, in attempting to take the sewing machine from the track, was struck by the engine on the 3.00 o'clock P. M. train from Portland, and instantly killed.

Robert D. Hunter, brakeman upon a freight train, was badly injured in the head at an over-head bridge, at East Kennebunk sta-

tion, about 10½ o'clock P. M., February 28th. He was cared for by his comrade as well as possible, and when the train arrived at Portland at midnight, the wounded man was carried to his house and Dr. Gordon was called. Mr. Hunter laid in an unconscious state until 6.15 the following morning, when he died. Dr. Gordon testified before the coroner's jury that he had no doubt that death resulted from a fracture of the skull. Andrews and Hunter were both estimable young men.

Albert Piper got on board at Biddeford of the morning train from Portland, March 20th. He was intoxicated, making some disturbance. The conductor put him off at the next station, but he got on again, and when the train arrived at North Berwick, Piper, who was in a Boston and Maine car, got off to take an Eastern Railroad car, for Beverly. He stepped on to the footboard of the car and off on to the station platform just as the train started. He attempted to get on again, but some by-standers, seeing that he was intoxicated, tried to prevent it, fearing he might get under the wheels. Piper shook them off, and attempted to jump on to the car, which had got well under way. He fell, and three cars run over his right arm near the shoulder. Dr. Hall of Biddeford amputated the arm.

John Wither, one of a party of river drivers, was en route, April 11th, westward, when the 3 P. M. train from Portland arrived at Saco. Wither got off the train, and in attempting to get on again, after the train was in motion, he slipped from the platform under the wheels. One arm was crushed and mangled in a manner that rendered amputation necessary near the shoulder.

As the mixed train from Portland was leaving the platform at Cape Elizabeth for Biddeford, June 24th, David M. French, in attempting to get on between two box cars, fell between them, and two or three cars passed over him. He was taken up and brought to the station at Portland; from there he was taken to the police station. Dr. Getchell, city physician, and Dr. Gordon, were called, but the man was beyond medical relief. He died of the injuries received about four hours afterwards, at 9.50 P. M. His age was about fifty years. The verdict of the coroner's jury was that the man came to his death by his own carelessness.

There have been, during the year past, an unusual number of accidents upon the railroads in the State; and some of them were most sad and disastrous. They were occasioned, so far as we have been able to learn, by no extraordinary or special agency, but were

the legitimate result either of inefficiency of management, defect of road or rolling stock, neglect of employees, or carelessness of the injured. None of them were intended, and yet all originated in the want of that degree of care and precaution which now, after their occurrence, it is easy to see should have been used, and which if used, would have prevented them.

But the practical question of the moment, which a reference to them suggests is, Whether any lesson they teach assures greater safety and protection in the future? If so, then these experiences, sad as they were, will not have been wholly without their use. If they shall admonish railroad management to avoid hereafter all causes of disaster within the control of their best skill and wisest precaution, so that there may be no rotten bridges, choked-up culverts, or other defect in road, nor unmindful engineer, forgetful conductor, or other negligent employee on train—then their lesson will have been one dearly learned, but of priceless value as a light held out to warn against dangers of wreck and disaster in the future.

Complaint is made that passengers are detained at Yarmouth Junction by the present arrangement of arrival and departure of trains at that station. A change of ten minutes, that is, of ten minutes later arrival of the train on one road and ten minutes earlier arrival of the train on the other road, would prevent a detention of about four hours. This inconvenience can be remedied, and we presume the railroad managers will soon attend to it.

We notice on the morning train from Bangor, that the cars to go on the lower route are left standing on the open trestle work of the Kendall's Mills bridge, while the train is divided and made up for the two roads. We fear this practice, if continued, may be attended with liability to accidents.

Complaint is also made in parts of the State, that a discrimination is made by the railroads in their tariff for passengers and freight, tending to direct business from its natural channels, unjust to travellers and shippers, and prejudicial to State interests.

The present practice of regulating the running of trains going in the same direction, or of an extra following a regular train, is *by distances*—requiring the following train to keep always one mile in the rear of the train ahead. This leaves the matter in the hands of the engine driver, and his judgment of distances may be at fault. Would not a better rule be, that trains shall not leave or pass a station until the preceding train has been gone ten minutes? The

station master might be charged with the execution of an order to stop all trains by displaying a red flag, or signal of danger, until the ten minutes had expired.

Several railroads have been completed, and others extended, during the year, from which we think the State may reasonably expect large benefits in industrial and commercial development.

Several new routes are under consideration; reconnoisance has been made of some of them and partial exploration of others. Some of them already have charters, and others will apply to the Legislature for them. These projects indicate a desire to make available local resources, and to enhance values by affording increased facilities for business. And if there be no public spirit in their inception, their successful construction cannot otherwise than inure largely to the best interests of the State. But we think there is a general and pervading sentiment in the State, attaining nearly to the dignity of patriotism, in favor of giving to railroad enterprise all safe and reasonable encouragement, in the hope that there may accrue from it the business, and employment, and growth, which have made other States great and prosperous.

There have been three collisions of trains during the year; at Hallowell, June 27th, near Sebago station, June 28th, and at Vassalboro', August 7th. And the conductors and engineers upon all these colliding trains had in their pockets at the time printed regulations, which if they had read and remembered, and observed, would have prevented the collisions.

November 15th, a train was thrown off the track below Hallowell, by reason of a choked-up culvert. On that day the road-master and bridge inspector had in their pockets printed rules, page 22—which, if they had read and obeyed, would have saved the damage to the train, and the fortunately slight, injury to passengers. And other accidents were occasioned by inattention to instructions by other employees during the year; but our allusion is, so far, enough to enable us to make the point, that the great want in railroad service is rather attention to his duties by the Superintendent, and vigilant performance and strict observance of regulations by employees, than any new rules or laws for the prevention of accidents. And we purposely refrain from any enumeration of the duties of the one or the other, because they are well stated in the standard regulations of the general railroad service and in the printed rules of the different companies in the State. But we earnestly call the attention of railroad management to

them, in the hope that another year there may be no disaster from the want of their observance, or from other neglect of executive officer, Superintendent or employee.

The compensation of the Commissioners is low, but it is the same as at the time when they accepted the appointment and they cannot therefore, with any delicacy, ask an increase of it, or change in the manner of its collection. It would not be becoming in them, holding office accepted without objection, to ask an increase of pay for services which others would perhaps gladly, and better it may be, perform, without change in the remuneration. An incumbent in office should, we think, tender his resignation before requesting an increase of salary, that the appointing power may confer the honor upon another, if it pleases, and can find one competent therefor, who will assume the service without promise of additional reward. And we refer to this matter only because it has been suggested that the Commissioners ought not to depend upon the railroad companies for compensation for their services, but should receive salaries, as in Massachusetts, to be paid either by apportionment by the Legislature, or by the Governor and Council, upon the different roads of the State, or from the common treasury.

The Commissioners have briefly stated the nature of their limited jurisdiction, that the Legislature may clearly see that their right of interference is only advisory except only in case of apparent existing unsafety at the time of examination. They have no power or right or means to ward off prospective dangers, except only the visitorial power of advice and suggestion. Whether they should be clothed with fuller powers, or the Governor or the Governor and Council upon their application, should be authorized to act as the exigencies of travel or public safety might require under such limitations as the good sense of the Legislature may prescribe, we submit without definite recommendation to the careful thought of the law-making power.

S. T. CORSER,
A. W. WILDES,
S. H. BLAKE,

BANGOR, December 29, 1871.