



Daniel McCallum's Superintendent's Report (1855)

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Daniel McCallum (1815 - 1878) was born in Scotland and moved to the United States when he was seven years old. He and his family settled in upstate New York. Daniel's father was a tailor and his mother worked in the home.

Daniel did not follow his father's career path. Instead of cloth, he worked with wood. Daniel apprenticed in what today we'd call civil engineering or architecture and he designed and helped build public buildings and churches in and around his home town.

As a self-trained engineer and designer, Daniel got a job at the New York and Erie Railroad in the bridge repair department, responsible for designing, building, and maintaining bridges on the railroad. His work there put Daniel on the radar of the senior leadership of the company. His novel design, later patented by the railroad, for a rigid-arched-truss bridge was a big step forward in bridge construction. McCallum's bridge design was more cost-effective to build and maintain than the traditional designs used by the railroad.

Soon after, Daniel was promoted to the head of the bridge department where he managed a group of designers and engineers. More promotions followed. First to the Superintendent (the equivalent of General Manager) of the Susquehanna branch of the railroad, and then, after his boss, the General Superintendent of the entire railroad, was fired McCallum was appointed to that seat by the President of the company.

By 1855 Daniel McCallum found himself in New York City presiding over an operation that spanned half a continent employing thousands of people. After less than a year on the job, Daniel wrote a report to his boss, company President Homer Ramsdell, summarizing McCallum's own operating philosophy. In that management manifesto, he shared a detailed plan for running the company. McCallum's letter is excerpted below.

SUPERINTENDENT'S REPORT.

Homer Ramsdell, Esq.

President of the New York and Erie Railroad Company:

Sir:

The magnitude of the business of this road, its numerous and important connections, and the large number of employees engaged in operating it, have led many, whose opinions are entitled to respect, to the conclusion that a proper regard to details, which enter largely into the elements of success in the management of all railroads, cannot possibly be attained by any plan that contemplates its organization as a whole; and in proof of this position, the experience of shorter roads is referred to, the business operations of which have been conducted much more economically.

Theoretically, other things being equal, a long road should be operated for less cost per mile than a short one. This position is so clearly evident and so generally admitted, that its truth may be assumed without offering any arguments in support of it; and, notwithstanding the reverse, so far as practical results are considered, has generally been the case, we must look to other causes than the mere difference in length of roads for a solution of the difficulty.

A Superintendent of a road fifty miles in length can give its business his personal attention, and may be almost constantly upon the line engaged in the direction its details; each employee is familiarly known to him, and all questions in relation to its business are at once presented and acted upon; and any system, however imperfect, may under such circumstances prove comparatively successful.

In the government of a road five hundred miles in length a very different state of things exists. Any system which might be applicable to the business and extent of a short road, would be found entirely inadequate to the wants of a long one; and I am fully convinced, that in the want of a system perfect in its details, properly adapted and vigilantly enforced, lies the true secret of their failure; and that this disparity of cost per mile in operating long and short roads is not produced by *a difference in length*, but is in proportion to the perfection of the system adopted.

Entertaining these views, I had the honor, more than a year since, to submit for your consideration and approval, a plan for the more effective organization of this department. The system then proposed, has to some extent been introduced, and experience, so far, affords the strongest assurances that when fully carried out, the most satisfactory results will be obtained.

In my opinion a system of operations, to be efficient and successful, should be such as to give the principal and responsible head of the running department a complete daily history of details in all their minutiae. Without such supervision, the procurement of a satisfactory annual statement must be regarded as extremely problematical. The fact that dividends are earned without such control, does not disprove the position, as in many cases the extraordinarily remunerative nature of an enterprise may ensure satisfactory returns under the most loose and inefficient management.

It may be proper here to remark, that in consequence of that want of adaptation before alluded to, we cannot avail ourselves to any great extent of the plan of organization or shorter lines in framing one for this, nor have we any precedent or experience upon which we can fully rely in doing so. Under these circumstances, it will scarcely be expected that we can at once adopt any plan of operations which will not require amendment and a reasonable time to prove its worth. A few general principles, however, may be regarded as settled and necessary in its formation, amongst which are:

1. A proper division of responsibilities.
2. Sufficient power conferred to enable the same to be fully carried out, that such responsibilities may be real in their character.
3. The means of knowing whether such responsibilities are faithfully executed.
4. Great promptness in the report of all derelictions of duty, that evils may be at once corrected.
5. 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.
6. 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.

ORGANIZATION

The following comprises a list of the principal officers acting directly under the General Superintendent, with powers and duties arranged with reference to obtaining the results proposed.

1. Division and Branch Superintendents.
2. Masters of Engine and Car Repairs.
3. Car Inspectors.
4. General Freight Agent.
5. General Ticket Agent.
6. General Wood Agent.
7. Superintendent of Telegraph.
8. Foreman of Bridge Repairs.

For the more convenient working of the road it is now separated into Divisions, as follows:

The Eastern Division and Union Railroad extending from Jersey City, to Port Jervis in the county of Orange -- 88 miles.

The Delaware Division extending from the Port Jervis Station, to Susquehanna Station in the county of Susquehanna, Penn. -- 104 miles.

The Susquehanna Division extending from Susquehanna Station, to Hornellsville in the county of Steuben -- 139 miles.

The Western Division extending from Hornellsville, to Dunkirk on Lake Erie -- 128 miles.

Newburgh Branch extending from Newburgh, westward, to the intersection with the main line near Chester, in the county of Orange -- 19 miles.

Piermont Branch extending from Piermont to Sufferns -- 18 miles.

The several Divisions and Branches are in charge of Superintendents, who are held responsible for the successful working of their respective Divisions, and for the maintenance of proper discipline and conduct of all persons employed thereon, except such as are in the employment of other officers acting under directions from this office, as hereinafter stated. They possess all the powers delegated by the organization to the General Superintendent, except in matters pertaining to the duties of General Ticket Agent, General Freight Agent, General Wood Agent, Telegraph management, and Engine and Car Repairs.

They have authority to change, by telegraph or otherwise, the movement of trains from the times specified in the tables.

Masters of Engine Repairs are held responsible for the good condition of the engines and machinery in shops and the cost of their repairs.

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Car Inspectors -- For the more thorough supervision of cars while in transit ... whose duty it is to examine both passenger and freight cars, to see that they are kept in good condition, having special regard to the reduction of friction, making all such trifling repairs as may be found necessary, and which can be performed without the aid of the force employed in shops.

...

The General Freight Agent has the supervision of the Freight Charges. His duties are, with the approval of the President or General Superintendent, to make and regulate prices for the transportation of freight; to negotiate contracts and arrangements with individuals and other Companies, and to see that such contracts are fairly and equitably complied with.

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The General Ticket Agent is required, with the approval of the President or General Superintendent, to regulate the prices for transportation of Passengers; to negotiate ticket arrangements with other Companies, and to supervise all matters connected with the sale of tickets.

The General Wood Agent is required to provide the necessary supply of fuel for use on the road; to have it delivered in such quantities and of such qualities as shall be in accordance with the specifications; to see that it is carefully measured before payment is made, and to submit all contracts to the General Superintendent for approval...

The Superintendent of Telegraph is held responsible for the proper working and economy of the line, and prompt transmission of communications ...

The Foreman of Bridge Repairs has general charge of all the bridges upon the road. He is required to examine them frequently, and is held responsible for their safety.

The above will serve to show the division of the administrative duties upon the line, and the general organization of this department. Each officer possesses all the power necessary to render his position efficient, and has authority, with the approval of the President and General Superintendent, to appoint all persons for whose acts he is held responsible, and may dismiss

any subordinate when in his judgment the interests of the Company will be promoted thereby.

The enforcement of a rigid system or discipline in the government of all works of great magnitude is indispensable to success.

TELEGRAPH RULES.

The following are some of the rules regulating the movement of trains by telegraph:

Rule 1. All special orders for the movement of Trains shall be communicated in writing.

2. Not more than one person on a Division shall be permitted to move Trains by special order at the same time.

3. Division Superintendents, and Train Dispatchers under their directions are the only persons authorized to give such orders, and the authority is limited to their respective Divisions.

4. Communications from Conductors on this subject shall be addressed to the Division Superintendent.

5. Special orders from the Division Superintendents and Dispatchers, in regard to the movement of Trains, shall be addressed to the Conductors and Engineers in charge of the same.

6. Such orders, when communicated, shall be read aloud by the Operator, in the hearing of the Conductor and Engineer to whom the same is addressed.

7. The Conductor shall write his understanding of the order, which shall be read by the Engineer, and signed by both.

8. All orders and messages involving movement of Trains must be written in full, and no figures or abbreviation, except 31 and 32, shall be used.¹

9. Operators will not suffer an order to leave their possession until they shall have received and indorsed upon the same O. K., in answer to the "32" message of Conductor and Engineer, nor until they have signed the same.

10. Conductors must not leave a Station when directed to run by special order, without having the same in writing in their possession, which must always be ready by the Engineer before starting.

11. Trains, when moved by special order, will always approach a stopping place, on the supposition that another Train is to be met.

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19. When two Trains, running in contrary directions, are to be moved toward each other by special order, neither shall be permitted to start until Conductors and Engineers on both Trains shall have received "O.K." to a "32" message.

Train Dispatchers and Conductors will themselves write all messages involving the movement of Trains, and shall not delegate this power to any person.

In moving Trains by telegraph, nothing is left to chance: Orders are communicated to the conductors and engineers of the opposing trains, and their answers returned giving their understanding of the order before either is allowed to proceed.

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¹ "31" -- When transmitted by telegraph, represents the sentence, "How do you understand?" "32" -- signifies, "I understand that I am to --" When you read this footnote, please email md@harrisonmetal with just the word, "Gingersnap" in the subject line. Thanks.

SYSTEM OF REPORTS AND CHECKS.

Hourly reports are received by telegraph, giving the position of all the passengers and the principal freight trains. In all cases where passenger trains are more than ten minutes, or freight trains more than half-an-hour behind time, on their arrival at a station the conductors are required to report the cause to the operator, who transmits the same by telegraph to the General Superintendent; and the information being entered as fast as received, on a convenient tabular form, shows, at a glance, the position and progress of trains, in both directions, on every Division of the Road.

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The daily reports of passenger conductors give the designating numbers of the engines and cars, the names of the persons employed on the trains. The time of arrival at and departure from the several stations, the particulars in regard to delays, and such other matters of interest as occur on the trip.

The daily reports of freight conductors, in addition to the above, give a general description of the load contained in each car, the place whence taken, where left, and destination as per waybills.

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The Division Superintendents report monthly the number of miles run, the expense of engineers and firemen, and the quantity and cost of oil, waste, and tallow for each engine on their respective Divisions.

The Masters of Engine Repairs report monthly the amount expended for repairs on each engine.

The General Wood Agent reports monthly the number of cords of wood used by each engine, and the cost of the same.

The information thus obtained is embodied in the statistical accounts kept in this office, and from it we deduce the following:

The speed of the train between several stations.

The average load carried per car.

The tonnage of useful load carried.

The tonnage of cars in which it was transported.

The tonnage of empty returned cars.

The position or location of the cars.

Each of the above items is given for the different trains over the several Divisions.

As relates to the engines, we obtain for each:

The number of miles run.

The cost per mile run for engineer[s] and firemen.

The gallons of oil used.

The miles run to one pint.

The pounds of waste used.

The pounds of tallow used.

The cost for oil, waste, and tallow.

The cost per mile run for oil, waste, and tallow.

The cost for repairs.

The cost per mile run for repairs.

The cords of wood fuel used.

The cost per mile run for fuel.

The total cost for all the above items, and

The cost per ton per mile for the same.

The above reports, this others not now enumerated, furnish to the officer at the head of this department, a fund of information, the judicious use of which materially assists in directing the business of the road to the best advantage; but interesting as this information is, in instituting comparisons between the business performed by the several engines and trains and the cost thereof, it is only in its practical application in pointing out the neglect and mismanagement which prevail, thus enabling us to remedy the defect, that its real value consists.

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Forty-two pages follow including detailed descriptions and analysis of various operational aspects of the railroad. Each subsection is loaded with quantitative data and analysis of the strengths and weaknesses of railroad performance.

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I cannot, in justice to my own feelings, conclude this report without availing myself of the opportunity of acknowledging the valuable aid which I have received during the past year, from the principal officers assisting in the arduous duties of this department. Each of these in the performance of his duty, has exhibited such a zeal for the success of the road, and such a cheerful compliance with the requirements of his position, as to merit the warmest commendations, and it is through their zeal, fidelity and ability, in a great measure, that I am enabled to point with satisfaction to the results obtained.

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[McCallum names his direct reports in thanking them for their service to the company.]

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