

MAINE STATE LEGISLATURE

The following document is provided by the
LAW AND LEGISLATIVE DIGITAL LIBRARY
at the Maine State Law and Legislative Reference Library
<http://legislature.maine.gov/lawlib>



Reproduced from scanned originals with text recognition applied
(searchable text may contain some errors and/or omissions)

Public Documents of Maine:

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

PUBLIC OFFICERS AND INSTITUTIONS

FOR THE YEAR

1874.

VOLUME I.

AUGUSTA:

SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.

1874.

REPORT

OF THE

RAILROAD COMMISSIONERS

OF THE

STATE OF MAINE,

FOR THE YEAR

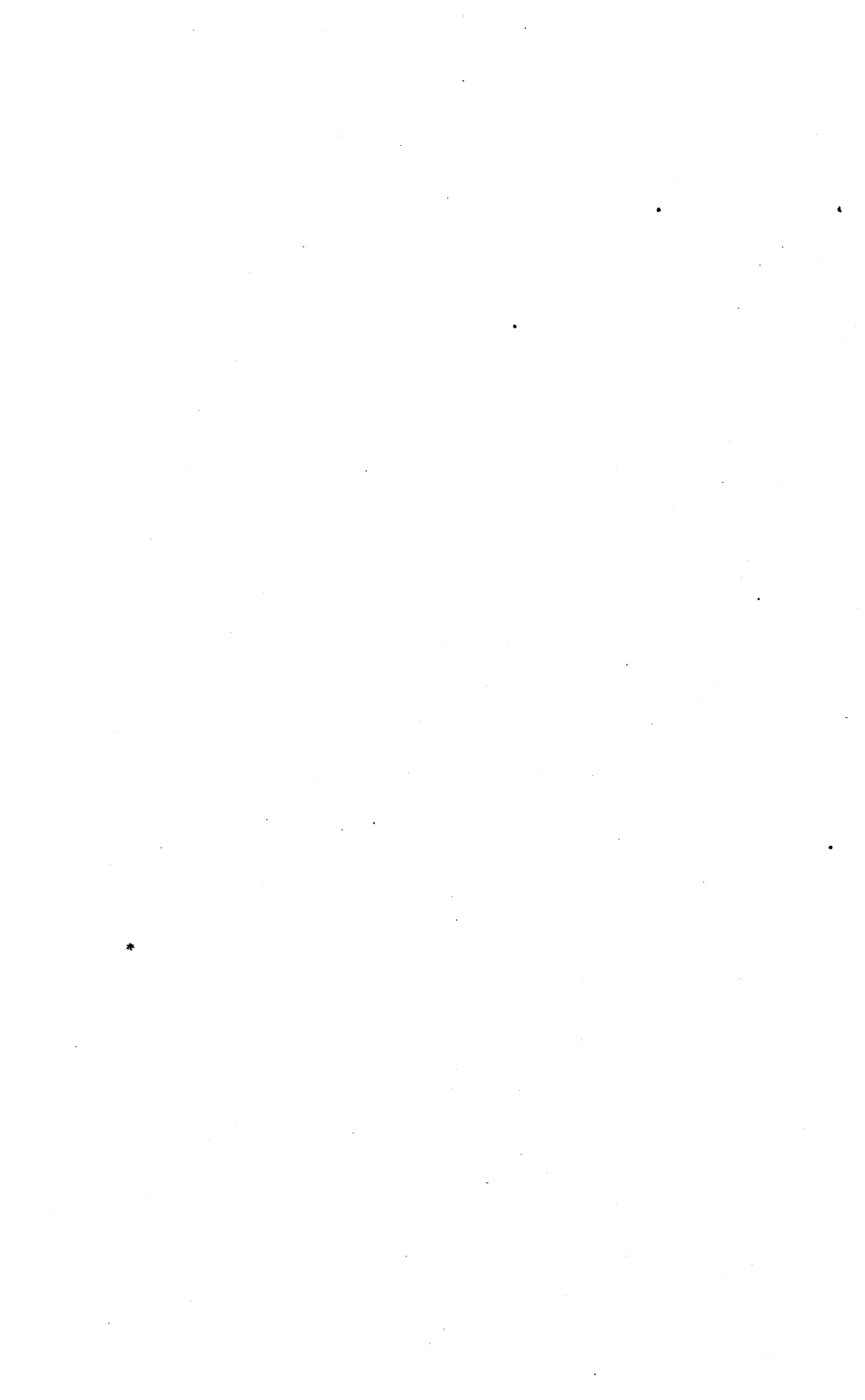
1873.



AUGUSTA:

SPRAGUE, OWEN & NASH, PRINTERS TO THE STATE.

1874.



REPORT.

To the Governor of Maine:

The Railroad Commissioners respectfully submit their Fifteenth Annual Report:

In their performance of the duties prescribed by statute, your Commissioners have carefully and repeatedly examined the several railroads of the State during the past year, and have found them to be generally in a very fair condition, and, measured by the ordinary standard of this country, under reasonably good management.

In common with too many other American railroads, there is throughout those of Maine a very unsatisfactory incompleteness apparent to every thoughtful observer.

This want of finish, conspicuous in the outside construction of the roads, exposes them to general, but too often superficial, criticisms upon merely the roughness of slopes, of the surfaces of the masonry and of the buildings, that are readily silenced by a replication that these are really non-essential objects of attention. But it far too prevaillingly extends beyond such comparatively unimportant matters, and is to be discovered, to a greater or less extent, in every department of perhaps all of these railroads. None are absolutely complete; scarcely one has a single department thorough; while almost all have no doubt wasted and perverted means enough to have their essential parts in perfect order and condition.

These essential agencies for thorough-going railroad traffic are: *first*, a track and way of uniform integrity; *second*, faithfully (not extravagantly) constructed rolling stock; and *finally*, skilled, devoted men, systematically organized and disciplined by an efficient Executive.

To every reader of the newspapers, it is evident that the railway system and management in this country is some way radically defective. The conviction is wide spread and of common

remark that some potential effort should be made to countervail the frequent recurrence of the calamities now set forth daily in such wordy detail of trivial, as well as revolting, incident, that the public mind is in danger of losing its assurance that they will be either avoided or abated. It may indeed already be prepared to reject the assertion here made that in almost every instance these evil events are the result of criminal neglect of duty on the part of of some individual man.

To every passenger, it is obvious that railway officials are, as a rule, more or less faulty in the full discharge of their duties; and the amplitude of this quite manifest deficiency of performance may be found to embrace all branches of every department. Its extent is to be discovered in equal measure with the reach of special knowledge and perceptive faculty possessed by any individual observer. While all notice, and are often annoyed almost insufferably, by the consummate superciliousness of a ticket agent, conductor, or train hand, so any one, according to the degree of his own instruction in the functions of the several branches of the service, may perceive throughout the whole, from the trackman to the Executive, instances of either positive ignorance or dereliction of bounden duty.

In the opinion of your Commissioners, a "railway accident" is a misnomer, as ordinarily applied. It is believed that every experienced, intelligent and candid "railroad man" will, upon due reflection and proper solicitation, admit that all such events, so named, may be traced to a fault or a crime; and it is conceived that if investigating committees possessed the requisite acumen, stamina and honesty of purpose, not only would such be their report in every case, but in most of them they would not fail to fix the lapse upon some accountable person acting, or neglecting to act, by himself or under instructions which would only extend the responsibility over others, without diminishing his or their individual accountability.

It is submitted as the view of your Board of Railroad Commissioners that if a railway official, from his own notions of expediency, or by instruction, permits himself to purchase and put in use an inferior thing, or performs or neglects to perform an act which he knows will imperil life or limb, he should be held to as strict an accountability as for any other crime; and it may be properly assumed that whoever continues to hold an important

and responsible position upon a railway does know, as he ought, all that pertains to the functions of his office.

To illustrate the position, let the so called "unavoidable accident" of a broken wheel be cited. Does the development of this fact exonerate the railway officials? It may; but, then, it may not. Should the investigation stop here, as it generally does? Ought not the manufacturer to be passed under a strict examination? He could say whether he warranted this wheel for the service to which it was put. He could give the limits of the service within which it was warranted. He might aid in deciding whether it had been subjected to too great a number of rapid revolutions, or unprovided for conditions of any sort. He could state whether this was a transaction where, for a saving of two or three dollars in its cost, an inferior to the best wheel was purchased and put to use. If a proper master of his craft, through him it might be determined why the wheel broke, and possibly by what person's fault. On the other hand, it might be shown that by a lack of good faith on the part of this manufacturer, the railway official received an inferior wheel, though entitled to the best, which would have been entirely adequate to the work this one failed under. In either case, or any, the delinquent might be exposed by persistent, faithful enquiry, and turned over to a tribunal that could inflict punishment commensurate to the offence.

And when this plenary mode of procedure should become the rule, when every man who labors for a railway is impressed with an abiding consciousness that every remissness on his part will be traced home to him, and retribution follow, it will infallibly engender a more conscientious performance of duty, and assure sound and finished work in all respects.

It is further submitted that an investigating committee that does not utterly exhaust every resource attainable, or hesitates to unequivocally establish the misdeed upon some amenable party, and shews that it fails to esteem the public safety as paramount to every other consideration,—is weakly derelict in its own duty, and should be regarded, and, if practicable, treated, as an accessory after the act it thus condones.

It is apprehended that the initiatory measures that result in these catastrophies too often have their origin in false notions of economy on the part of the Direction of railroads. To this class of markedly able and skilled men of business, accustomed to deal mostly in monetary affairs, and to regard the strictest economy of

expenditure as the very essence of success, the difference in the purchasable rate of materials, manufactures and men, is apt to have greater weight than their intrinsic and inbred qualities. If their subordinate heads of departments can be prevailed upon by them to admit that wheels, bridges or men of a lower cost than the price of the best, can possibly be made to answer the immediate purpose or emergency, they too readily determine upon these cheap things. They urge and intend the practice of a rigid economy. They overbear and constrain the better judgment of their own appointees in leading posts of responsibility requiring special qualifications foreign to the study of their own lives. They interpose the stolid weight of their Executive power to prevent a demand from procuring its proper supply. In lieu of the genuine, a make-shift is substituted, which may, and probably will, fail at the pinch of an emergency. If the Direction of a railway is actuated by no higher notions of its responsibility, the wasteful expenditure of life and treasure in disasters growing out of such management should teach that this economy of purpose is real improvidence; and an indignant people should refuse to accept the plea of inevitable accident in excuse for its consequences.

In another point of view, this pinching illiberality of outlay is reprehensible in that it lessens the self-respect of the employees, diminishes their esteem for and confidence in their superiors, and therefore tends to subvert proper discipline. If the subordinate is not well grounded in his convictions and firm to obstinacy, if he have but the ordinary force of an average man, he will yield even the point of public safety to the will of his superiors.

This false economy is quite conspicuous in the lower grades of the personnel of the service, and is in this respect a certain and prolific source of disaster, not only to the public but to the business interests and stability of railways. The deleterious influence of cheap material here is far more baneful than in a wheel that smoothly performs its evolutions for more than 100,000 miles before it breaks. The converse of this in prompt, resolute and respectful employees, is always strikingly observable. In no other way can a railroad company acquire by so reasonable an outlay, such popular credit, and, at the same time, the very best means of assured success. The respectful but unyielding firmness and painstaking care, begotten of positive knowledge in subordinates, must inspire the minds of their intelligent superiors with a conviction that

thoroughness is an economy essential to every part of the material, manufacture and special direction of a vehicle by which hundreds of lives and thousands of treasure are transported daily, at such a fearful rate of speed that the slightest unforeseen check, break or remissness may cause its instantaneous destruction and the utter extinction of its priceless freight.

As a guard against these evils, it has been waggishly suggested that a Director of every railway should occupy a seat at the front of the locomotive power of each train of cars. But this extravagant expression contains the essence of an important principle—that every person concerned in the management of a railway should feel a direct personal share in the hazards of any blundering. And in all seriousness, it is here suggested that every man in any way, directly or however remotely, connected with the transportation of passengers or goods by rail, should spend an occasional portion of his time at some point close upon the line of a railway (as for example, on a way station platform of the Boston and Albany), where express trains pass at the rate of thirty or forty miles an hour, and picture the result (which he may witness) if a wheel or rail should break, or an engine driver were to move his own train too slow or too fast, with other trains behind and before, close at hand in point of time. Let him there realize the term of a single second, and consider that every car wheel of that train makes half a dozen complete revolutions in this extremely short space of time, and that parts of the locomotive have also to *repeat* a precise and regular movement several times in that second. Let him reflect that this rapid and precise movement goes on hour after hour, day by day, under all sorts of conditions, through the obscurity of the night as steadily as in the clearness of daylight; in storms as well as in sunshine; through extremes of heat and cold; in reality, exposed to every vicissitude and contingency most trying to the endurance and integrity of this rapidly rolling mass, the materials of which it is made up, and of the men who direct its movement.

There let every man who has any duty to perform, or governing word to utter respecting it, ponder awhile, and determine whether haphazard shall ever again rule this complex machine. Let him resolve that, so far as his efforts may reach, it shall be sound and staunch throughout, with its parts always in nice adjustment, and controlled solely by skilled hands working under impulses from healthy brains of experts. Let him pray that it

may ever abide as a potential instrument of gain to human life, and never more (as he must then apprehend it may, by the slightest imperfection) become a tremendous engine of death and destruction.

In considering the present aspect of railway conduct and economy, your Commissioners are impressed by a belief that the undue influence of the inconsiderate and prating part of the travelling public has tended to divert the resources of these companies into sumptuous expenditures for objects of pure luxury and display; and that at the present time a simply safe and comfortable train of cars would be greeted with derision, and disparagement to the company, by such persons. So long as this is the existing sentiment, and stockholders assent thereto, the extravagant style must continue. But it is obvious that every dollar of outlay in the cost and finish of cars, beyond the points of safety and comfort, is unnecessary, and, in tendency, mischievous. It is believed that failure of pecuniary success may be often traced to this sort of meretricious display, while it is altogether a perversion of the true province of a railway, which should be simply the safe, speedy, comfortable and convenient transportation of passengers and goods. It is believed that any company, which might have the resolution to restrict its expenditures to these essential things, and positively and manifestly secure them, would be sustained by the reasonable persons of every community, and soon find itself in easier circumstances financially.

But, amidst all the present unsound practice, it is gratifying to perceive a growing condemnation of the ponderous apartment cars that have been tugged over the rails of Maine at such a constant loss to the railroad companies, in the wear and tear their passage effects; unnecessary, absurdly heavy, and too often offensively conducted by irresponsible servants, for whose misconduct there is no remedy short of the proprietors, who abide in another State, and to whose sole benefit, *pecuniarily*, they are maintained. It is believed that the comparatively small portion of the travelling public who, in this State, occupy these cars, may be equally well provided for in all respects in cars constructed for, owned and controlled by, the railway companies, which might then reap all the benefits that in any way accrue from the use of such cars, and reduce the dead weight thirty or even forty per cent.; while thus may be obviated any complexity that might arise from the anomalous action of a corporation controlled by

aliens operating within another that is subject to the control and supervision of the State.

It is believed that if a more simple style of car manufacture was adopted, in place of the heavily framed, expensively upholstered, panelled, veneered, moulded and gairishly ornamented tops and bodies of those in general use, these might be reduced very considerably in cost and weight; a relief of weight, too, that would lower the centre of gravity nearer to the track and secure greater steadiness to the cars when in motion. Furthermore, if veneers were discarded, and plush replaced by leather, the danger to passengers from flying splinters in a crush, and from insinuating infections gathered by spongy receptacles in such common use might be diminished. (And especially, if constructors could, by studying a form of car body adapted to the more tenacious and pliable material, substitute for wood its full correspondence of strength in iron throughout, it is by no means improbable that the weight of the monitor top cars might be reduced twenty-five per cent., or perhaps even to the same relation in weight that iron bears to wood of equal strength; then might the expressed advantages be gained to a greater degree, together with a complete immunity from the fearful peril of fire that stoves and kerosene oil expose passengers to in the highly combustible car, whose walls of wood have been dried like tinder in the wind, and perhaps saturated with oil.) It is estimated that a train of ten passenger cars may be reduced in weight thirty tons, and in cost fifteen thousand dollars below those in present use, with a positive gain both to the stockholders and to passengers. But to apply figures that the manufacturer will not attempt to refute, let the possible reduction of their cost be called one thousand dollars in each car and locomotive, and consider then the relief that may be effected in the burden now carried by the railroad companies (or the business community for them), by such a discount in the first cost of this perishable sort of property.

It is estimated that there are owned by the railroad companies operating wholly or partly in Maine, little less than five hundred locomotives, and rather more than five hundred passenger cars. The saving in the first cost on this number of each would aggregate \$1,000,000. The simple interest on this sum is \$60,000. Now the average cost of operating these roads is seventy per cent. of their gross earnings. Hence they have to earn \$200,000

annually to net the simple interest on a needless excess of expenditure in engines and cars. But in the general practice, to meet the rate of interest actually paid on this sum of money, the gross earnings annually absorbed would be not less than \$300,000. And if the representation of chapter 12 of the "Great Industries of the United States" is correct, that the average life of a car is but nine years, and that of locomotives be the same, then in every decade more than \$6,700,000 of these companies' earnings are foolishly perverted.

While your Commissioners can but highly commend the strict enforcement of the rigid system of management adopted by the Grand Trunk Railway Company, and recognize it as an important instrument of a marked improvement in the general condition of this great international way, notwithstanding its enormous traffic and consequent wear and tear to rail and rolling stock; yet it is believed that the freer and more elastic method generally obtaining in this State accords better with the spirit of the people, and when carried into effect as thoroughly, proves equally adequate to the current requirements.

But, as an aid to the efficiency of each and every system, and to promote the welfare of the men employed, your Commissioners venture to repeat here the suggestion made in a former report, and respectfully *urge* upon railway managers a consideration of the value and expediency of decreeing rewards for extra merit in the several grades of the service, each decree of merit to have an attached value in money, as well as its appropriate badge. In this declared and open recognition of his worth, a fitting gratification to every deserving man's self-respect may be accorded, and a fair remuneration for extra service bestowed, which, as an earnest of his due appreciation, would unquestionably prove the best inducement that could be offered for his future zeal.

Can there be reasonable doubt that the declaration of such an intention would become an instant spur to a more active and cheerful discharge of duty by employees, and prove to be of steadily increasing benefit to railway companies, if properly granted? not for a single meritorious act, not for mere length of service, but for the man's persistent, *zealous* discharge of his obligations,—not merely for the proper performance of the simple functions of his office (this a company has the right to expect of every man who accepts a place in its service), but for shewing on

all occasions a lively interest in the prosperity of the corporation,—a zealous coöperation in every effort to improve its condition,—strict economy on his own part, and the suppression of every wasteful practice in others whom he may influence,—vigilance in guarding its possessions and rights, and an *esprit de corps* in maintaining for *his* road a first class rate in the esteem of his fellow craftsmen.

As a matter of course, such an innovation would require something more of nerve and discrimination on the part of the Executives. None but fearless and resolute masters of their position could essay the initiation of this measure, with any chance of fitly establishing it. The claims of many would have to be set aside—of the froward, the over-zealous, the too positive, the officious meddler, and of the really good but easy-going man who restricted his acts, however conscientiously, to the bare discharge of prescribed duties. For a time it might, and probably would, produce antagonism, and promise evil rather than good. But an able and discriminating Executive might soon secure thoughtful and zealous coöperation, which, in the mere saving of dimes and dollars, would mark its progress in the regular routine of the service; while the respectful deportment, alacrity of movement and manifest vigilance of employees, in the cheery thought of being deservedly appreciated, would inspire confidence, and elicit such general commendation as might prove the most profitable advertisement that any outlay could procure. And none can doubt that when a perfect sympathy and understanding was established between the manager and his employees; when the whole force became imbued with the sure eventual feeling of pride in the service and in *their* road, approaching as near as possible to the spirit of proprietorship, many casualties would be averted, which now, time after time, occur.

In the chapter upon "Railway Management," in Mr. Vose's valuable "Manual for Railroad Engineers," well worth the attention of all railroad men, upon page 425, quoting from Mr. McCallum of New York, "the following general principles are laid down, as governing the formation of an efficient system of operation: *first*, a proper division of responsibilities; *second*, sufficient power conferred to enable the same to be fully carried out, that such responsibilities may be real in their character; *third*, the means of knowing whether such responsibilities are faithfully executed; *fourth*, great promptness in the report of all derelictions of duty, that

evils may be at once corrected; *fifth*, such information to be obtained through a system of daily reports and checks that will not embarrass principal officers, nor lessen their influence with their subordinates; *sixth*, the adoption of a system, as a whole, which will not only enable the General Superintendent to detect errors immediately, but will also point out the delinquent." Again, on page 428, "The enforcement of a rigid system of discipline in the government of works of great magnitude, is indispensable to success. All employees should be accountable to, and directed by, their immediate superiors only, as obedience cannot be enforced when the foreman in immediate charge is interfered with by a superior officer giving orders directly to his subordinates. It is very important, however, that principal officers should be in possession of all the information necessary to enable them to judge correctly as to the industry and efficiency of the employees of any grade. To acquaint themselves in this particular, and remedy imperfections without weakening the influence of subordinate officers, should be the aim of the heads of departments. Each official should possess all the power necessary to render his position efficient, and have authority, with the approval of the President or General Superintendent, to appoint all persons for whose acts he is held responsible, and to dismiss any subordinate when in his judgment the interests of the company will be promoted thereby." And on page 432, "A very essential point, and one to which especial attention is paid upon the Pennsylvania Railroad, is the educating of its officers and men in the particular field in which they are to be employed. This point is worth far more consideration from railway managers than it has commonly received.

* * * * *

A system of coöperation between the company and its workmen has also been adopted, by which great economy has been promoted. Premiums have been paid to all foremen who exert themselves in an unusual degree in the direction of economy, both of material and labor. So, too, in the running department, the value of all fuel and stores per mile run, saved, over a certain established quantity, is equally divided between the company and the employees, engineers receiving 65 per cent., firemen 30 per cent., and others engaged in handling stores 5 per cent. The saving in a single year by this system amounted to \$100,000."

For a few years past the public mind has been greatly exercised, in Maine as elsewhere, respecting consolidation of railway

companies, and it is hoped that a few words upon this topic may not be deemed irrelevant to a report from this Board.

Your Commissioners recognize some ground of apprehension that such consolidation might concentrate power in more direct action, and possibly for a limited period give to this interest an influence in general affairs inconsistent with its true province as a common carrier of persons and things. But the undue exercise of this or any authority would be sure to hasten its own overthrow, and no influence can long overshadow the spirit of free bred and intelligent citizens of an independent State. It is questionable, too, whether there is any other branch of business for which the same degree of ability, representing such an immense amount of capital, would not wield a far more considerable influence; while there is certainly none towards which, as a whole and invariably, such a jealous scrutiny is maintained; none whereto, respecting its every movement, such uncaudid suspicion could be aroused from a betrayal of trusts in merely a few isolated instances however prominent. It is conceived that monopolies far more dangerous to the public welfare might take place from joining an amount of capital equal to that of railroads, in almost any other business that may be named, everywhere free under existing law to aggregate unlimited means of operation. As a rule, the stock and bond holders of railways, who may at any time summarily exert their power of entire control over their management, have other interests paramount to those pertaining to their property in these companies, which, though generally coincident with, are quite often adverse to, the current course of these corporations, and almost always in positive opposition to them as monopolists. These interests the proprietors hold in common with their fellow citizens who possess no property whatever in railroads.

Therefore, waiving this as a political question, and essaying to regard it in its narrower and prescribed aspect, your Commissioners venture to put out for unprejudiced consideration the query whether the completely uniform system, with more economy in operating, that the consolidation of several railways into one corporate body, with one central governing and directing head, is clearly susceptible of, or that must inevitably result from a reconciliation of their diverse interests into one harmonious arrangement, might not better, subserve the public safety at all points, life, limb and treasure, than to continue existing antagonisms.

Is it an improbable conjecture that,—if existing companies were relieved of the present spirit of rivalry that provokes non-essential expenditures as well as hazardous efforts, and as links of the chain of consolidation, were left free to attend exclusively to their legitimate business of forwarding safely, expeditiously and most economically whatever came by the way, or was brought to be carried along, together with a proper maintenance of their ways and rolling stock—greater efficiency, a perfect system and altogether better results might be attained, with also a reduction of rates, to the advantage of the public and without detriment to the stockholders?

These views are not proffered in the belief that unlimited consolidation of railroad companies is expedient or practicable, nor to advocate the measure, but rather to counsel a stay of too hasty judgment upon an experimental course of procedure that, it is believed, may be safely left to the deliberate judgment of the managers of these corporations.

The only real claims that, it would seem, the entire community may properly exact of its railroads, are a safety and certainty of operation, the proper accomplishment of which necessitates long continued special study, guided by daily observation in practice. It is therefore most respectfully submitted, as the settled conviction of your Commissioners, that disastrous effects are very likely to follow upon crude decrees and inflexible restrictions. Any legislature essaying to deal in a specific manner with rail or car connections, power brakes, or any other of the minor details of the service, may seriously disturb the true solution of questions under experimental investigation by every important railroad company in the country.

Such a bill as was presented to the last Congress, entitled "An act to increase the safety of human life upon railroads," if passed to be enacted, might be found to work incalculable mischief, however honestly conceived. From the more obvious necessity for having quick control of trains in motion, men not familiar with the requirements for success and safety in the management of railroads are likely to lose sight of the hardly less need of power to set in motion with facility trains at rest. While the importance of possessing all appliances for increased safety to human life is more patent to railroad managers, and while these devices more constantly engage their attention, with a will on their part to adopt all that may prove wholly efficient, they can also far better discern their too often fatal defects.

And how can a legislative committee, even if it were made up of expert railroad managers, determine upon an equitable adjustment of rates of fare and freight throughout a great State, where each one of its existing railways is exposed to varying conditions peculiar to itself? Is it possible to make inflexible, uniform rates bear equitably upon all? Is there any more propriety in such an interference with railroads, than there is or has been, with steamboats or stages, or the transportation of goods by horse power?

A general consolidation of the several railway companies of a State into one management would undoubtedly tend to uniformity of rates, and render an overruling determination of their limits more feasible, at a time when, if ever, the necessity for such a protection of the public might become really apparent.

But it is believed that even the most experienced managers of railway companies are yet very imperfectly aware of what living rates, on persons as well as of goods, may be for portions of their routes; and that if wear and tear, or a perfect maintenance of the way and rolling stock, was properly taken into account, though some might be lowered, many of the current rates would have to be increased, even if the utmost indulgence of its just claims was accorded to the travelling public.

The mention in an official paper of any patented appliance for securing greater efficiency to the service it concerns, is attended with some risk of bringing into question the purity of motive underlying such notice; and it has become a serious question with your Commissioners as to what extent they are justified, by a conscientious discharge of duty, in expressing an opinion upon certain inventions of Maine men lately brought before the public. But because they are convinced that a general adoption of those named below would conduce to the public safety and convenience, as well as result in true economy to railroad companies, your Commissioners venture to call the attention of railroad managers to them.

It is believed that the patent right of F. H. Whitman, of Harrison, covers the best cross-tie that has yet been devised,—for its endurance as well as the increased and uniform bearing and wear it obtains for the rail; for its slight and sufficiently elastic respond to the percussion of the rolling stock, that relieves both that and the rail of the evils resulting from the too great rigidity of stone, iron or solid oak ties and of iron chairs, while there is no more, perhaps even less, cutting of the rail into the oak bearings than in

any solid hardwood ties; for the resistance it enables the spikes to oppose in any lateral thrust upon the rail, thus securing integrity of the gauge throughout; and for other less prominent but quite important advantages.

It is believed that the patent right held by William A. Goodwin, City Civil Engineer of Portland, for the protection of brakemen on freight trains, if adopted by railroad companies, would enable these men to remain faithfully at their posts of duty, within reach of a brake, in all conditions of the weather, and not expose them beyond human endurance as they now often would be if they did not seek a refuge in the caboose car or the cab of the engine, where in any sudden emergency they could be of little account but to add bitterness to a casualty.

It is believed that the new and improved car-coupling, patented by Charles H. Knowlton of Rockland, possesses the merits that he claims of coupling automatically, and also automatically uncoupling, in case one of the cars shall be overturned or otherwise displaced from the track; of so connecting cars in a train as to prevent their jerking and thumping at every change of speed, and to render it safer for persons to pass from one to another; that it has the practical advantage of admitting an open space with the slack of the common link connection between the cars, or of their being drawn together, at the option of the conductor, so that the solid platform of one car shall bear directly, fairly and constantly against the solid platform of the next one in the train; that, with an ingenious device for preventing the cars from jumping the track or of telescoping, also entirely under the quick control of the persons in charge of the train, the ready means are provided, by a simple movement, to either lock the platforms in close contact, or to unlock them.

It is believed that the simple, comparatively cheap, and very serviceable platform, patented by Ansel Stevens of Standish, has positive merit that entitles it to the consideration of railroad companies seeking a practical precaution of this sort attainable within reasonable cost.

And finally, the very ingenious design for holding cars to the track, and preventing the ordinary crush from derailment, patented by S. W. Emery of Portland, is believed to be worthy the thoughtful attention and personal examination of railroad men.

Your Commissioners have also seen a brake attached to a locomotive, but not yet in the market, the invention of Supt. W. W.

Sawyer of Calais, that appears to possess great advantages over those in general use, and it is believed may supersede the latter, to the benefit of railway companies.

The railroad Commissioners respectfully request that the several railway companies of the State be prepared to furnish replies to the following queries in addition to those they are now required to return to the State department:

Length of sidings.

Miles length of steel rails.

Miles length of fished joints, and of what sort.

Miles length of chair joints.

Miles length of Whitman's improved ties.

Whole cost of equipment.

Whole cost of operating.

Number of passenger trains during the year.

Number of freight trains during the year.

Average number of passengers per train.

Average number of tons of freight per train.

Average receipts per passenger per mile.

Average receipts per ton of freight per mile.

Average pay to each of the following grades: Conductors, baggage masters, station agents, switchmen, engine drivers, firemen, brakemen, foremen of track sections.

Amount of receipts from passengers, and freight originating along the line of your own road by itself, and the amount brought to it by other lines, with a view to obtain the comparative value of local and through business.

Number of stations upon the line.

It is respectfully suggested that all returns from the railroad companies shall be rendered on or before December 1st, for each year ending September 30th.

Railways in Maine.

1. Androscoggin, see Maine Central.....	70½	miles.
2. Atlantic and St. Lawrence, see Grand Trunk....	82	"
3. Bangor and Piscataquis, see E. and N. American	48 $\frac{17}{100}$	"
4. Bath Branch, see Maine Central.....	9	"
5. Belfast and Moosehead Lake.....	33½	"
6. Boston and Maine.....	44	"
7. European and North American.....	114	"

8. Grand Trunk.....	—	miles.
9. Houlton Branch.....	3	“
10. Knox and Lincoln.....	48½	“
11. Maine Central.....	127½	“
12. Newport and Dexter, see Maine Central.....	14	“
13. Portland and Kennebec, see Maine Central.....	100	“
14. Portland and Ogdensburg.....	51	“
15. Portland and Oxford Central.....	27½	“
16. Portland and Rochester.....	49½	“
17. Portland, Saco and Portsmouth.....	52	“
18. Portsmouth, Great Falls and Conway.....	4¼	“
19. St. Croix and Penobscot.....	22	“

Total number of Miles.....900¼ miles.

No new roads have been opened for passenger travel this year, excepting the Boston and Maine extension to Portland.

The Somerset road from West Waterville has been opened for freight 13 miles, to the south side of the river at Norridgewock.

The Lewiston and Auburn Branch is nearly graded.

The Bucksport and Bangor Railroad is well under way, and will be completed another year. It is to connect with the European and North American Railway at Bangor.

Projects for other roads are being agitated.

Boston and Maine Railroad.

Since the date of the last annual report the extension of this road has been completed to Portland, 44 miles in this State. The road was opened for freight trains on the 18th of February last, and for passenger trains about the middle of March following, and since that time has been operated safely and regularly.

In their examinations of this road the Commissioners were fully impressed with the high character of the work, not only in the more important structures, but also those generally considered of minor consequence. The masonry is first-class, substantial and adequate.

The super-structure of the bridges with the exception of the pile bridges is of iron, and all of the most approved patterns and plans for strength and durability; the pile bridges are first-class of their kind.

The road-bed is well finished, of good width, well drained and ballasted, and the general alignment, gradient and surface most favorable for safe and rapid transportation.

The station buildings are tasty and substantial in construction (so far as completed) and well adapted to the uses for which they are intended, and the whole construction of the road impresses the mind with the feeling of security which thoroughness of design and accomplishment imparts. The proprietors of the Boston and Maine Railroad may well congratulate themselves upon having in their extension (if not the best) one of the best constructed railroads in the country.

The amount expended upon the extension up to the 30th day of September, 1873, was \$3,941,322.66, but much remains to be done in and about the city of Portland.

Bonded debt is \$1,227,500 ; stock paid in, \$6,921,274.52 ; gross earnings for year ending September 30th, 1873, \$2,300,093.68 ; net earnings for year ending September 30th, 1873, \$572,268.68 ; earnings from passengers, \$1,302,190.55 ; earnings from freight, \$820,512.44 ; number of passengers carried, (equal to 61,760,456 per one mile) \$5,008,074 ; number of tons freight carried, 520,720.

There has been added to the rolling stock the past year, 18 passenger and 3 parlor cars, 1 baggage and 177 freight cars, and 1 snow plow. Total, 1,400 freight, 120 passenger and 3 parlor cars and 69 locomotives.

There has been laid (including that laid on the extension) 5000 tons of iron and 1,700 tons of steel rails.

There have been six passenger depots and four freight houses built in Maine.

Nathaniel G. White, Esq., of Lawrence, is President ; James T. Furber of Boston, is General Superintendent.

Consolidated European and North American Railway.

BANGOR AND PISCATAQUIS RAILROAD. By articles of agreement and consolidation of December 1, 1872, this road embraces the 114 miles in Maine, formerly European and North American Railway, and the 88 miles in New Brunswick, formerly western extension of European and North American Railway. The Bangor and Piscataquis Railroad, 48 miles, has also during the year, been leased to the Consolidated European and North American Railway, practically consolidated. So that the Consolidated European and North American Railway embraces 250 miles of railroad, 162 of which are in Maine.

The road and rolling stock are in good condition. A new bridge at a cost of about \$25,000, has been built at Oldtown, and

the third pier in the Orono bridge, about which we had felt some apprehension, has been strengthened at a very considerable expense. Other repairs and improvements have been made and new rolling stock added—bringing up the character of the road and its equipment.

The freight and travel of the road has largely increased during the year and several new industries called into being by the facilities afforded by the road are in process of construction, which will afford employment to labor and bring business to the road, and give besides value to slate and iron ores and other natural products of little worth in their dormant state. But the Piscataquis road when extended to reach Canadian travel and traffic, as is said to be in early contemplation, and the Riviere du Loup when opened as far as Tobique if no farther, already completed to Woodstock and already making its contributions to the Consolidated European and North American sensibly felt, will more than any individual enterprises swell the volume of business upon the main line.

The European and North American Railway Company still retains the lands donated to it by the State, being about 77,000 acres as we understand from the Land Office. The road, however, claims as the Land Agent informs us, about 260,000 acres more, which he thinks it is not entitled to under the resolve of March 3, 1868. The timber and lumber upon ten townships equal to 242,366 acres; of this 700,000 acres had been reserved by resolve of March 21, 1864, for the common school fund, with the right in 1874, to cut the lumber. The same reservation was made in the resolve of March 3, 1868, and the time to remove the lumber is extended to 1884.

The bonded indebtedness of the road January 20, 1869, is \$1,000,000 from Bangor to Winn; March 1, 1869, \$2,000,000 from Bangor to Vanceboro'; \$2,000,000 debentures from Vanceboro' to St. John; \$7,822,000 Bangor to Guilford on the Piscataquis road. The \$2,000,000 of March 1, 1869, are secured by mortgage upon the lands above donated by the State.

The earnings of the Consolidated European and North American Railway were in 1872, about \$536,000; in 1873, \$652,000, estimating a portion of decrease—increase, \$116,000.

G. K. Jewett, Esq., of Bangor, is President; E. R. Burpee of St. John, Vice President; M. H. Angell of Bangor, is Superin-

tendent; H. D. McLeod of St. John Vice President, and Hon. N. Woods of Bangor, is Treasurer.

Grand Trunk Railroad.

The Atlantic and St. Lawrence Division extends from Portland to Island Pond in Vermont, 149 miles. Of this division, 82 miles are within the limits of Maine.

In commencing their report, the Commissioners think it proper to remark that they have been unable to get the important business statistics of the road, so necessary to a statement of its condition and interesting to the public, and the same causes prevail here as in the other cases we have referred to. The officials of the Grand Trunk road have always manifested a kind and cheerful desire to meet every request for information and details concerning the road. This year we are informed that the items are not yet made up, or the accounts for the year closed, but are indebted to C. E. Barrett, Esq., Treasurer, for the few financial items given.

The Commissioners are happy to report this road in good condition. Great improvements have been made during the last two or three years, and greater ones are proposed the coming summer. The track is in good running order—some ballasting has been done. The pile bridge near Portland has been thoroughly repaired. The wooden truss bridges at North Yarmouth, 107½ feet span, at Mechanic Falls, 156 feet span, and Whitman's Creek between West Paris and Bryant's Pond, 132 feet span, have been removed and their places supplied with iron structures. The wooden truss bridge at Pea Brook, 67 feet span, and Pleasant River 69½ feet span, have been rebuilt. Thirteen and one-fourth miles of new iron and 36,370 sleepers have been laid in the track, and 8½ miles of track has been ballasted. The guage of the Canadian portion of the road has been changed the past season from 5.6" to the prevailing guage of the country, 4.8½", and it is understood that the guage will be changed between Montreal and Portland some time during the year 1874. This accomplished, the inconvenience of breaking bulk at the different points of connection with other roads, which has seriously impeded the successful operating of this road, will be done away with, and the cars of the Grand Trunk will be able to deliver freight at all points now reached by competing or connecting roads.

The management of the road has been highly successful the past year, and we take pleasure in commending it as safe and efficient.

The capital stock of the division between Island Pond and Portland is \$5,000,000 ; debt funded, \$3,484,000.

Hon. John B. Brown of Portland is President of the Atlantic and St. Lawrence Company ; Charles E. Barrett, Esq., Treasurer. Hon. Richard Potter of London is President of the Grand Trunk Company ; Hon. C. J. Brydges of Montreal is Managing Director ; Henry Bailey, Esq., is Local Superintendent ; Joseph Hickson, Esq., is Treasurer.

Houlton Branch.

The Houlton Branch of the New Brunswick and Canada Railroad commences at Debec Junction in the Province of New Brunswick, and extends to Houlton in Maine, 8 miles. The portion in the State is only 3 miles.

The New Brunswick and Canada road is in better condition than heretofore noticed, and its Houlton branch is a particularly good piece of road. It needs more gravel, and nothing has been done upon it this season, but it is well sleepereed ; the rails, though light, are good ; the track is well made, the surface and alignment are unexceptionable. A little work in the way of ballasting and clearing out the ditches would make this branch a first-class piece of road.

The depot buildings are convenient, and the facilities for storing freight have been improved and enlarged—though, as we have before said, the terminus of the road should have been in the heart of the town, upon the flat, on a level with the banks of the Meduxnekeag.

Perhaps no town of its size in the State has more wealth or enterprise than Houlton, but it is to be regretted that the enlightened foresight of its citizens had not seen their interest in a railroad looking toward commercial centres and the ancestral hearthstones of the State to which they owe allegiance, rather than in a diversion of their business toward provincial towns and into a foreign government.

The rolling stock used is that of the New Brunswick and Canadian Railroad—is adequate for the business of the branch, and is in very fair condition.

Henry Osburn, Esq., is Managing Director, and W. Stuart is Superintendent. Both have their offices at St. Stephen.

Knox and Lincoln Railroad,

Extending from Bath to Rockland, 48½ miles. At our examinations of this road during the past year, we found the track and bridges generally in good condition.

The exceptions were the pile bridge across Dunton's Cove, on the east side of the Sheepscot river, and the truss bridge across Wight's stream. The first required additional braces and side stringers, and we directed that the chords of the latter should be strengthened with iron plates. All of our directions have been complied with, and we now consider the bridges in safe condition.

The road-bed has been improved with additional ballast, and the track is in good line and surface.

Owing to the difficulty in obtaining gravel (there being no large deposit of this material along the line), the process of ballasting is necessarily slow and expensive, but the work is advancing. A construction train has been employed in this service most of the past summer, keeping the track in good running order.

The extension to tide water at Rockland has been completed, and a safe and convenient wharf, with appropriate buildings thereon, constructed.

These improvements and additions must, we think, add largely to the business of the road, furnishing as they do a safe and convenient landing for steamers and other vessels receiving or delivering freight from and to the road. Upon the whole we think the Managers are fairly entitled to commendation for the energy and perseverance displayed by them in the construction and improvements of this road.

The cost of the road, including the extension to tide water at Rockland, is about \$2,705,502.85; bonded debt, \$2,395,000; stock paid, \$361,655.00. Liabilities are more than balanced by bills receivable and cash on hand.

The rolling stock is in good condition, and consists of six engines, nine passenger cars, one shifting passenger car, one saloon car, five baggage cars, twenty-two box cars, thirty-two platform cars, one cattle car, three shifting cars, thirteen push cars, eleven hand cars, three snow plows, and one flange scraper. One snow plow and one baggage car has been added the past season.

We are unable to give statistics of the business of the road, receipts from passengers or freight, miles run, cost of running, etc., as the company have not made up their report for the past

year, and it will not be completed before the report of the Railroad Commissioners will be due—a difficulty common to nearly all the roads in the State, and one which is a source of much regret to the Commissioners, from the fact that they are unable to embody these interesting statistics in their annual reports.

Oliver Moses, Esq., of Bath, is President; C. A. Coombs, Superintendent.

Consolidated Maine Central and its Branches.

PORTLAND AND KENNEBEC DIVISION. Extending from Portland to Augusta, $62\frac{3}{4}$ miles with branch to Bath of 9 miles, making $71\frac{3}{4}$ miles.

The directors and other officers and employees of this road have not been idle during the past summer, as the great amount of work done in improving and repairing the road will conclusively prove, and the freedom from accident and regularity of trains in arrival and departure is additional evidence of their continued good management and success.

New bridges have been built on this division of the road as follows: Portland street, Portland, Howe truss, 80 feet span; Royal's river, Yarmouth, Howe truss, 102 feet span; Topsham street, Howe truss, 40 feet span; *Cathance, 102 feet span, iron; Lawrence Boom, Howe truss, 65 feet span; Rolling Dam, Howe truss, 65 feet span. At Gardiner a new trestle bridge has been built of 35 bands on granite benches or foundations, the entire length of the structure being 425 feet. At Cobbossee Contee stream Gardiner, a Howe truss, 60 feet span. A new turn-table has been built at Bath, and a wharf at Portland, equal in dimension to 22,910 square feet. The above items include only the new structures. Extensive renewals and repairs have been made at other points along the line, details of which will be given in another place. The track is in good running order for winter.

SOMERSET AND KENNEBEC DIVISION. From Augusta to Skowhegan, $37\frac{3}{4}$ miles. On this division one mile of track has been changed,—at Lang's slide, Vassalboro', and at the trestle bridge near Skowhegan; these changes were rendered necessary from the fact that the embankments were originally built on the sloping bank of the river, the soil being for the most part of a clay

* On the ground but not yet in position.

formation with tendency to slide. The company adopted a wise precaution by thus moving the line further into the bank.

A new Howe truss bridge, 65 feet span, has been built over Martin stream near Pishon's Ferry, Fairfield, and a new turntable at Skowhegan.

We wish we could add that the bridge over the Kennebec river at Waterville had been rebuilt, but such is not the fact although the attention of the directors and officers of the road has often been called to the necessity of it. The Commissioners feel deeply their responsibility in this case and it has been a cause of much anxiety and care to them, and they are convinced that the trains ought not to be and will not be allowed to run over this bridge another season without protest from them, and the use of all the power to prevent it with which the State has invested them to secure the safety of travelers upon railroads at the present time. The long span of the bridge is supported upon trestles, and as a temporary expedient this answers the purpose of helping to sustain the bridge, but the spring freshets will probably carry off these trestles and leave the bridge without their necessary support. We hope this matter will be considered at an early day, and such action taken as will secure the desired result, viz: *absolute safety.*

The track on this division is in fair condition for winter.

MAINE CENTRAL DIVISION. From junction with Portland and Kennebec division at Cumberland to Bangor, 127½ miles.

Many improvements and repairs have been made on this division of the road, but not to so great an extent as upon the Portland and Kennebec division. The bridge at Winthrop pond has been strengthened throughout its entire length and is now secure. This was one of the first bridges built upon the road and so thorough in construction and material that it has required and received very little repair for the twenty-five years it has been in use. The truss appears to be as sound as when first erected; it was built upon the lattice principle, and has proved safe and serviceable; but owing to the fact that the company is using heavier rolling stock and largely increasing the number of trains, the Commissioners recommend the strengthening of all the bridges. Every span of this bridge is now supported by a system of struts and straining beams, adding greatly to the firmness of the structure.

The pile bridge at Belgrade has been removed and a new abutment built, and a Howe truss of 65 feet span put on, reducing the length of the bridge 60 feet from the original structure.

At Benton road, Benton, a Howe truss bridge of 40 feet span has been built.

The ledge cut just east of Etna bog, has been lowered five feet, thus reducing the heavy grade ascending from the bridge, which in years past has been a source of trouble.

At Shaw's brook near Bangor, a substantial arch culvert has been built to take the place of the old pile and trestle bridge. The old bridge still remains as the embankment has not been made over the arch.

New freight depots have been erected at West Waterville and Pittsfield.

The trestle bridge at the Rice crossing of the Emerson stream, and the truss bridge over the Sebacook at Pittsfield, will need attention very soon, and we hope to see the old pile bridge at Etna bog give place to an earth embankment. The road-bed and track on this division are in excellent condition.

BELFAST AND MOOSEHEAD LAKE BRANCH. From Belfast to Burnham, $33\frac{1}{2}$ miles. This road remains in the same condition as reported last year with the exception of covering the bridges to protect them from the weather and building a new wharf at Belfast. Nothing has been done in the way of repairs and improvements; the track is in good running order and rides well, but the great need of the road is more gravel—surfacing and raising the embankments to the original grade line. We think the company are pursuing an unwise policy in this matter and that there would be a great saving in the wear of iron and expense of running if the embankments should be raised to their original heights.

Arrangements are in progress for extending the line of this road along the water front and across the wharves at Belfast, in order to better accommodate and facilitate the delivery and receiving of freight at the stores and vessels. With reasonable tariff rates—facilities for receiving and delivering freight—there is no good reason why Belfast should not secure a large proportion of the freight and business of the interior country; certainly no other point on the sea-board possesses greater advantages.

The road is leased by the Maine Central Company and operated

by them. The cost was about \$850,000; its bonded debt, \$150,000; its liability beyond is upon stock.

Charles B. Hazeltine, Esq., of Belfast, is President; Asa Farwell, Esq., Treasurer.

DEXTER AND NEWPORT BRANCH. From Newport to Dexter, 14 miles. The energy and enterprise manifested by the citizens of Dexter in projecting and building this road have been amply rewarded by the successful results accomplished by its construction. From the day of its opening it has proved, not only a safe and convenient line of travel, but a pecuniary success, a fact which can be stated of very few new roads in the country. The road is in its usual good condition, and the trains run with unvarying safety and regularity.

A new turn-table has been built at Dexter the past summer, which is the only marked item of improvement or renewal.

The entire cost of the road was \$300,000: town of Dexter bonds, \$125,000; town of Corinna bonds, \$50,000; stock, \$125,000.

The Maine Central leased the road, paying 6 per cent. on the entire cost.

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

ANDROSCOGGIN DIVISION. Brunswick to Farmington, $65\frac{3}{4}$ miles, with branch to Lewiston, 5 miles, making the total length of road $70\frac{3}{4}$ miles.

This division is formed by the union of the Androscoggin, Lewiston Branch, and Leeds and Farmington roads.

The road is for the most part improving under the new management. Much attention and labor have been devoted to renewing and repairing the bridges, graveling the road-bed, and substituting new sleepers for defective ones.

The bridge over the Sandy river at Farmington was badly damaged by the freshet last fall, and a portion swept away, but the injured part has been restored in a more substantial manner than before, and the bridge is now in good order. The "Twin Bridges" (so called) were forced out of position, but have been replaced.

These last named bridges might be entirely avoided by excavating a new channel for the stream for a short distance. We hope the company will conclude to make this improvement next summer, as the bridges are a constant source of danger and detention in the occurrence of a freshet. The material to be taken from

the new channel is needed for filling at other points where wash-outs have occurred.

The pile bridge, 260 feet in length, at Dead river was entirely swept away by the same freshet. It has been rebuilt with 5 spans of Queen's truss, on pile piers, and reduced in length 60 feet.

A new Howe truss of 60 feet span has been built over Sabattis stream, and the trestle and truss bridge at Sabattisville repaired and strengthened. Nearly all the small bridges on the line have been overhauled and improved.

The statement of other repairs and materials used is included in the general summary of repairs made and materials used on the consolidated road.

That part of the line between Crowley's Junction and Leeds is not in so good order as the other portion of the line, and will require extensive repairs the coming season.

Below we give statement of bridges and buildings built and materials used in renewals and repairs during the past season—items of interest, as we think, showing not only the vast amount of labor and materials required to keep a great railroad in running order, but a desire on the part of the managers for safety and improvement.

Recapitulation of materials and repairs on the Maine Central Railroad, for the the year ending December 31, 1873 :

3170 tons of new rails have been laid, equal to $34\frac{1}{4}$ miles.

10,000 rails repaired and relaid, equal to 20.2 miles.

3 miles of new side track have been laid.

65 miles of track raised from 8 to 18 inches, with ballast.

1 mile of road-bed changed at Lang's Slide, Vassalboro', and trestle bridge near Skowhegan, and grade lowered 5 feet through Etna Ledge cut.

168,000 pounds of spikes have been used for track.

14,000 fish joints.

74,092 cedar sleepers put in track.

36.4 miles of new fence built.

3,429 yards of masonry laid for culverts, turn-tables and buildings.

12 culverts have been filled with earth.

3 turn-tables built—Dexter, Skowhegan and Bath.

2 turn-tables repaired—Portland and Farmington.

6 road bridges built over the track, and 13 new bridges built, as follows, viz :

Portland Street, Howe truss, length.....	80 feet.
Royals River, " "	102 "
Topsham Street " "	40 "
Cathance Iron (not yet in position), length.....	102 "
Lawrence Boom, Howe truss, length.....	65 "
Rolling Dam, " "	65 "
Gardiner trestle (35 bands on granite benches) length..	425 "
Cobbossee Contee, Howe truss, length.....	60 "
Sabattis Stream, " "	65 "
Belgrade, " "	65 "
Dead River (5 spans Queen's truss on pile piers) length.	200 "
Martin Stream, Howe truss, length.....	65 "
Benton Street, " "	45 "
Total.....	1382 feet.

Dead River bridge has been shortened 50 feet.

Belgrade bridge has had one new abutment, which shortened it 60 feet.

22 bridges have been repaired in a substantial manner, equal to 7,665 feet, and many others have received more or less repairs.

5 new water stations have been made, and two supplied with steam pumps.

2 new wood and 2 new coal sheds have been built.

2 new freight houses, one at West Waterville and one at Pittsfield.

2 wharves built, one at Belfast, 7,910 feet, and one at Portland, 15,000 feet; total, 22,910 square feet.

On the 23d day of April last, 1,167 feet of the most important and expensive portion of the bridge over the Kennebec river at Kendall's Mills, was destroyed by fire, leaving 768½ feet standing, 614 feet of which was trestle work. The piers and abutments were not originally first-class structures and were damaged and weakened by the action of the fire.

After some deliberation—the exigencies of the road requiring immediate action—it was decided to build a new line from the easterly of Waterville bridge in Winslow, (on the Somerset and Kennebec) to a point of junction with the line of the old Maine Central road in Benton, four miles in length. The work was commenced on the 5th of May, and was urged forward so rapidly that the line was so far completed on the 16th of June as to allow trains to pass regularly for the transportation of passengers and

freight. Certainly this was quick work, and the officers of the road are entitled to high commendation for the expeditious and thorough manner in which the undertaking was accomplished.

After more mature deliberation the directors decided to build a new bridge over the Kennebec river, and fixed upon a point near Holland's brook about one and a half miles above Waterville as the suitable location. Work was commenced on the new bridge the first day of September, and the work is being pushed forward with all possible dispatch. This new location or crossing requires a bridge of four spans, two of 200, one of 114, and one of 102 feet in length, making a total of 616 feet. The foundation courses of the piers and abutments are cut into the solid rock bed of the river. All the courses are doweled and laid in cement. One pier and the two abutments were to be completed during the month of December. The other two pieces are each built 6 feet above the water and the materials are nearly all prepared to complete them. The iron super-structure is being built by Clarke, Reeves & Co., of Phoenixville, Pa., and will be delivered on or before the first of February. It is confidently expected that the bridge will be completed and in order for the trains to cross by the 10th of March. When this is done the trains will pass over the lower bridge to the new station at Waterville, thus doing away with the unpleasant and annoying detention at Winslow.

However opinions may differ as to the good judgment and wisdom displayed in the various changes in location, etc., all must admit that they are made in good faith and with a desire to secure the best interests of the public and the company.

There have been added to the rolling stock during the past year, 6 locomotives, 200 box, 115 flat, 4 saloon, 1 postal, 5 baggage and mail and 6 passenger cars; 2 snow plows have been added and 4 built to take the place of those destroyed.

The company has bought the shifting engine Gen. Knox of the Knox and Lincoln, thus adding 7 engines this year.

The rolling stock consists now of 57 locomotives, 88 passenger and baggage cars, and 1,119 freight cars.

The bonded debt is, \$7,674,108; stock paid in, \$3,634,520; liabilities, (floating debt) \$933,747.12; gross earnings, (estimate) \$2,052,000; net earnings after paying working expenses, \$695,000.

Hon. Anson P. Morrill of Readfield, is President; Charles F. Hatch, Esq., of Boston, General Manager; Thomas Holt, Esq., of

Waterville, Chief Engineer; L. L. Lincoln, Esq., of Augusta, Superintendent 1st Division; Arthur Brown, Esq., Bath, Superintendent 2nd Division; John W. Philbrick, Esq., of Waterville, Master Mechanic; J. S. Cushing, Esq., of Augusta, Treasurer.

Portland and Ogdensburg Railroad.

From Portland to State line, 51 miles. This road is steadily and surely advancing towards completion and while many enterprises in other parts of this State and country have, owing to the panic and stringency of the money market, been entirely abandoned or greatly retarded, this company has continued its operations and pressed forward with a determination and energy worthy of the great object to be accomplished by the construction of this road.

The road was opened to North Conway, sixty miles, in August, 1871, and to Upper Bartlett, twelve miles further, in July, 1873.

The line passes through a section of country remarkable for the beauty of its scenery. And the ever varying views of lake, river and mountain, are a constant source of pleasure to the traveller and tourist.

The character of the soil along the route is very favorable for construction and easy maintenance of the road-bed, and taking into consideration the fact that the road penetrates one of the most mountainous regions of New England, the alignment and graduation are remarkably favorable.

There are two iron bridges upon the line—one of 185 feet span, and one of two spans, 155 feet each. The road is in excellent condition throughout its entire length and is steadily growing in public estimation and favor, as the increased receipts the past season prove.

The work of grading the line through the "Notch" of the White Mountains, is rapidly progressing under a contract with the energetic and reliable contractors, Messrs. Fuller and Harding of New York, and soon the echoes of the steam whistle will be heard reverberating from summit to summit of the grand old mountains, announcing another triumph of science over natural obstacles and proving that mountain barriers can present no insurmountable difficulties in the pathway of resolute endeavor stimulated by the demands of commerce and supported by well directed energy, skilled labor and the appropriation of required capital.

Receipts—from passengers.....	\$67,256 15
Freight.....	72,292 21
Mails.....	3,071 00
Express.....	2,250 00
Carage.....	112 90
	\$144,982 26

Expense of operating, (estimated) \$95,907.28, say $66\frac{15}{100}$ per cent. of earnings.

Mileage—passenger trains, 78,464; freight and mixed trains, 45,698; ballast trains, 6,064; construction trains, moved by contractors, 17,510.

Samuel J. Anderson, Esq., of Portland, is President; John F. Anderson of Portland, is Chief Engineer; Jonas Hamilton of Portland, Superintendent; W. H. Anderson, Esq., Treasurer.

Portland and Oxford Railroad.

This road was examined carefully on the 25th and 26th of August and in the hope that its condition had been improved, but it was found to be in the same state of dilapidation and neglect as when visited the previous autumn. Its bridges were weak and rotten—its sleepers crushed and decayed—its track between Hartford and Canton out of alignment and surface. The rolling stock was also unsuitable, its only passenger car hogged and crazy and its two engines both old and one of them crippled.

On the 22nd and 23d of September, this road was again examined with a view to present its then condition at a hearing to be had upon information to the Supreme Court by your Commissioners under the statute of 1871, as to its unsafety for travellers upon it.

Some new sleepers had been put in and some new stringers to the bridges and some horses to strengthen them, but no substantial improvement had been made. It still remains unsafe.

Your Commissioners attended court at Paris—September Term, Supreme Judicial Court—prepared to present the condition of the road and the rolling stock, but the case was postponed to convene the parties, and a week after at chambers in Portland, Judge Virgin heard the evidence upon both sides as to the safety of the road for passenger trains, and the arguments of counsel upon the application of the Railroad Commissioners for an order of the court for repairs as provided by statute.

The court decided the case in favor of the Railroad Commissioners, and Judge Virgin entered a decree at the adjourned day of the court at Paris, for repairs to be made by December 1, 1873, and required a bond in the sum of \$20,000 to be filed by November 10, 1873, that said order should be complied with. The bond was not filed, and an injunction was issued November 18, 1873, enjoining from running or attempting to run any passenger trains or train on said road till the further order of the court.

The legislature of 1873 passed an act, chapter 344, approved February 21, 1873, declaring the charter of the Portland and Oxford Central Railroad forfeited, "by reason of alleged abuses of the rights and privileges and duties thereby conferred and enjoined, and on account of public necessity and convenience," but suspended the act until January 1, 1874, provided the owners or managers of said railroad corporation should, by August 1st, 1873, file with the Secretary of State a certificate of the Railroad Commissioners, that said road had been put in good repair and condition, and that good and sufficient equipment had been put upon it and that trains for the accommodation of freight and passengers were daily run and operated thereon.

In September, under advice of the Governor, your Commissioners examined the road to see if the conditions of said act had been complied with. It was found upon said examination that the conditions of said act had not been complied with and we so reported to the Governor and Council. The road was still unsafe for passenger trains over it.

This railroad company have now for more than three years neglected to repair their road as required by the Railroad Commissioners; they have disregarded the order of injunction of the Supreme Judicial Court, September Term, 1871, at Paris, against running cars with passengers over Pottle Bridge and are in contempt of court therefor—of which Attorney General Reed was duly advised. They have not repaired their road as ordered by the Supreme Judicial Court at Paris, September Term, 1872. They have not repaired their road as ordered by Judge Virgin at Paris, September Term, 1873, and have refused to give any assurance that they would do so, but have submitted to an injunction for said neglect and refusal; and so the road has now come to a stand still, and exists only as a stumbling block in the way of the travel and traffic of the country through which it passes,

without income to its owners and without benefit to anybody and a hindrance to other facilities of travel and of other modes of transportation of merchandise and products.

The legislature has declared the charter of the road forfeited for manifest abuses of its rights and privileges. This act, chapter 344, of 1873, may require further legislation to make it practically effective. If its validity is questioned by the company, then the road by indictment or quo warranto, may perhaps be brought before the court where its rights and abuses may be all inquired into and passed upon by the court, and if the allegations against it by the Railroad Commissioners and by the State in its act of forfeiture of 1873, are judicially found true, it may have such decree passed against it as the law and facts will warrant, and such that it shall itself afford the needed accommodation to travel and business, or not much longer be in the way of their being furnished by other competent and practicable means.

It is due to the officials in charge of this road, to state that they have always expressed a desire and manifested an anxiety to have it repaired and put in good condition, but they seem not to have had at their disposal funds of the company to enable them to do so.

F. B. Smith, Esq., of Canton, is President and Managing Superintendent.

On the 15th of May, 1871, as stated in our Report of last year, many citizens of Hartford upon the line of this road presented us a petition under statute of 1871, chapter 204, asking the establishment of a depot at Hartford Centre. Upon this petition a hearing was had, and it appearing to us that public convenience and necessity required a depot as prayed for, we ordered its erection within thirty days. The respondent road objected to the constitutionality of the law authorizing the Railroad Commissioners to order the depot, and the case was made "Law" at the September Term of the Supreme Judicial Court at Paris, and was argued by the Attorney General for the State at the subsequent Law Term at Portland. No opinion has yet been given by the Court.

The provision of the charter of the road, chapter 122, section 8, of 1857, is that "said corporation, after they shall commence the receiving of tolls, shall be bound at all times to have said railroad in good repair, and a sufficient number of suitable engines, carriages, and vehicles for the transportation of persons and articles,

and be obliged to receive, at all proper times and *places*, and convey the same," &c. To enforce this provision of the charter as to proper *places* to receive persons and articles, the legislature passed the law of 1871, chapter 204, conferring upon the Railroad Commissioners jurisdiction and the duty of deciding where were "proper places," or in the equivalent words of the act where "public convenience and necessity required the erection and maintenance of depots."

And it is this law that the respondent road alleges is unconstitutional. But the charter itself, section 11, provides that "the legislature shall at all times have the right to inquire into the doings of the corporation, and into the manner in which the privileges and franchises, herein and hereby granted, may have been used and employed by said corporation, and to *correct and prevent all abuses of the same*, &c.; but not to impose any other or further duties, liabilities, or obligations."

And who is to decide whether the corporation has abused its franchise in an alleged neglect to have a "proper place" to receive persons and articles and upon the mode of compelling, if so found guilty, a compliance with this requisition of the charter? the legislature or the corporators? The legislature has not decided it, nor has it left the rights of the public to the mercy of a decision by the corporation; but it has, as sovereign-guardian alike of the rights of its subjects and of corporations as well, which exist by its grace, made such provisions as seemed to it meet, best to subserve public convenience without infringement of corporate privileges. A tribunal existed,—the board of Railroad Commissioners—having a general supervision over the railroads of the State—and the legislature conferred upon it as a court jurisdiction in the matter, and authorized it to hear the parties and decide the case between the corporation and the public petitioning for redress, and to enforce its decree. And why might not the legislature confer upon the board of Railroad Commissioners, authority to decide whether a given place was a "proper place" to receive freight and passengers *upon a railroad*, whose charter required that such places be kept up for that purpose, or in the equivalent phraseology of the act "whether public convenience and necessity required it, in case of an alleged neglect to do so," as well as to confer upon the Board of County Commissioners authority to hear parties and decide upon the location of a highway, or give any other specific jurisdiction to a municipal judge or a law court? The sovereign

will can in any case only be carried out by the instrumentality of agents, and why may not the legislature as well assign to a Board of Railroad Commissioners the determination of proper places for access to a railroad in case of difference between the public and the corporation about it, as it may assign jurisdiction to a bench of judges over other matters, under a statute, it may have enacted?

In neither case can it take from the corporation or individuals rights vested by the charter or the constitution, nor can it without dereliction of duty, allow the rights of the public to be taken by a corporation. For the public have vested rights as well as corporations. But where the charter, under which the corporation has its being, provides by express terms, as in this case, that there shall be proper *places* for the receipt of articles and passengers, there is no room to doubt the right of the public to these easements reserved to it. It is only left to the legislature, in accordance with the usage of the State under the constitution and without violation of law, to provide such proper means as it pleases, of securing the enjoyment of them to the public.

Is it answered that this law imposes a "further duty, liability, or obligation?" Not at all. The charter requires the road "at all proper times and *places*" to receive passengers and freight. It is no new duty it requires, it is the performance of a condition in the charter that it exacts. Nothing more. And this is why the legislature granted the franchise, that passengers and freight might be received at proper times and places and carried for appropriate tolls, and this is the reason why the company built the road, that they might thereby receive reasonable tolls. But they cannot have the benefit of one part of the contract without the performance of the other. It is not so nominated in the bond.

NOTE.—We are not unaware of the case of *State vs. Noyes*, 47 Me., 189. But that was a case where the legislature, 1st, by itself, without any intervening agency, with opportunity to investigate the facts calling for such legislation, and with power to hear the parties, decided *exparte*. 2d, it did not undertake, by itself, or by other tribunal, to fix the place and time of arrival and departure of trains at Kendall's Mills, other than that established by the Directors of the road—it assumed these were both proper—but it required one train to wait twenty minutes in case of non-arrival of train on crossing road. This, the court held, was imposing an additional duty, not consistent with the right of the Directors to fix the time, the usual time not being objected to or changed, and so it was, and the statute can be sustained, if at all, upon another and distinct ground.

Portland and Rochester Railroad.

The Commissioners are pleased to be able to report the continued improvement of this road and its increasing value as one of the important avenues of business to and from the city of Portland. The road is also assuming a prospective importance as one of the through lines from Portland to New York.

The completion of the Rochester and Nashua Railroad will accomplish the desired connection with the Nashua and Worcester Railroad, thus making a through line to New York and opening communications with many important towns in New Hampshire, whose business will be greatly accommodated by this new and convenient outlet to tide water at Portland, and add largely to the traffic of the road.

During the past year the work of putting new arches into the Saco river bridge has been completed, and the pile bridge over Mill stream at Portland, has been rebuilt with oak piling and pine timber, and we now consider all the bridges on the line in good condition.

Four and one-eighth miles of new fence has been built on the line of the road ; 3,020 feet of new side track laid at the stations ; 62 tons of new rails and 7,478 oak and cedar ties laid in the main track. The track is in fair running condition and the trains have run safely and regularly during the past year.

The gross earnings of the road for the past year are stated in the report of the President, as follows :

For passengers.....	\$56,867 69
Freight.....	80,111 57
Mails and express.....	4,365 92
Other sources.....	1,228 71
Total.....	\$142,573 89
Increase over former report.....	\$11,009 61
The expense accounts for the same time are \$101,595.46 ; net, \$40,975.43.	
The capital stock of the road is.....	\$636,111 80
City of Portland bonds, A.....	700,000 00
“ “ B.....	357,500 00
Portland and Rochester bonds.....	350,000 00
Bills payable.....	133,460 74
Total.....	\$2,177,072 60

The rolling stock consists of 6 locomotives, 9 passenger, 1 mail, 3 baggage, 52 freight 89 platform cars.

Number of miles run by passenger trains during the past year, 75,010; freight, 48,979; wood and gravel trains, 10,119; total, 134,108. Passengers carried, 142,846; tons of freight carried, 64,490.

Hon. John Lynch is President; Col. Frederick Robie, Clerk; W. H. Conant, Esq., Treasurer; W. H. Turner, Esq., Superintendent.

Portland Saco and Portsmouth Railroad.

From Portland to Portsmouth, 52 miles. This road is in its usual good and safe condition, and our examinations disclosed no serious defects in the road-bed or bridges with the exception of the bridge at Kennebunk river, which we notified the Superintendent, Mr. Prescott, should be immediately rebuilt.

The truss bridge over the Saco river should be strengthened by the addition of arches throughout its entire length, although the bridge gives no evidence of unusual yielding or straining at any given point, still it has been in use several years and as it is now subjected to more frequent and heavier loads than formerly, prudence would seem to indicate that its capacity to sustain heavier trains and great strains should be increased in proportion to the service required of it.

The large amount of labor and material expended upon the road during the season of 1872, left but little (with the exceptions before mentioned) to be accomplished the past summer. The road it is believed is in as good or perhaps better condition than ever before.

The station building at Portland has been thoroughly repaired and to some extent remodeled and is now comfortable and convenient, but we think if the money expended from time to time on this old building had been judiciously expended in the erection of a new depot and one corresponding to the importance of the road and its terminus, the company would have found it greatly to their advantage.

The road is now operated by the Eastern Railroad Company, under an agreement between the companies.

The rolling stock is first class in every respect and no pains have been spared in keeping it up to the highest demands of usefulness, safety and comfort.

Thornton K. Lothrop, Esq., of Boston, is President; C. F. Hatch, Esq., of Boston, General Manager; J. Prescott, Esq., of Boston, Superintendent.

Portsmouth, Great Falls & Conway Railroad.

This road diverges from the Portland, Saco & Portsmouth Railroad at Conway Junction in South Berwick, and extends to North Conway, New Hampshire, 70 miles. Its entire length of track in this State is four and three-quarter miles. It is controlled by the Eastern Railroad. This road crosses the Boston and Maine Railroad and Salmon Falls River at Salmon Falls, and thence through the town of Great Falls, N. H., to the town of Sanford in Maine, and running about three-fourths of a mile in this State recrosses the line into New Hampshire.

At one examination this year, we found the track and bridges, with one exception, in fair condition. The road bridge near Salmon Falls needed repairs, and the Commissioners directed that they be made.

The completion of this road to North Conway opens a very direct and expeditious route from Boston via the Eastern or Boston & Maine Railroads, to the beautiful White Mountain region which has become a favorite place of resort for invalids and pleasure seekers during the heat of the summer.

Thornton K. Lothrop, Esq., of Boston, is President; Charles F. Hatch, Esq., of Boston, is General Manager.

St. Croix and Penobscot Railroad.

The Commissioners visited and examined this road twice during this year, in June and September.

At our examination in June, we directed Mr. Sawyer, the Superintendent of the road, to strengthen and repair the bridges at Baring and Sprague's Falls, across the St. Croix river. Also several other bridges and culverts of minor importance, and were pleased to see, at our examination in September, that a large portion of the work had been accomplished, and the remainder was being done. The track is in fair condition, but needs gravel and some new ties to put it in good order. We were assured by the Superintendent that these deficiencies were being supplied and that he should continue the repairs until completed. The road is 22 miles

long, its present termini are at Calais and Princeton; but an effort is making to extend the line to Grand Lake Stream, or to a connection with the European and North American Railroad at some point not yet determined.

The principal business of the road consists in transporting manufactured lumber from the mills at Baring to tide-water at Calais. Above Baring the business is light both in passengers and freight, and we judge is not remunerative; but should the line be extended, as contemplated, to the European and North American road, and become the avenue of travel for Calais and a portion of New Brunswick, we think the value and importance of the entire road would be greatly enhanced.

The rolling stock consists of six locomotives, four passenger baggage, 183 lumber, and 24 platform cars, all in fair condition. As we have not received a statement from either the Superintendent or Treasurer, in regard to the financial standing of the company; expense of running; receipts, &c., we are unable to change the figures reported last year.

George W. Porter, Esq., of St. Stephens, is President; W. W. Sawyer, Esq., of Calais, is Superintendent.

ACCIDENTS.

Fewer accidents than usual have occurred this year, and the roads have been managed with commendable care for the safety and lives of passengers. We give a statement of the casualties and the roads upon which they occurred.

European and North American.

In August last, about 7 o'clock in the evening, two spans of the bridge on the European & North American, between Oldtown and Milford, were blown completely away by a tornado. An engine and tender with five men, which was crossing from Oldtown to Milford, plunged into the river and the engineer, Geo. A. McLellan, was killed and the others escaped.

September 23. Robert W. Sawyer, while standing on top of a box car at Lincoln Centre, was thrown between two cars by the sudden starting of the train. His left foot and hand were crushed by the wheels.

September 30. Conductor, W. L. Breese, was killed at Finn Brook bridge, his head coming in contact with the bridge, while leaning from the train.

May 12. A. Sawyer, while attempting to get on to a moving train, at Oldtown, fell; one car passed over his left hand. James Elder, employee, was seriously injured at Webster, by being struck in the abdomen by a chain attached to the drawbar of the rear car of the train which he was shifting on to another track.

May 31. George Wallace, an employee, while making up a train at Bangor, was caught between two passenger cars and badly jammed. Left arm broken.

July 11. Willie Davis, while endeavoring to get upon a moving train in the yard at Bangor, fell; one of the wheels passed over his left foot, badly crushing it.

July 13. As the night train passed Winn, it struck an intoxicated man, John McDonald, crushing his foot.

Grand Trunk.

April 14. Martin Sheridan attempted to pass under a freight car, at Portland; the train started, passing over him, crushing him in a horrible manner.

March 25. Two freight trains collided near West Bethel, the engines were badly broken up and several employees injured. A collision occurred near Norton's Mills, between a passenger and freight train; one car badly broken, but no one seriously injured.

Portland and Rochester.

June 2. Frank Hurd's hand was caught, while shackling cars at Portland, and badly jammed.

Boston and Maine.

January 13. Gravel train ran off the track between Wells and Kennebunk. An arm of one of the employees was broken.

March 8. A boy while attempting to get upon a moving freight train at Old Orchard, fell, and his right leg was badly crushed.

August 28. A passenger and gravel train collided near Biddeford. One man was injured.

Maine Central.

April 17. T. T. Coombs, employee of Grand Trunk Railroad, while walking on the track of the Maine Central, near New Gloucester, was struck by a train. He received severe though not dangerous wounds.

May 5. John Hamilton, brakeman on a freight train from Portland to Waterville, was struck by an overhead bridge at West Waterville, while the train was passing under it, and seriously injured.

May 20. A man named Unwin, 80 years of age, was run over just above Sabbattus by the Farmington train. He died from the effect of his injuries soon after.

April. The down train from Portland struck a man near Durham. It was thought that he was killed, but after being taken aboard the train he soon revived, and it was found that his only injury was a severe cut on the head.

July 19. Thomas Blake was killed in the yard of the Maine Central Railroad in Portland, while attempting to cross the track in front of an engine in motion. He was not an employee of the company.

September 8. Owen Clemens, brakeman on freight from Portland to Waterville, received severe injuries by his head coming in

contact with an overhead bridge near Monmouth, while the train was passing under it.

April 8. Joseph B. Parsons, who was found by the side of the Maine Central track, near Brunswick, died the following day. The Coroner's jury report, death by accidentally falling from the train.

Portsmouth, Saco and Portland.

January 10. Mr. Williams, while coupling cars at Portland, was caught between the bunters and injured badly about the head.

January 29. Daniel Hadlock, employee. Hand caught while coupling cars at Kennebunk; also received a severe cut on the head.

December 2. Hiram D. Marshall, freight Brakeman, was killed by falling from the top of a car at Portsmouth.

December 20. Two freight trains collided between Kennebunk and Saco. Albert Bisbee, conductor, Milan C. Felch, and Abraham W. Shurburne, train hands, were instantly killed. The Coroner's jury decided that the accident was occasioned by a concurrence of the negligence and incompetence of Assistant Train Dispatcher, Henry B. Wing; gross error in judgment of Henry L. White, night operator at Kennebunk station; and the culpable recklessness of both Charles T. Pettee, conductor, and Wallace W. Morrison, engineer of down freight F.

When the report of your Commissioners was substantially completed this sad case of destruction to life and property occurred upon the Portland, Saco and Portsmouth Railroad at Kennebunk. The event happened so late in the year that it has not been deemed expedient to delay the report for an elaborate discussion of the subject, which would require considerable time for a proper examination of the facts. But it seems proper at this time to state that when the case came to the knowledge of the Board, the member residing nearest to the scene of the casualty proceeded thither and passing it under examination, made such personal inquiry into the matter as he found practicable, and applied for a certified copy of all the testimony that might be produced before the coroner's jury then sitting upon the case. So much of the testimony as was reported for the newspapers has also been considered. The copy of evidence asked for has not yet been fur-

nished, and your Commissioners are consequently without such full information as they would desire before attempting to express any positive judgment of the real cause to which this fearful occurrence is to be attributed; but they have no hesitation in declaring that it did not arise from any imperfection of road-bed, rails or rolling stock, nor from any omission to provide suitable and requisite appliances for managing the trains upon this road.

After what has been presented upon the subject in another part of this report, it can hardly be necessary to say here that your Commissioners are not disposed to shrink from the responsibility of an opinion upon a painful subject by referring this case to "unavoidable accident" or the "inscrutable ways of Providence," before exhausting thoroughly all means of ascertaining if the culpability does not rest solely upon the human agents employed.

The coroner's jury have now rendered their verdict. With that verdict, so far as the immediate responsibility is concerned, this Board is disposed to concur fully. But there still remains for consideration how much those censured may cast further back grave fault.

Without undertaking to settle and answer that question, it may be suggested whether in the anxiety to perfect a system, there has not been some disregard to the worthlessness of a system without competent agents to apply it, and a forgetfulness of the necessity for caution in adopting, all at once, arrangements of numerous details, for the government of employees trained under a different method. The history of the management of this very railroad in former years, and its long and happy exemption from severe casualties, as well as from hair breadth escapes of casualties, affords proof that railway employees should continue to observe an undeviating adherence to the fundamental rule which governed them—"Be sure to keep on the safe side always and never risk anything;" or "whenever in doubt, take the safe course," under whatever system they may be working.

Your Commissioners do not mean to imply that the well meant efforts to diminish exposure to danger are useless, but they do incline to the belief that some simple, and easily to have been corrected, failure may be discovered which will fully account for what has occurred; and their opinion of what this is, may be gathered from the body of their report, written before the occurrence of the recent calamity.

CONCLUSION.

Your Commissioners feel themselves to be justified in rendering an opinion that the railways of Maine, taken as a whole, will compare favorably with those of any other New England State. An earnest disposition is generally manifested to bring them up to a higher standard, and, during the past year or two, improvements have been made of a character to furnish good ground for the expectation of continued progress in most of them. But all nevertheless fall short of absolute completeness,—as before said,—and some discover work neglected that ought not to be put off, the extent and pressure of which is better known to their respective managers than it can be to outside supervision.

Your Commissioners have in former reports respectfully invited attention to the statutes prescribing and circumscribing their duties. They have offered, in a specific way, several suggestions touching these statutes and upon such other public needs as their experience and judgment dictated, without eliciting any legislation or apparent attention. They have no personal desire to magnify their office or to increase their responsibility, although constrained by a sense of duty, to represent that the before made suggestions still forcibly impress their minds as being important and worthy the attention of the State executive and legislature.

Questions affecting the rights of business men and the convenience of travelers are occasionally arising between the citizens and the railroads, and between competing or connecting railroads, over some of which questions the Railroad Commissioners have jurisdiction. These, so far as presented, have been carefully examined and decided, under the best lights at command to guide to their proper disposal. These questions require sometimes an examination of railroad charters, and of the general statutes, and always a right construction of them, which it is hoped they have not failed to receive, and a practical knowledge of the working of railroads and of the dependence of business and travel upon them.

In the application of the Bucksport and Bangor Railroad to the Commissioners, to take as for public uses, a large and valuable property belonging to a wealthy citizen, for depot and other purposes, your Commissioners were somewhat embarrassed by the various suggestions presented, as to the rights of the road and of the proprietor, as well as to the extent of their own power, which

for the interest of both parties should not be exceeded. It is hoped the result arrived at will be reasonably satisfactory to both parties. Your Commissioners certainly took all possible pains that it should be in conformity to the true intent and object of the statute which clothes them with this high power of taking private property for public uses. The statute conferring this power is concise, though comprehensive. It would greatly relieve the Commissioners if the legislative intention were given more in detail.

It may be worthy of legislative consideration whether the Railroad Commissioners should not be required to settle a much larger portion of the differences that arise between citizens and the railroads and between different railroads, and thereby prevent the interference of these differences with the time and customary business of the courts—with an advantage, also secured, of personal examination, sometimes necessary, and of a more practical knowledge than the court may always have. Too frequent applications to the legislature might perhaps be thus somewhat prevented. Applications upon matters that experienced and practical men might settle as well, with an advantage of more leisure to attend to them, and which now take up much of the time of the legislature, are sometimes pressed upon members with an unpleasant importunity. The assessment of damages for lands taken by the location of a railroad; the right of one road under its charter to connect with another, and upon what terms and conditions; the allowing one road to connect with another, where the right is not given by its charter, but not prohibited by that of the road to be connected with; might not these and other kindred questions now vexing the courts and annoying the legislature, as well be referred to the Railroad Commissioners, with proviso for appeal to the court in any case where the right to trial by jury is guaranteed and claimed, or the constitutionality of any charter or act is called in question?

The following paper was contributed by Mr. Howard Fry, who at the time it was written, held the important post of Assistant Mechanical Superintendent of the Grand Trunk Railway, but was soon after called to the still more responsible position of Locomotive Supervisor of the Erie Railway. It was written at the request of your Commissioners,—after an interesting discussion of

the subject matter,—who were desirous of presenting, in his own words, the views of a thoughtful, skilled and practical man :

THE GRAND TRUNK RAILWAY COMPANY OF CANADA,
Mechanical Department. Richmond Station, June 23, 1873. }

DEAR SIR: I have tried to put down for you in a detailed form my experience of the delays that occur through the difficulty of handling wood. These difficulties are not felt on a small road, with few trains, as it is then easy to arrange for trains to wood up at stations where they are obliged to make long stops, and so the taking of wood causes but little extra stoppage. It is when a heavy traffic compels the purchase of very large quantities of wood, which wood has to be obtained all along the line wherever it is cheapest, and therefore trains must stop wherever the wood is, regardless of crossings. It is then that the difficulties I have pointed out arise. I have not spoken of the extra expense required in coal-burning fire-boxes over those burning wood, as that has already been pointed out by every one at all conversant with the subject.

Yours truly,

HOWARD FRY.

“ In comparing the relative values of coal and wood as a fuel for locomotives on a large railroad, there are one or two points often overlooked by those not accustomed to practical railroad management. After ascertaining the cost of each fuel, delivered on the tender, the question as to which is the better fuel to burn, is not settled by merely finding the amount of each kind of fuel consumed by the engines hauling given loads; but in addition to this the great difficulty of handling wood has to be taken into account. In the first place, supposing an engine could always get a full load of wood at any wood-station, it would always be necessary to stop somewhere for wood during a day's run; for, taking a road of moderately easy gradients, a train will only average about thirty miles to a cord of wood, and a tender will not carry more than from one and a half to two cords. But in practice it will be found that freight trains have to stop from three to four times in running one hundred miles, because the wood at different stations varies so much in quality, and the drivers have to mix it, taking a little hard-wood at one station to mix with the soft of another. It will be found to occupy ten minutes every time an engine takes a cord of wood, so that supposing an engine can always get to the wood pile as soon as it arrives at a station, there would be from thirty to forty minutes lost to every freight train in running one hundred miles, and from fifteen to twenty minutes on a passenger train. But with freight trains much more time than this is lost in practice, especially where traffic is heavy and over a single track,

for instance, two trains cross at a wood station and both want to take wood: one engine must wait till the other has finished taking wood, which makes a delay of twenty minutes to the last train. This delay is still more annoying when there is a rush of traffic and the regular freight trains are carrying red signals for specials; at such times it is not unusual for four trains to meet at one station and all want wood, and as some of the trains have shunting to do, it will be an hour before the last train gets wooded up; indeed, when wood-men do not keep a number of spare racks filled, it often takes longer. Three or four trains all arriving together will empty the racks and the last engine has to wait till they are filled again; this, too, affects not only the trains actually waiting for wood but also those trains at other stations with which they have regular crossings. These constant delays throw out the train despatcher in his calculations and get the whole of the trains into confusion; and the worst of these delays is their uncertainty. It is impossible to tell how long it is going to be to take wood, it depends on so many uncertain circumstances; as to whether the racks are full when the train arrives; as to whether the wood-men stand ready to begin throwing on immediately, and as to whether the brakemen on the train can come forward and assist in throwing on, or have to stay back attending to their train. A constant source of delay like this is a serious matter to a large road with many trains. It throws the trains behind time and begets confusion, the drivers try to make up for lost time by fast running, and that endangers rolling stock and impairs the track. This serious source of delay is entirely avoided by using coal, as enough can always be carried to serve an engine for a run of one hundred or one hundred and fifty miles, if necessary."

It is to be regretted that Mr. Fry did not extend his interesting paper into a discourse upon the use of coal, respecting which something may be said both for and against.

It is suggested by an observant railroad official of excellent judgment, occupying a position of great responsibility, that where wood is used as fuel for locomotives upon a road of heavy traffic, provision should be made for wooding up more than one engine at a time at any wood station; that while with good water and good men skilled in effecting a proper consumption of coal, the fire box may be made to last five years, under similarly favorable conditions in wood burning, the fire box will last fifteen years; that the most successful use of coal as fuel for a locomotive depends not

only upon a judicious treatment of it, but as well upon its quality and kind as upon that of the water used, while the original construction of the engine should provide against the greater intensity of heat burning out the fire box by having around it a broad water space of from three to four inches; that under these favorable circumstances, which certainly ought always to exist upon a well managed railroad, the advantage claimed by Mr. Fry might be gained in a substitution of coal for wood; and another very important point in favor of coal as fuel for locomotives, is its freedom from endangering sparks. But that in ordinary practice, with the ignorance and neglect of cheap men—the want of proper care in the selection of coal and with engines originally designed as wood-burners—it is often found that trains have to be delayed every thirty miles, all of twenty minutes to clean out the clogged fire boxes which are sometimes burned out in a single year; and that it may be taken as a rule under such practice “where it costs more to get a ton of coal than a cord of wood delivered upon the tender, it will not pay to change from wood to coal.”

But it may be added that if the whole cost of a cord of wood actually delivered upon a tender is fairly and fully computed upon the common practice, it is surmised that the expenses may be found to aggregate something beyond the usual cost of coal so delivered; especially if its proportional expense in a wood train is added to the first cost of a cord of wood, together with that of the various processes of its manufacture and manipulation with the invariable loss of time accompanying each that has to be paid for.

With a desire to promote the efficiency of this Board, it is suggested that all interested, and especially railway officials, make these annual reports the medium for conveying practical thoughts that may be deemed beneficial in any respect to the service.

All who respond to this appeal may be assured that their contributions shall meet with the fullest consideration and due credit accorded; or, if so offered, the communications will be received in strict confidence as to their origin. Let each one render whatever he may know of improvements that can be effected, or evils that may be abated without fear or favor; and without fear or favor, with a single eye to the general advancement of railway practice, the knowledge thus obtained shall be appropriately presented.

Finally, your Commissioners recommend that the fiscal year for all the railways in this State be made to end with the month of September, or some other date common to all, so that uniformly complete and recent returns may be had, susceptible of comparison for these annual reports.

S. H. BLAKE,
A. W. WILDES,
JOHN F. ANDERSON.

AUGUSTA, December 31, 1873.

ERRATA.

Page 20, 20th line, read 700,000 acres instead of 77,000.

Page 20, 8th line from bottom, read \$822,000 instead of \$7,822.00.

Page 20, 3d line from bottom, read December instead of decrease.