Terminus of the Pennsylvania State Railroad.
       at Columbia, 1842.
PHILADELPHIA AND COLUMBIA RAILROAD.

The beginnings of the Philadelphia and Columbia Railroad and the circumstances through which the first railroad charter allowed by the State of Pennsylvania was granted on the 1st of March, 1823, have been described in the previous pages.

By the provisions of this charter “The President, Directors and Company of the Pennsylvania Railroad Company” were authorized “to erect a railroad from Philadelphia to Columbia in Lancaster County.” The preamble recites that—

Whereas, it hath been represented by John Stevens, in his memorial to the Legislature, that a railroad from Philadelphia to Columbia would greatly facilitate the transport between those two places, suggesting also that he hath made important improvements in the construction of railways, and praying that in order to carry such beneficial purpose into effect, himself and his associates may be incorporated; now, therefore,

Section 1.—Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same, that John Connelly, Michael Baker, of Arch street, Horace Binney, Stephen Girard, Samuel Humphreys, of Philadelphia, Emmor Bradley, of Chester county, Amos Ellmaker, of Lancaster city, John Barker and William Wright, of Columbia, be and they are hereby constituted the president and directors of a company hereby incorporated, to be called “The President, Directors and Company of the Pennsylvania Rail Road Company.”

Mr. Connelly was to act as president until an election was held under the provisions of the act, which granted a term of fifty years for the existence of the company, with power to lay out a railroad from Philadelphia to Columbia, not more than forty feet wide, to be located so as to do the least damage to private property.

In sections six, eleven and thirteen of the charter it was enacted that the plans of John Stevens were to be followed in constructing the road, which was to be managed and operated under his direction, as will be seen by the following:

Section 6.—It shall and may be lawful for the company hereby incorporated to make, erect and establish a railroad on the route laid out as aforesaid, to be constructed on the plan and under the superintendence and direction of the said John Stevens; the said railroad in its progress shall, in no part of it, rise above an angle of two degrees with the plane of the horizon; and said company are hereby also empowered to erect, make and establish all works, edifices and devices to such railroad as may by the said company be deemed expedient for the purposes of carrying into effect the objects of their incorporation. . . .

Section 11.—The said railroad shall be constructed agreeably to the plan and under the superintendence and direction of the said John Stevens,
or his legal representative or representatives, he or they rendering quarterly, to the President and Directors of said company, exact and true accounts of all expenditures incurred in constructing the same; and for his or their trouble and expenses he or they shall be paid such compensation for each and every day he or they may be employed in superintending and directing the construction of said railroad as the said President and Directors may deem reasonable and proper.

Section 13.—On the completion of the said railroad, all transportation on the same, of whatsoever nature or kind, shall be carried on and conducted by and under the superintendence and direction of the said John Stevens, or of his legal representative or representatives; and it shall and may be lawful for the said John Stevens and his legal representative or representatives to charge and receive for freight on and for the transportation of goods, wares and merchandise, at a rate not exceeding seven cents per mile, on each and every ton weight thereof passing westward, and three and a half cents per mile on each and every ton weight thereof passing eastward, on the said railroad; but on all single or detached articles weighing less than a ton, it shall and may be lawful to charge and receive, on the transport of the same, an advance not exceeding twenty per cent on the rates as above established.

The regulations concerning grade crossings in this early charter are of interest. By section eight it was enacted “That the said railroad shall be so constructed by the said company as not to obstruct or impede the free use and passage of any public road or public roads, whether they be State, turnpike, or county, which may cross or enter the same, being now laid out, or hereafter to be laid out; and in all places where the said railroad may cross or in any way interfere with any public road, it shall be the duty of the said company to make, or cause to be made a good and sufficient causeway or causeways, to enable all persons passing or traveling such public road, to cross and pass over the said railway, which causeway or causeways shall be made and maintained by the said company.”

By Section 15 it was provided:

That if any person or persons shall willfully or knowingly break, injure or destroy the railroad or any part thereof, or any work, edifice or device, or any part thereof, to be erected by the said company, in pursuance of this act, he, she or they shall forfeit and pay to the said company three times the actual damages so sustained.

A careful examination of this, the first railroad charter granted by the State of Pennsylvania, will satisfy the reader that the railway projectors of three-quarters of a century ago had very definite ideas concerning the rights of the individual as related to the corporation.

This act received tangible encouragement neither from the State nor from capitalists, although earnest efforts were made in that direction by John Stevens, who as early as January 5, 1821, had written an open letter to Robert Wharton, then Mayor of Philadelphia, in regard to the matter. The citizens of Pennsylvania could not at the time be aroused to the importance of the measure. Their failure to encourage the undertaking led to the publication and distribution of a public letter by Mr. John Stevens, in 1823, which, in view of the fact that no railroad for general purposes was then in existence on the face of the globe, entitles the author to be held in grateful remembrance by those for whose interests he labored so earnestly.

The following is a copy of this remarkable document:

PHILADELPHIA, .......... 1823.

Sir:—It is now generally admitted that a railroad is not a mere visionary project, but is actually practicable. An erroneous idea has, however, prevailed among its opponents that it is only practicable to short distances, and that the contemplated extension of a railroad to a distance of seventy-three miles is ridiculous.

As the railroad will, throughout its course, be in its construction exactly similar, it is only in its deviations from a horizontal line that any difference in the progressive motion of carriages thereon can take place. The charter contains a provision that the railroad in its progress shall in no part rise above an angle of two degrees with the plane of the horizon.

Now let us suppose that a section of the intended railroad be constructed in the immediate vicinity of the city, of one mile in extent, in the progress of which elevations of two degrees do actually occur. Should it, however, be practicable on such section of the intended railroad to cause loaded carriages to move forward and backward, without encountering any impediment or difficulty, would it not be fairly presumable that the effect
would be precisely the same were a similar road to be extended ever so far? Such an experiment, then, would not fail to produce conviction in the minds of the most incredulous.

As a further illustration of the practicability of the proposed railroad, it would be barely necessary to notice the rapid progress this important improvement has recently made in the island of Great Britain. If in the narrow limits of twenty-one miles in length and twelve miles in breadth, in the immediate vicinity of New Castle, no less than 450 miles of railroad have within a very short period of time been formed, why should it not be practicable to erect one extending only seventy-three miles? The contemplated formation of a railroad from Manchester to Liverpool, between which large towns there now exists a spacious canal, demonstrates very forcibly its feasibility and great utility.

The expense of the contemplated railroad is estimated at about $5,000 per mile. One thousand shares, then, at five dollars each, would be sufficient for the construction of one mile of the road.

An appeal is now therefore made to the enlightened patriotism and to the enterprising spirit of the good citizens of Philadelphia to step forward and, by an advance of five dollars each, to place the contemplated improvement beyond all possibility of doubt or uncertainty.

That the stock will, from the start, yield more than legal interest there cannot be a shadow of a doubt. That it will ultimately, and at no distant period, yield 12 per cent per annum is equally certain.

The contemplated railroad will differ from turnpike roads in these very important particulars: The actual expense of transportation on the railroad will be reduced to one-quarter to what it now is on the existing turnpikes. But the most essential point of difference, as it regards stockholders, is that the whole of the emoluments to be derived from the transportation of commodities, and from the conveyance of passengers, will go to the railroad company, whereas the turnpike company receives only a toll.

The expense of repairs will bear no proportion to that incurred on turnpike roads. The railroad, too, will be equally good at all seasons of the year. This circumstance gives to a railroad a decided superiority also over a canal, which continues for months, during the winter season, locked up by frost.

But when, in the progress of improvement, the power of steam shall be substituted for that of horses, transportation will most assuredly be afforded at much less than on a canal. However extraordinary this opinion may appear, by a recurrence to calculation it is, nevertheless, capable of demonstrative proof. And when this great improvement in transportation shall have been extended to Pittsburgh, and thence into the heart of the extensive and fertile State of Ohio, and also to the great western lakes, Philadelphia may then become the grand emporium of the western country.

Should the subscription for the shares be speedily filled, the road from Philadelphia to Columbia may be made to finish before the next winter, and thus the stockholders will derive an immediate interest on their stock.

I am, sir, your obedient servant,

JOHN STEVENS.

No comment is needed upon this remarkable paper, which forms a fitting supplement to the pamphlet issued by the same author eleven years before.

The United States Gazette said in May that "the Pennsylvania Iron Road is to commence at Hamiltonville."

Very little was known about railroads in those days, and inquiries were made in the Philadelphia Gazette, " What is a railroad? " " What does this plan mean? " In his reply the editor stated that he hoped some of his correspondents " might be able to explain."

Mr. Stevens wrote as follows to Horace Binney on April 30, 1823:

The improvement now, but at the same time so lately introduced into transportation by substituting rails for the wheels to run on in the place of the usual turnpike roads, ought surely to rouse the attention of the public to this important object.

By the " Documents " which accompany this you will find that it is now more than eleven years since various communications respecting railroads passed between me and the president and some of the committee for exploring the route of an inland navigation, &c., in the State of New York. The Board referred my communication to a committee. The chairman and some other members of this committee honored it with answers, stating various objections; to these I replied, refuting them in my mind most fully. But failing to make any impression on this Board, I next attempted to excite the attention of the General Government. My appeal to Congress was altogether disregarded. It was treated with the contempt and derision usually attached to every new project, which, because it is new, is sure to be considered as visionary. In 1818, six years after this appeal to the General Government, being at Harrisburg soliciting the passage of an act for the improvement of the navigation of the Delaware river below Bloomsbury, I once more made an attempt to draw attention to my favorite
object, and published "Hints" and "Further Hints," "addressed to the members of the Legislature of Pennsylvania." Those hints were in a great measure disregarded. I know of but one individual member of the Legislature who became a convert to the project, and he thereby brought upon himself the ridicule of his fellow-members.

Although disgusted with the universal apathy, to say no worse, with which my projected improvement was treated, I, however, persevered, and during the session of 1822 addressed a memorial to the Legislature of the State of New York, stating the great advantages of a railroad between Utica and Albany. This met with the reception my novel and consequently wild project had previously experienced. I then endeavored to make an impression on the Turnpike Company who had made the road between Albany and Schenectady, and although I stated to them how much more eligible a railroad between these two places would be than a canal by the contemplated route, the latter's crossing the Mohawk river three times and going nearly double the distance of the intended route of the railroad, yet my proposition, although not altogether disregarded, was answered by the most futile objections.

I have at length, however, so far succeeded as to obtain a charter from your Legislature, incorporating a company, on my liberal terms, for erecting a railroad between Philadelphia and Columbia, confessedly the greatest thoroughfare, even at this time, in the United States, and which, whenever the railroad shall be completed, will be fourfold greater. Nothing now remains then to produce entire conviction in the mind of every candid, unprejudiced individual but the exhibition of a perfect fac-simile of the contemplated railroad. I say fac-simile, as this experiment, now proposed to be made of one mile in extent, will differ in no one respect from the contemplated railroad throughout its whole extent.

You say your professional occupation is constant and your "ignorance of railways profound." In consideration, therefore, of the intimation you give of your time being completely occupied in your professional pursuits, I shall now refrain from attempting to enlighten your darkness on this subject by going into any tedious and unsatisfactory description of the details of the project, but will leave your decision on the merits to be formed from the result of the contemplated experiment.

This topic is eminently calculated as an object of speculation; it is, however, useless now to expatiate. Should the experiment succeed, its importance in this point of view will be placed beyond all doubt. In such case the dividends must very soon amount to twelve per cent per annum, thereby advancing the value of the stock one hundred per cent.

The following extracts are made from a paper published by Mr. Stevens in June, 1823, for the purpose of inducing subscriptions to the stock of the "Pennsylvania Railroad Company":

"It is beyond all doubt that in less than a month after commencing, one mile of said railroad will be completed, the cost of which is estimated at $5,000. For an advance, or loan, then, of said deposit of five dollars, say for three months, the subscriber will secure to himself the chance of the rise of said script; perhaps, too, five hundred per cent. whenever a successful experiment shall be made thereon.

As an object of profitable speculation merely, this charter is surely worthy of general attention. It differs from all former acts of incorporation for the erection of bridges, turnpike roads, &c., in this very important feature—that the whole profit of transportation thereon devolves exclusively upon the Company; whereas in the charter for erecting bridges, turnpike roads, &c., the Company are limited to a demand of a specific toll.

On no road throughout the United States does there now exist so extensive a transportation as on the turnpike between Philadelphia and Columbia. There can be no question, then, that the stock will yield more than legal interest from the start, and in less than one year after the road shall have been completed, three per cent quarterly. . . .

The improvement, when once introduced, will, unquestionably, be extended from Philadelphia across New Jersey to the city of New York. Among other beneficial effects resulting from such an extension of the railroad system are the following:

1st. It will be the means of furnishing this city [Philadelphia] with an inexhaustible supply of coal from the Susquehanna and Juniata, of superior quality, applicable to various and different purposes, and at a cheaper rate than coal much inferior can be procured from any other quarter.

2d. As New York possesses commercial advantages which must forever give her a decided superiority over her neighboring rivals, whenever the facilities afforded by the railroad shall have added to those afforded by the Erie Canal, the Western trade will center principally in this grand commercial emporium. But in the winter season, when the navigation of the Delaware is locked up by frost, which will give not the least interruption to transportation on the railroad, New York must engross the whole.

3d. By the astonishing facilities afforded to travellers, from the ease and rapidity of this mode of
conveyance, it will tend to promote social intercourse in a degree wholly unprecedented either in this or any other country.

Since the above was written, a plan has suggested itself to my mind by which more captivating inducements may be held out to our citizens to come forward and subscribe. Within one month after the specified number of shares shall have been subscribed for, John Stevens hereby engages to erect a railroad at Hoboken of sufficient extent to test its merits, on which will be placed a number of carriages to be propelled by steam, moving alternately forwards and backwards with a celerity far exceeding that of carriages on the best turnpike roads. This mode of conveyance will be very conducive to health and afford a most delightful species of amusement.

A moderate compensation for the trouble and expense attending will be exacted from non-subscribers, while subscribers will pay nothing until a sum equal to the amount of the deposit shall be expended, not to be called on again for payment of the same.

From July 17th to 25th, 1823, John Stevens, accompanied by Charles Loss, was engaged in making a preliminary survey of the route for the proposed railroad from Philadelphia to Columbia. From the journal of this trip, preserved in the papers of Mr. Stevens, interesting abstracts have been made which will be found in the Appendix. They present the earliest record of the exploration of a route for a railroad from Philadelphia westward, and will be read with profit by every one interested in the inception of the great work which he did so much to further.

The following letter was sent to "the President of the Pennsylvania Railroad Company" before Mr. Stevens left Philadelphia on the tour of reconnaissance:

Philadelphia, July 16, 1823.

John Connolly, Esq., President of the Pennsylvania Railroad Company.

Dear Sir,—I called at your house yesterday afternoon and was informed by one of your neighbors that you had gone into the country. I propose starting to-morrow morning towards West Chester with a view of exploring the most eligible route for the contemplated railroad. I take a young gentleman with me who is very capable of making an accurate survey thereof, and also of estimating the elevations and depressions of the ground over which it may be taken, so that an accurate calculation may be made from the people of the quantity of earth it may be necessary to remove in order to reduce it to the proper degree of rise and fall. By the time mentioned in the enclosed notice for the meeting of the Board, I expect the work will be so far completed that the Board will be able to form a sufficiently accurate judgment of the probable expense. And if they should be satisfied that it will not exceed the capital mentioned in the charter, they will, I presume, proceed to open books of subscriptions. By putting your signature to the enclosed notices you will very much oblige, dear sir.

Your obedient servant,

John Stevens.

P. S.—As I shall not have it in my power to see you before leaving this place to-morrow, I must request the favor of you to enclose the notices for Ennor Bradley, Amos Ellmaker, John Barber and William Wright, under cover, directed to me (as Secretary), and transmit the same per mail to me at Lancaster. The others can also be put into the post office.

COPY OF NOTICES.

Philadelphia, July 16, 1823.

Sir:—

In an Act to incorporate a Company to erect a railroad from Philadelphia to Columbia in Lancaster County, passed at the late session of the Legislature of this State, I find you are named as one of the Directors of said Company. Your attendance is therefore requested at a meeting of the Board on Tuesday the 29th day of July, instant, at 10 o'clock A. M., at No. 280 Chestnut Street.

I am, sir, your obedient servant.

John Connolly, President.

Michael Baker, Arch Street,
Horace Binney,
Stephen Girard,
Samuel Humphreys,
of Philadelphia.

Ennor Bradley, of Chester County.
Amos Ellmaker, of Lancaster City.
John Barber and William Wright, of Columbia.

The activity of Mr. Stevens was untiring. On October 27, 1823, he forwarded the subjoined communications to the Franklin Gazette:

To the President and Directors of the Pennsylvania Railroad Company.

 Permit me, gentlemen, to solicit your attention for a moment to the importance of the duties imposed upon you by the act of the Legislature, by which a company is incorporated for the purpose of erecting a railroad from Philadelphia to Columbia.
The bill was introduced into the Senate soon after the commencement of the session, and did not pass into a law until the very last day. During this long period it underwent repeated discussion and thorough investigation in both Houses of the Legislature. It cannot, therefore, with any degree of truth be asserted that the members were taken by surprise, and that thus an exceptional bill was enacted into a law precipitately and without due consideration. The gentlemen named therein as President and Directors have met repeatedly, have organized a board and have thereby assumed upon themselves a very serious and important responsibility.

The object of the charter is no doubt a perfect novelty on this side of the Atlantic, but by no means so in the island of Great Britain. The utility of railroads there has recently been placed beyond all question. It is stated on undoubted authority that, within a very limited district in Yorkshire, forty miles of railroad have within a very short period of time been made, and it is now in contemplation to erect one between Liverpool and Manchester, although a canal and river navigation (besides turnpike roads) at present exist between these large commercial and manufacturing towns.

If the railroad system is held in such high estimation and is so rapidly extending its utility in Great Britain, why may it not be most advantageously introduced on this side of the water? That rich and fertile island furnishes no route of a railroad, in any respects, comparable to the one designated in the charter lately granted. When the navigation of that grand and extensively pervading river, the Susquehanna, shall be so far improved as to admit of the use of steamboats

1 A plan to this effect was introduced and reported on favorably by a committee of the House of Representatives, but too late in the session to be acted upon.

They are merely required by the charter to execute certain preparatory, but essential, duties. And may I not now be permitted to say that it is imperatively incumbent on them as good citizens and patriotic members of the community to carry into effect such provisions of the charter as are indispensably necessary to the formation of the company. They have incurred a solemn responsibility. They are most assuredly answerable to the public should the charter be suffered to become extinct from neglect on their part, either individually or collectively, to perform certain very light duties imposed on them by the act.

I shall not enter now into any detail of the expenses incurred, and of the time spent by me in the prosecution of this business. Suffice it to say, that I have explored a route not merely practicable, but which, in its elevations and depressions throughout its whole course, may be reduced to less than one degree, and that, too, at a very moderate expense. The President has informed me by letter that he will notify the members of the Board, individually, that a meeting of the directors will be held on the first Monday in November next, at 10 o'clock A. M., at 380 Chestnut Street.

In January, 1824, Mr. Stevens wrote to Jacob Holgate that "As no Directors of the Pennsylvania Railroad Company have, agreeable to the provision of the act of June, 1823, been chosen, owing to the failure in forming a Board, it becomes necessary to remedy the lapse by some supplementary act. As those of the Directors residing in the city have declined serving, and the gentlemen from Lancaster and Columbia, though friendly to the object—owing to their distance from the city of Philadelphia and their attention to their own affairs—have not and probably will not serve, I would suggest that their places be filled by the following gentlemen residing in the city, who have consented to serve: Richard Peters, Jr., Robert Patterson, Caleb Newbold, Jr., John Redman Coxe, and William Duncan. These with John Connelly, Stephen Girard and Eumnor Bradley, will constitute the number originally named in the Act," whereupon in the House of Representatives Mr. Holgate, on January 23, 1824, presented A SUPPLEMENT to an act entitled "An Act to incorporate a Company to erect a railroad from Philadelphia to Columbia in Lancaster county," as follows:

1
Whereas, The directors named in the act to which this is a supplement have not performed certain duties required of them in said act, in consequence of which no choice of directors took place on the second Tuesday in December, anno Domini one thousand eight hundred and twenty-three, agreeably to the provisions of the same, therefore

Section I. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same, That John Connolly, Stephen Girard, Richard Peters, Jr., Mathew Carey, John Redman Coxe, Robert Peterson, Caleb Newbold, Jr., and William Duncan, of the city of Philadelphia, and Emmor Bradley, of the county of Chester, be, and they are hereby, constituted the President and Directors of the company incorporated by said act, to continue in office until the second Tuesday in December next ensuing, anno Domini one thousand eight hundred and twenty-four.

This supplement failed to receive favorable consideration, and the act authorizing the surveys for a continuous canal from Philadelphia westward was favorably reported from committee eighteen days later.

Colonel Stevens's efforts in this direction shared the same fate in Pennsylvania as in New York, and, although he made diligent efforts to excite popular interest in favor of his project during 1824 and 1825, he was unable to raise $5,000 to build a single mile of experimental road. The terms of the charter not being complied with, the Legislature of 1826 repealed it, but the seed then sown was destined to bring forth good fruit.

Had Colonel Stevens been able to carry out his plans, "The Pennsylvania Railroad Company" would have built the pioneer railroad on this side of the Atlantic.

The Legislature which assembled on the 2d of December, 1823, was not favorable to the appropriation of State funds for subscription to the stock of the Pennsylvania Railroad Company, not being satisfied of the practicability of constructing a railway to be operated either by horses or steam. On February 10, 1824, a special committee to whom the subject of internal improvement had been referred, in a report to the House of Representatives, recommended a survey from the terminus of the Union canal, at Uniontown, "for a continuous canal from Philadelphia to Pittsburgh." On the 27th of March, 1824, an act was passed "Providing for the appointment of a board of Commissioners for the purpose of promoting the Internal Improvement of the State."

The Canal Commissioners presented a report to the Legislature, February 2, 1825, in which they stated that they had surveyed about five hundred miles on various lines and that "a canal was practicable and ought to be undertaken."

The Legislature, on the 11th of April, 1825, enacted a law "To appoint a board of Canal Commissioners," who were directed "to consider and adopt such measures as they shall think requisite and proper, preparatory to the establishment of a navigable communication between the eastern and western waters of the State and Lake Erie."

The efforts of this board in connection with the surveys and the construction of canals have been recorded in the chapter entitled "The Pennsylvania State Canals."

The discussion between the advocates of the railroad and canal continued, and the general subject of intercommunication came to be regarded of such importance that "The Pennsylvania Society for the Promotion of Internal Improvement" was organized in November, 1824, with a membership of forty-eight public-spirited citizens, who paid an initiation fee of $100 and annual dues of ten dollars each. Among the objects for which the society was organized was "to open an entire and complete communication from the Susquehanna to the Allegheny and Ohio rivers, and from the Allegheny to Lake Erie."

The society, impressed with the importance of the subject, went actively to work, and at a meeting held on the 19th of January, 1825, decided to "send an agent to Europe to collect information of all the valuable improvements in canals, roads, railways, bridges, and all other information calculated to promote the objects of the society."

At a meeting of the society held February
3. 1825, William Strickland, of Philadelphia, with Samuel Kneass (his pupil) were assigned by the society to this important mission, and on the 20th of the following month they sailed for England.

In addition the attention of the society was directed to the publication of papers showing the usefulness of canals and railroads. These papers were read with interest, and through the efforts of Gerard Ralston, the corresponding secretary, the attention of eminent men in all of the Eastern States was called to the importance of a liberal and extended encouragement of public works.

On the 16th of June, 1825, Mr. Strickland completed his first report on railways and locomotive engines, and forwarded it from England to the Pennsylvania Society. This report was followed on the 28th of July by a report on canals, and on the 3d of August by a paper on turnpikes.

As Mr. Strickland's reports were published and widely read by persons interested, their influence upon the minds of those who were about to engage in canal and railroad construction cannot be overestimated.

The battle between the friends of the railroad and the canal was waged with much earnestness during the early part of Mr. Strickland's absence, as is shown in the following extracts from a letter addressed to him on September 19, 1825, by the Secretary of the Pennsylvania Society for Internal Improvements:

Canals and railways present the most important of all subjects for your attention. Upon every matter connected with both you will be expected to be well informed; and if you shall have to decide between them you must be able to furnish the facts and circumstances by which the decision shall be produced. Much excitement prevails in this State upon the question whether railways are superior to canals, and the inquiries that are in progress in relation to them are in the hands of men of ingenuity and well disposed to the cause of internal improvement. It is, however, feared by many that the question between canals and railways will have an injurious influence in Pennsylvania, as it will divide the friends of the cause of improvement, and thus postpone, if not prevent, the commencement of the work. The importance of correct information in relation to them is thus greatly increased.

Mr. Strickland shortly afterward returned to Philadelphia, and in 1826 his "Reports," profusely illustrated by large and handsome plates, were issued. In March, 1826, he was appointed an engineer on the Eastern Division canal from Middletown to Hollidaysburg.

STOCKTON AND DARLINGTON LOCOMOTIVE "No. 1."

A model was brought to America from England by William Strickland, 1826, for the information of the Pennsylvania Society of Internal Improvement, now in the museum of the Franklin Institute, Philadelphia.

For several years the columns of the newspapers contained animated discussions between the advocates of the canal and those who favored the construction of railroads. The friends of the canal were in the majority at Harrisburg, and on February 25, 1826, the law was approved "to provide for the commencement of a canal, to be constructed at the expense of the State, and to be styled the 'Pennsylvania Canal,'" which was followed April 1, 1826, by laws "Establishing an Internal Improvement Fund," and "Authorizing a
loan for the commencement of the construction of the Pennsylvania Canal."

It was at this juncture that the friends of the railway, on the 7th day of April, 1826, secured the passage of an act "To incorporate The Columbia, Lancaster, and Philadelphia Railway."

The project of connecting the eastern terminus of the new canal from Hollidaysburg to Middletown by a railroad with the Delaware river had not been thought feasible by the Canal Commission, but Major John Wilson, an officer of the Corps of Topographical Engineers, U. S. A., who had been assigned to explore the route east of Middletown, having made careful surveys for a canal from Valley Forge on the Schuylkill, nineteen miles above Philadelphia, through Chester Valley, Downingtown, and Coatesville to the gap of the summit of Mine Ridge, decided that this route, while impracticable for a canal, was adapted to the construction of a railroad.

By the terms of the first section of the act of 1826 it was directed "That Richard Peters, junior, Samuel Archer, Simon Gratz, and Levi Ellmaker, of the city of Philadelphia; George B. Porter, James Buchanan, Amos Ellmaker, and Samuel Dale, Esquires, of Lancaster; Jacob Strickler, John Barber, James Givin, and James Clyde, Esquires, of Columbia; and Joshua Hunt, Richard Thomas, junior, and David Townsend, of Chester county, or any three of them, be and they are hereby appointed commissioners to do and perform the several things hereinafter mentioned, that is to say: they shall on or before the first day of July next, procure six books, one of which shall be opened at some convenient place in the borough of Columbia, the borough of York, the city of Lancaster, the borough of West Chester, the borough of Norristown, and city of Philadelphia, in each of which they shall enter as follows: "We, whose names are hereunto subscribed do promise to pay to the president and managers of the 'Columbia, Lancaster and Philadelphia Railroad Company' the sum of fifty dollars for every share of stock set opposite to our respective names."

The capital stock was to consist of thirteen thousand shares representing $650,000.

In Section 2 it was provided "that when eight thousand shares or more of the said stock shall be subscribed, the commissioners, or a majority of them, may certify to the Governor under their hands and seals the names of the subscribers and the number of shares subscribed by each, whereupon the Governor shall, by letters patent under his hand and the seal of the commonwealth, create and erect the subscribers, and if the subscription be not full at the time, then also those who shall thereafter subscribe to the number of shares as aforesaid, into a body politic and corporate in deed and in law, by the name, style and title of 'The Columbia, Lancaster and Philadelphia Rail Road Company.'"

Authority was given to the "President, Directors and Company of said Railroad Company" "to survey, lay down, ascertain, mark and fix, such route as they shall deem expedient for said road, beginning at or near the bridge, on the south side of the Susquehanna river, in the borough of Columbia, in Lancaster county, and extending to the city of Lancaster and thence to the west side of the river Schuylkill, near to and below the Schuykill permanent bridge, having due regard to the situation or nature of the ground, and of the buildings thereon, the public convenience and the interest of the stockholders, and so as to do the least damage to private property, and the said road shall not be more than four rods wide, and shall not pass through any burying ground nor place of public worship, nor any dwelling house without the consent of the owner thereof, nor shall it pass through any outbuilding of the value of three hundred dollars."

The ideas of the railway projectors of that period concerning methods of construction and operation are manifested in the following extracts from the provisions enacted "the bet-
ter to enable the said corporation to construct railways and erect steam engines and other apparatus necessary to carry on the said business.”

Section 14 provided:

That it shall and may be lawful for the company hereby incorporated to make, erect, and establish a railroad on the route laid out as aforesaid, to be constructed so that the said railroad in its progress shall in no part of it rise above two-tenths of an inch to the yard, except where it may be necessary to form inclined planes with fixed engines or brakes, these planes not to rise more than two inches to the yard; said company are also hereby empowered to erect, make and establish all works, edifices and devices to such railroad as may by the said company be deemed expedient for the purposes of carrying into effect the objects of their incorporation, and also to contract and agree with the owner or owners for the purchase of any lands or tenements which may be necessary for the purpose of erecting the said railroad.

Section 16 contained the following provision:

The said railroad shall be so constructed by the said company as not to obstruct or impede the free use and passage of any public road or public roads which may cross or enter at the same, being now laid out, or hereafter to be laid out; and in all places where the said railroad may cross or in any way interfere with any public road, it shall be the duty of the said company to make, or cause to be made, a good and sufficient causeway or causeways, or other devices, to enable all persons passing or travelling such public road to cross and pass over the said railway, which causeway or causeways shall be made and maintained by the said company.

The following regulations concerning the opening of the road and the rates of toll to be charged thereon are contained in Section 20, which by its terms provided that freight eastwardly bound should pay smaller tolls than that hauled in the opposite direction. This section declared:

That on the completion of a section of five miles of the principal railroad, and from time to time of the lateral railroads, the said company may charge and receive for freight on, and for transportation of goods, wares and merchandise at the following rates, that is to say, on each ton of salt, three cents per mile; on each ton of coal, gypsum, brick, lime, iron ore and sand, two cents per ton per mile; on wood for fuel, two cents per cord per mile; on lumber, squared and round, per one hundred feet solid, two cents per mile; on boards, planks, scantling or other sawed stuff, reduced to inch stuff, two cents per one thousand feet per mile; on staves and heading for barrels and other vessels of less size, one cent per mile per thousand; on all carriages conveying passengers, one cent per mile for each passenger; on pig iron, three cents per ton per mile; on manufactured iron, four cents per ton per mile; on all articles not enumerated, passing eastward, two cents per ton per mile; and on all articles not enumerated, passing westward, four cents per ton per mile; on all single and detached articles, weighing less than a ton, it shall be lawful to charge and receive on the transports thereof an advance of twenty per cent. on the rates as above established; provided, always, and it is hereby declared and enacted that the rate of tolls chargeable on articles of any kind whatsoever passing westward may be one-third more than the tolls hereby established and chargeable on similar articles passing eastward; provided, the dividends shall at no time exceed fifteen per cent. per annum on the capital stock of said company.

By the terms of the last section (25) the act entitled “An act to incorporate a company to erect a railroad from Philadelphia to Columbia in Lancaster County,” passed March 31, 1826, was repealed.

Three days after the passage of this charter the Canal Commissioners were directed during the ensuing season, “to call upon and receive, or cause to be called upon and received, from all and every person or persons, as far as conveniently can be done, who are the owners of land along or near the several proposed lines of communication, between the eastern and western waters, acquaintances or releases, from any claim to damages, in case the said line of communication shall pass through their land, or for materials which may be taken to carry on the work.”

The friends of the railway cherished the hope that with this liberal charter the construction of the railroad between Philadelphia and Columbia would be carried on simultaneously with the work upon the canal west from the latter place.

1 Supplement to the act, approved April 10, 1826, “to provide for the commencement of a canal to be constructed at the expense of the State.”
Although many subscriptions to the stock of this company were made during the summer of 1826, notably by the Bank of Pennsylvania, the enterprise languished, and the friends of internal improvement being compelled to look to the State for aid, determined to make a strong appeal to the law-makers at the next session of the Legislature.

for Internal Improvement, members of the Legislature, and other influential citizens. Although he had outlived the allotted three score years and ten, he continued his interest in all matters relating to the introduction of steam and the locomotives on the railroad.

The Allegheny mountains had been the insurmountable barrier which had discouraged

LOCOMOTIVE BUILT BY JOHN STEVENS AT HOBOKEN, N. J., 1825.

This locomotive was exhibited to a Committee of the Pennsylvania Society for Internal Improvement, while the question of constructing a railway from Philadelphia to Columbia was under consideration. This is the first steam locomotive in America of which there is reliable record, which carried people on a track, 1825-1826-1827.

THE FIRST LOCOMOTIVE IN AMERICA.

The official reports of the Pennsylvania Society for Internal Improvement, published in 1825-1826, describing the railways that Mr. Strickland visited while abroad, continued to encourage those who had faith in the ultimate demonstration of the practicability of applying steam to the railroad locomotive, and the attention of several Americans possessing unusual mechanical knowledge was directed to the solution of the problem.

John Stevens was in constant correspondence with officials of the Pennsylvania Society the friends of internal improvement from hoping to construct a continuous line of intercommunication with Pittsburgh. No locomotive had yet been constructed that could climb a heavy grade.

In order to avoid the practice pursued in Europe of using cables and stationary engines on inclined planes, on the proposed railway over the mountains, Mr. Stevens, in 1824, when 75 years of age, designed the locomotive with the multitubular boiler, which he constructed in the following year, placing it in operation on a circular track
660 feet in circumference, which he had erected on his estate at Hoboken. This locomotive had a single horizontal cylinder five inches in diameter connected with a cog wheel which geared into a rack-rail laid midway between the rails of the circular track, which he laid in a plane inclined to the horizon.

He thus had on his experimental track all proportions of grade from a level to a maximum grade of sixty feet to the mile with a curvature of 110 feet radius.

The locomotive successfully climbed this grade, carrying six or eight passengers, running at a speed of twelve miles an hour. This was the first steam locomotive in America of which there is reliable record that ran on a track. It was the first locomotive powerful enough to propel itself or to carry people up a grade. During the three years—1826, 1827, 1828—that it was in operation many experiments were made with it in the presence of those interested in internal improvement.

The original boiler is preserved in the U. S. National Museum, and a model of the locomotive and of the boiler were displayed in the historical collection in the Pennsylvania Railroad Company's building at the Chicago Exposition.

The following letter describing this locomotive was received by the author thirteen years ago:


J. E. Watkins, Esq.

Dear Sir,—I send the following answer to your request for information in relation to the experimental railroad and locomotive built by my grandfather, John Stevens.

In November, 1825, I being eleven years old, my father resided with his family at Hoboken; and in the summer of 1826 we boarded in the Long House, still standing, at the northeast corner of Hudson and First Streets. I then first noticed the railroad and locomotive, but I cannot say when they were built.

Annexed is a tracing of a portion of the first map of Hoboken, called the Loss Map, made and filed in 1804; the lines in the black ink being copied from the map, and my addition being in red ink.

The brick building marked Hotel was in an enclosure called the Green, bounded by the Newark Road, by Washington Street, by First Street, and by the Hudson River.

The red circle shows the railway as it was in 1826. The red line from A to B shows a straight railway built a year or two afterwards; C is the house in which we resided in 1826.

The railway came quite close to the fences on First and Washington Streets, and within thirty feet from the nearest corner of the hotel. I have drawn the circle with a radius of 110 feet, and it could not have differed much from that. D is the point where wood and water were taken in, which was done frequently, as the tubes held but very little water and as the grate was small.

The track was laid on a true plane but inclined, the northeastern side being raised on stone pillars so as to be about 30 inches higher than the opposite side. This would make the grade 36 feet to the mile. When the steam was down, which was frequently the case, the engine would always be retarded or arrested by this grade.

The track was laid on wooden stringers capped with thin iron; the gauge being about that usual on ordinary roads or turnpikes. A cast-iron rack was laid in the center of the track, and into the teeth of this track a cog-wheel, driven by the engine, geared.

The engine had only a single cylinder, which was exactly horizontal, resting on the main frame, and was from four to five feet in diameter and about one foot stroke.

The boiler was formed by a number of vertical tubes each about 14 inches external diameter and 4½ feet long. These tubes were set closely together in a circle, surrounding and enclosing a circle grate of about 10 inches in diameter. This boiler was enclosed by a jacket of thin sheet iron, which was surmounted by a conical hood on which the smoke-stack rested.

The fuel was wood, which was dropped onto the grate through a door in the hood.

The boiler, with its jacket and stack, presented very much the outside appearance of the small vertical flue tubular boilers now in common use.

The engine was set on four wooden wheels about four feet in diameter.

I have an impression that friction wheels of small diameter, and having their axes vertical, were used to keep the engine on the track, but my recollection is not at all distinct on this point. The tires were without flanges, the wheels being the ordinary wagon wheels.

One or more transverse seats were placed at the

1 The first locomotive with a horizontal cylinder on record.
end farthest from the boiler, and at times a load
of half dozen men and boys were carried. I esti-
mate the maximum speed at about 12 miles an hour,
for sometimes she would run away from everyone
following. I often rode on it.

This locomotive was by no means unsightly, the
boiler and engine occupying but small space.

In the year 1828 or 1829 the locomotive was
taken off this circular track, which was then altered
by the lessee of the hotel, Mr. Van Antwerp, into
a double track with a narrow gauge, on which
hand-cars were placed.

The locomotive was altered by having an addi-
tional boiler similar to the one above described,
and by having the wheels near the boiler made
heavier and double-spoked, and was then placed on
a track made on the river shore between the points
marked A and B. This track was level with an
incline at an angle of about one inch, five and twenty
feet long at each end. As we did not then reside
in Hoboken, I saw this railroad only on holidays,
and remember to have seen it work only once
under steam.

At the point marked A a wooden tower, at least
80 feet high and braced diagonally, was placed for
the purpose of raising heavy weights, by the falling
of which the engine was impelled while cold or
without steam.

Cars both loaded and light were also impelled
by these weights.

This I frequently saw done.

I presume from what I saw that the object of the
experiment with the falling weights was to ascer-
tain the resistance caused by the friction of the en-
gine and of the cars, as the apparatus used would
have given accurate results on these points. I may
mention that it was mainly to determine these essen-
tial points that the Chevalier De Pambour made his
famous experiments on the Manchester and Liver-
pool Railway in 1834.

The fact that Mr. Stevens was 80 years old in
1829 shows how strong his interest in the subject
must have been.

A year or two after that he made a suspened
elevated railway between the points A and B,
formed only by four iron rods about \( \frac{3}{4} \) of an inch
in diameter welded together, so as to extend be-
tween those points. These four rods were attached
at A and B to wooden trestles about 20 feet high.
Two semicircle grooves were turned on the tread
of each of the cast-iron wheels of the cars. He
afterwards removed this suspended railroad and
placed it on the lawn near his residence at Castle
Point, where it remained for some years.

Yours truly,

FRANCIS B. STEVENS.
The Canal Commissioners in their report to the Legislature, February 6th, 1827, recommended that a portage railroad should be constructed over the mountain to connect with a canal on the Juniata route.

The Baltimore and Ohio Railroad having been incorporated by the Legislature of Maryland on the 28th of February, 1827, as a joint stock company with large capital and influential stockholders, the advocates of internal improvement in Pennsylvania became very active.

"Gap" on the Mine Ridge between the Conestoga and the Chester valleys, when the work was abandoned, and the corps under the direction of Major Wilson then began the survey for a canal from Middletown to Columbia, on the Susquehanna river, 18½ miles below.

As the Canal Commissioners continued to make surveys during the summer and autumn of 1827, the need for a railroad instead of a canal became more apparent. In their report of December 25, 1827, they state that the navigable connection between the eastern and western waters of Pennsylvania is wholly impracticable.

The experiments with locomotives in England continued to be gratifying to the advocates of the steam railway.

1 On April 9, 1827, the Legislature passed an act directing that the canals on the main line be extended to Lewistown on the east and to Blairsville on the west side of the Allegheny mountains.

In July, 1827, the canal from Harrisburg to Middletown, 10 miles below, was in course of construction. The Union Canal, connecting Reading with Middletown, was completed, and boats could proceed up the Schuylkill and through the Union Canal to Middletown.
On the Stockton and Darlington Railroad, opened for traffic September 25, 1825, locomotives had been in active service for over two years, and the description of the improvements made by the Stephensons in their locomotives built during 1827 which reached America caused much comment.

The coal railway at Mauch Chunk, ten miles long, had been in operation by horse power, and earning dividends since April 1, 1827. Thus waiving the question whether the motive power was to be horse power or steam, the roads so far constructed demonstrated that the railway was more rapid, and under many conditions less expensive and better suited to traffic than the canal.

With all these conditions favoring the construction of a railroad as a profitable financial undertaking, the efforts of the friends of internal improvement who appealed to the State for aid were at last successful.

On the 24th of March, 1828, five years after John Stevens had succeeded in obtaining the charter of 1823, an act was passed by the Legislature entitled "An act to provide for the commencement of a railroad to be constructed at the expense of the State and to be styled the 'Pennsylvania Railroad,'" directing that twenty miles at each end of the line from Philadelphia to Columbia be at once put under construction. THIS WAS THE FIRST RAILWAY IN THE WORLD CONSTRUCTED AT THE EXPENSE OF THE STATE.

In April, 1828, Major Wilson began the location of what was afterwards commonly called the "Philadelphia and Columbia Railroad," with a corps of twelve men at Columbia. A report upon twenty-nine miles of the line from Columbia to the summit of Mine Ridge was made August 15, and another report on the remainder of the line December 1, 1828. In April, 1829, the work was under way and on the 11th of December the Canal Commissioners in their report stated that they had contracted for the construction of forty and a half miles of railroad.

In the engineer corps that made the original survey there were some men who afterward became eminent. Joshua Scott, principal assistant; Robert Pettit and John Edgar Thomson, assistant engineers; John P. Baily, Samuel W. Mifflin, Wm. Hasell Wilson, J. Brinton Moore, rod-men; Wm. J. Lewis, Wm. W. Torbert, John G. Davis and James Moore, chain-men, were connected with these surveys.

I am indebted to W. Hasell Wilson for the following statement concerning the invention of the transit:

"During the location and the early part of the construction of that road, the ordinary surveyor's compass was used for making out the alignment; but it was soon discovered that this instrument was not sufficiently accurate for the purpose of defining the curves and tangents for track laying; while on the other hand the theodolite was too complicated and heavy for rapid field work, besides being very inconvenient and liable to error, unless extraordinary care was used, in running by back and forward sights. At the suggestion of Mr. J. Edgar Thomson and other members of the engineer corps, Mr. William J. Young of Philadelphia, the well known mathematical instrument maker, invented and manufactured an instrument which he named the Transit, and which was first introduced on the Columbia Railway in the year 1831. Its advantages were so evident that its use soon became general, and it has been extensively, and we may say invariably adopted for railroad work. Improvements in details have been made from time to time, but the general design and material parts remain the same as at first."

The eastern terminus of the Philadelphia and Columbia Railroad was located at the corner of Broad and Vine streets in the city of Philadelphia, whence the road extended in a straight line to Callowhill street. Here the

---

road curved to the northwest and crossed the Schuylkill river below Peter Island on a wooden bridge 1,045 feet long consisting of seven spans, the abutments and piers being of solid masonry.

On the west bank of the river was the foot of the Schuylkill inclined plane; the line then continued up the dividing ridge for some distance, thence descending into the valley of Chester county and through Downingtown and Coatesville to Lancaster, thence to the head of the inclined plane at Columbia, descending ninety feet, thence along the Susquehanna to the basin at the termination of the Pennsylvania Canal at Columbia, the total length of the road being 81.6 miles.

In 1828 the best civil engineers of England had placed the statement on record that locomotives could not do effective work on grades exceeding thirty feet to the mile. Several inclined planes of fifty feet to the mile in England were operated with ropes and stationary machinery driven by steam or water power. Less experienced engineers in America, acquainted with practice abroad and with no means at hand to test its correctness, followed in the footsteps of the English railroad builders, and adopted thirty feet as the maximum grade of such portions of the roads as were to be worked by locomotives.

Major Wilson also adopted thirty feet as the maximum on the Philadelphia and Columbia Railroad.

This decision necessitated the construction of an inclined plane near each terminus of the road.

The “Schuylkill Inclined Plane” near Philadelphia, located within a few hundred feet of the present Belmont Mansion in Fairmount Park, was over half a mile long with a seven per cent grade, the actual measurement being 2,805 feet long, with a rise of 187 feet.

The grade on the “Columbia Inclined Plane,” about one-third of a mile long, was much less, being not quite five per cent, the rise being only ninety feet in a length of 1,901 feet.

The distance from the head of the “Schuylkill Plane” to the head of “Columbia Plane” was about seventy-eight miles, which in addition to numerous grades had many curves of ten degrees or more.

The original location of the road required a deep cut at the summit in the gap near Lancaster, but as the work proceeded a quicksand was reached and the excavation proved so difficult and expensive that the track finally was laid at a grade of forty-three feet a mile, at which it remained for many years.

A Philadelphia paper issued in November, 1828, thus describes the proposed method of grading the road:

The earthwork will be formed of strata of broken stone of various sizes, the last or upper layer being very small, and confined between a curb formed of chestnut puncheons.

The ravines, gullies and small streams will be passed by bridges of wood or stone, or both, and culverts and drains, to secure dryness to the road.

The estimates are made for eight miles, and the whole cost of preparing the road is estimated at $578,602 or, including steam-engines and inclined planes, to overcome the elevations, $1,006,505.

**SUPERSTRUCTURE.**

The combination of the strap-iron rail and granite stringer in use on the Baltimore and Ohio Railroad, originally thought to possess great merit, was adopted at first for a few miles by the engineers of the Philadelphia and Columbia road.

The strap-iron rail two and one-half inches by five-eighths of an inch was, however, placed nearer the middle of the stringer than on the Baltimore and Ohio.

The stone stringers were from three to twelve feet long, twelve inches deep and twelve inches wide, and rested upon a layer of broken stone laid in a longitudinal trench two feet wide and cut ten inches below the bottom of the sill. The spikes which held the rail were driven into locust plugs, which were put in holes five-eighths of an inch in diameter and three and one-half inches deep. The bars were fifteen feet long, and a horse-
path of gravel and broken stones six inches deep was made between the tracks.

About six miles of track were laid with it before its demerits were fully appreciated.

The Canal Commissioners were authorized by a resolution of the 20th of April, 1829, to make "a re-examination and survey of the line of the Pennsylvania Railroad commencing at the foot of the contemplated inclined plane, near the farm of the late Judge Peters to the terminus at Vine and Broad streets in the city of Philadelphia, and also to a point on the tide-water of the Schuylkill at the head of sloop navigation." The Commissioners were also forbidden to contract for any railroad east of the contemplated inclined plane, until further legislation had been effected.

In their next report the Commissioners state that two lines had been examined with a view to this object; one following the trace of the line crossing at Fair Mount until within a half mile of the proposed crossing point, here ascending a ravine nearly at right angles with the river and passing back of Mantua Village near the junction of the road from the two bridges, terminated opposite the permanent bridge; a second passed along the bluffs and sloping shore of the Schuylkill the whole distance from the foot of the inclined plane to the 18th street wharf below the said bridge. The first of these lines would necessitate a break at the point of termination, and either of the lines would be very expensive for a double branch on which a lesser radius of curvature than that adopted on other parts of the railroad was deemed inadmissible.

These surveys marked the beginning of the development of the railroad terminus upon the banks of the Schuylkill river.

The engineers employed in 1829 to "resurvey the location of the contemplated railroad in the vicinity of Philadelphia," published their report, "Also a reply to a committee appointed at a meeting of the citizens of Philadelphia to report in regard to the termination of the Pennsylvania Railroad," in a pamphlet of twenty-five pages.

In regard "to the merits of a line crossing at Fair Mount," Moncure Robinson and William R. Hopkins, engineers, state that:

"Such a line is perfectly practicable, but involves considerable difficulties,—two heavy embankments, a deep cut and an unusual portion of rock excavation must be encountered. And in order to bring the railway by a gentle and easy curve on a bridge at the point proposed, it will be necessary to incur the expense and the inconvenience of a tunnel.

Should the location of the line reported by Maj. Wilson be confirmed, its graduation should, in our opinion, be modified to attain an elevation of thirty-seven feet above high tide. This should be done in order to give it all the advantage it could have for a connection with the shipping on the Schuylkill without reducing it below the level of the summit between this river and the Delaware."

The term of John Andrew Schulze, Governor of Pennsylvania, expired on the 15th of December, 1829, when George Wolf, who had been elected Governor by a reduced majority over Joseph Ritner, reform candidate, was inaugurated. The people of the State having become dissatisfied with the large expenditures of the Board of Canal Commissioners, elected a majority of the members of the Legislature pledged to retrenchment, and, although the Legislature assembled on December 1, 1829, and remained in session until the 7th of the following April, no appropriation was made for the prosecution of further work upon the Philadelphia and Columbia Railroad,¹ in spite of the fact that nearly three and a half millions of dollars was appropriated by this Legislature for internal improvements. A reduction in the engineer corps became necessary, and no work was done during the year 1830, save to

¹ By the act of April 6, 1830, the Governor was authorized to appoint annually three Canal Commissioners to succeed the three whose term of office expired in a board consisting of nine members. Engineers were directed to be appointed, one for each division of the canal, and one for each line of railroad.
complete the contracts for the grading and bridging of twenty miles at each end of the road, which had been made during the previous year. The Legislature which assembled on December 7, 1830, was more liberal in its views. On the 21st of March, 1831, they appropriated $600,000 to the Philadelphia and Columbia Railroad and instructed the Commissioners "to complete as soon as practicable the whole railroad between the rivers Schuylkill and Susquehanna . . . . beginning at the intersection of Vine and Broad streets in the city of Philadelphia and thence extending to the end of the canal basin at Columbia, in the county of Lancaster." The Commissioners were also directed to complete the first twenty miles of the railroad west of Philadelphia "with double tracks, engines and all other means to make it useful for transportation, with the least possible delay." By the provisions of this act the Canal Commissioners were forbidden to contract "for any part of the railroad between the western shores of the river Schuylkill and the intersection of Vine and Broad streets until the Mayor, Aldermen and citizens of Philadelphia, by their proper authorities, shall engage to construct a continuous railroad from the intersection of Vine and Broad streets, down Broad street to Cedar street." They were also authorized to construct "branches of railroad from any point or points of the Pennsylvania Railroad, east of the river Schuylkill and not further north than Francis street, and carry the same to any point on the rivers Schuylkill or Delaware within the limits of the said city." By the provisions of this act the Commissioners were also authorized "to cause a bridge across the river Schuylkill to be constructed in such a manner that the same shall be suitable for the accommodation of carriages and passengers other than those traveling upon the railroad."

The bridge was called the "Great American Viaduct." Illustrations of it appeared in the English Mechanics' Magazine and other engineering papers. A model of one span formed part of the Pennsylvania Railroad exhibit at the Chicago Exposition. The original structure was afterwards purchased by the Philadelphia and Reading Railroad Company and formed part of that Company's main line to Reading.

From a brief review (see Appendix), collated from a Description of Railroads in the United States, by Thomas Earle, published in the spring of 1830, the reader can form a definite idea of the limited extent of the American railroads at that period.

On the 1st of April, 1831, John Barber of Columbia was appointed superintendent of the Columbia and Philadelphia Railroad, and John Wilson principal engineer.

James Clarke, president of the Canal Board in the year 1831, was strongly in favor of canals, believing in their superiority over railroads. The following extract from the annual report of the Canal Commissioners in December, 1831, gives evidence of the decided opinion held by him at that time that "canals are from two to two and one-half times better than railroads":

While the Board are themselves favorable to railroads where it is impracticable to construct canals, or under some peculiar circumstances, yet they cannot forbear expressing their opinion that the advocates of railroads generally have greatly overrated their comparative value. To counteract the wild speculations of visionary men and to allay the honest fears and prejudices of many of our citizens, we have been induced to believe that railroads are better than canals, and, consequently, that for the last six years the efforts of our State to achieve a mighty improvement have been misdirected, the Canal Commissioners deem it their duty to state a few facts which will exhibit the comparative value of the two modes of improvement for the purpose of carrying heavy articles cheaply to market in a distinct point of view.

The introduction of locomotives and Winans cars upon railroads where they can be used to advantage will diminish the difference between canals and railroads in the expense of transportation. But the Board believe that, notwithstanding all the improvements which have been made in railroads and locomotives, it will be found that canals are from two to two and a half times better than railroads for the purposes required of them by Pennsylvania. The Board have been thus explicit with a view to indicate the sound policy of the com-
PHILADELPHIA AND ITS ENVIRONS. 1831.

Reproduced from an old map in the possession of the War Department, Washington, D. C. The Philadelphia and Columbia Railroad, indicated by a solid black line, is the only railroad put down on this map, published 1831.
The physical characteristics of the Philadelphia and Columbia Railroad were thus described in the American Appendix to Wood's *Treatise on Rail Roads*, published in 1832:

The first division of the road commences in the city of Philadelphia, at the corner of Broad and Vine Streets, whence various branches, constructed by the several corporations, will diverge. The main line proceeds northward to Callowhill Street, and thence it curves to the west, and is continued due west along an avenue which is designed to be 100 feet broad. The road is straight for about three-quarters of a mile, and conforms to the inclination of the streets which are within the limits of the

grades prescribed for the residue of the line. The road is then curved to the northwest, and proceeds afterwards in a straight line to the entrance of Pratt's Garden, where the cut of 70 feet deep and one-third of a mile long commences. This cut was executed in 1792 for the bed of a canal, which has long been abandoned. The line then continues nearly parallel to the river Schuylkill, and generally occupies the bed of the old canal (which has been altered for the purpose) to the bridge over this river below Peter's Island. This viaduct is 984 feet in length between the extremities of the wooden platform, which is elevated 37 feet above the water. The stone piers are six in number, and the greatest depth of the foundation below the surface is 24 feet.

His report to the Board late that year led to an increase in the specifications of the weight of the rails (which had not yet been ordered) from 28 to 30½ lbs. per yard.¹

By an act entitled "An Act relative to the Pennsylvania Canals and Railroads," eight hundred thousand dollars were appropriated for the Philadelphia and Columbia Railroad on the 30th of March, 1832.

¹ In the annual report of the Canal Commissioners for 1831 it is stated that "six months were required to lay six miles of stone track on the Baltimore and Ohio Railroad."
These piers rest on rock, or compact gravel; cofferdams have been resorted to here. Crossing this stream by this noble viaduct the line is conducted to the foot of an inclined plane which is located on the bank. This plane is straight and uniform in inclination; the length of it is 41 chains, 60 links, and height 187 9-10 feet. The line is continued on the dividing ridge between the waters flowing into the Delaware and the Schuylkill, and attains the principal summit (547 feet above the mean high tide) at a point near the Warren Tavern; it then gradually descends the South Valley Hill into the Great Chester County and crosses Valley Creek by a viaduct 577 feet long, the piers of which rise 58 feet above the water. Here the road approaches the southern slope of the valley, thence it is continued and crosses the eastern branch of the Brandywine river by a viaduct situated immediately to the south of Downingtown; then it crosses the western branch of the river just mentioned by a viaduct at Coatesville. The viaduct over the Big Brandywine is 405 feet long, and the piers rise 26 feet above the water. The viaduct over the Little Brandywine is 850 feet long, and the piers rise 73 feet above the water; thence it is located on the northern slope of the valley, which it now leaves and ascends along the margin of a branch of the Octarra Creek (a tributary of the Susquehanna) to the second principal summit at Mine Hill. It passes through the Great Gap in this ridge by a cut of 37 feet deep. This summit is 555 feet above mean high tide at Philadelphia. Thence gradually descending, the road proceeds westwardly, crossing the Pequa by a viaduct 145 feet long, elevated 18 feet above the stream, and Mill Creek by a viaduct 550 feet long and 40 feet high, and the Big Conestoga by a viaduct 1,412 feet long, elevated 60 feet. The piers of this structure are composed of rubble masonry, and are supposed to be the loftiest of the kind in existence. The plan is what is commonly called Town's, and this is the only instance on the line where it has been adopted. Seven of the eight large viaducts on this railroad are made according to Burr's plan. The road then enters the city of Lancaster on the northern side, thence it is conducted across the Little Conestoga by a viaduct 804 feet long and 47 feet high in a direction towards the head of the inclined plane at Columbia. This plane is straight, the length 1,220 feet, the height 90 feet. From the foot of the plane the road is conducted through Columbia, along the margin of the Susquehanna, to the outlet lock in the basin which terminates the great Pennsylvania Canal. The lengths include only the platforms, independent of the wing walls. On the line there are 31 viaducts. The aggregate length of the platforms of the viaducts is 7,341 feet. There are also 73 stone culverts, &c., having from 3 to 25 feet span (the aggregate of the span being 538 feet) and nearly 500 stone drains, generally two feet wide and three feet high in the clear. There are 18 common roads and farm bridges, 8 of which have stone arches of 25 feet span; the remainder have stone abutments, &c., and wooden superstructures, the span varying from 31 to 54 feet. The length of the railroad from Vine Street in Philadelphia to the termination is 81 6-10 miles, and the whole is in rapid progress. The road formation of 80 miles is finished, and the remainder, 16-10 miles, will be finished in a few weeks with the exception of two viaducts, and the deep cut through Mine Hill (which will not be finished until September). A temporary ferry will form a substitute at the Schuylkill until 1833, when the viaduct will be used. Westward from Philadelphia the road was laid on a number of sections, and wagons are employed on them. Travelling has commenced, and the rails for the first track may be laid on the residue of the road during the present year (1832).

The use of granite sills or rails is confined to the first ten miles westwardly from Philadelphia; these are from 5 to 9 feet long, 1 foot wide and 1 foot thick, and the trenches are 22 inches deep, including the thickness of the road metal, and are filled with small broken stone. These sills are arranged in continuous parallel lines. On the upper surface near the inner edges flat iron bars 15 feet long, 2½ inches wide and five-eighths of an inch thick are attached by square nails. 3½ inches long and 11-32 inches in diameter, driven into cedar plugs five-eighths of an inch in diameter, which are inserted in holes 3½ inches deep drilled into the sill at intervals of 18 inches asunder.
This part of the railway has recently been carefully examined by the engineer. The severe winter of 1832-2 (during which the frost was intense and several thaws occurred) has not in the slightest degree affected the stability of the rails.

![Rails laid on Philadelphia and Columbia Railroad](image)

The blocks are 3 1/2 feet apart on the straight line and 3 feet on the curves. Seventeen miles of single track have stone blocks; 9 miles have stone sills, and the residue of the single track, and probably all but the city division of the second track, will rest on wooden sleepers placed in trenches across the road filled with broken stone. The rails and chairs will be similar to those resting on the stone blocks; the latter are 20 inches by 12 and upwards, and are placed in trenches in the same manner as the stone sills.

The line traverses a very undulating country and crosses the stream at right angles; consequently, the expense of the road-formation has been unusually great, the excavations are frequently deep, and the embankments are extensive and lofty. Near the Warren tavern the surface of the road is elevated 80 feet above the bottom of a ravine. The cut at Mine Ridge is 37 feet deep, through gravel abounding in springs and difficult quicksand. Large but judicious expenditures have been incurred to render the line as straight, direct and level as the country would permit. The curves have a greater radii than those which have been resorted to on an extensive railroad located across ridges in Europe or America. The length of the line is only a few miles greater than that of the turnpike between the same points. The length from Fairmount to the basin at Columbia is 80 1-5 miles by this railroad. By the Schuylkill, Union and Pennsylvania canals, which connect these points, the distance is 158 miles.

**PHILADELPHIA AND COLUMBIA RAILROAD, 1831.** 1-20 full size.

On the remaining 71 6-10 miles, rolled edge rails have been adopted, according to the plan pursued in Great Britain, on the Wigan Railroad.

Seventy chairs on the recently formed embankment of the city division (commencing at the short curves of 300 feet radius, in the streets of Philadelphia, at Broad and Callowhill Streets) are composed of Carolina string pieces 6 inches square; the iron bars 2 1/2 by 3 1/2 of an inch; the sleepers of the usual form and size, rest on bearing timbers 8 inches square secured by ties 20 feet apart.

The edge rails, of rolled iron, are 15 feet long, 3 1/2 inches deep, and are parallel at the top and bottom; they weigh 41 1/2 pounds per yard. The cost in England was £6 17s 6d per ton; cost, delivered in Philadelphia, $50 50-100. The cast-iron chairs weigh 15 pounds each; the rails or bolts, 10 ounces each; the two wrought-iron wedges to each chair weigh each 10 ounces. On turnouts rails weigh 33 pounds to the yard; chairs 12 pounds each.

Cast-iron chair for attaching wooden stringer rail to stone blocks laid on Belmont Plane. 1830.

Philadelphia and Columbia Railroad.
or twice the length of the railroad. The maximum grade never exceeds 30 8-10 feet to the mile, and this only in the direction of the greatest grade. Two points only require stationary engines. The width of the roadbed is, in general, 25 feet, and sometimes it is wider. If the profile be analyzed it will be perceived that 71 per cent of the useful effect will be obtained on this road which would be attainable on a line perfectly level. It is almost unnecessary to add that every division of this great work evinces the skill and sound judgment of the engineer, Major John Wilson, to whom it has been intrusted from the commencement.

Branches.—At the termination of the State Railroad, at the corner of Broad and Vine Streets, a continuation of the line along Broad Street, southwardly through the city and thence to the Delaware, a distance of 2½ miles, is to be commenced without delay by the corporation, and a junction is to be formed with the Delaware, north of the city, by a line about 1¾ miles long. Also a junction with the railroad from Philadelphia to Norristown. A company has been formed to construct a branch from Downingtown via the valley of the Brandywine, to Wilmington; the surveys have been published, but the work is not yet commenced. Another company has been authorized to construct a branch towards Port Deposit, on the Susquehanna, via Oxford. The surveys were made by a corps detailed by Major Wilson. It is contemplated to extend this branch to Baltimore, for which purpose a company has been formed in the State of Maryland.

Much dissatisfaction existed in regard to the location of the railroad at Lancaster, and on July 2, 1832, a resolution was passed by the General Assembly directing the Canal Commissioners "to take immediate measures to have a survey made by an experienced engineer, who has not heretofore been employed on the Philadelphia and Columbia Railroad, of the ground between the Big and Little Conestoga bridges on the Philadelphia and Columbia Railroad, for the purpose of ascertaining where it may pass through the city of Lancaster, so that it may cross North Queen street, and pass through the business center of the city, provided the corporation of the city of Lancaster shall negotiate to pay the expenses of said resurvey."

By an act passed a few days later, $60,000 was appropriated for this purpose, it being directed that the line "shall pass through the city of Lancaster at or near the intersection of North Queen and Chestnut streets, and that the Commissioners shall agree to form the same for a double track railway."

By resolution passed on the eleventh of June, 1832, the Canal Commissioners were authorized "to permit cars to be placed on such parts of the Philadelphia and Columbia Railroad as are or may be finished, and appoint
such person or persons to collect tolls on such road, and also to adopt rules and regulations relative to the use of the said road."

A single track from the west side of the Schuylkill at Philadelphia to West Chester intersection, near Paoli, twenty-two miles distant, was opened September 20, 1832; and on the 18th of October the road was so far completed as to be partially opened between Paoli and Columbia. Passengers were carried along the unfinished portions in stages; all of the cars on the railroad being drawn by horses.

The Westchester Railroad is thus described in Wood’s Treatise on Railroads for 1832:

This road is a branch of the Pennsylvania Railroad. It commences near the first summit of the latter, on the South Valley Hill, about two miles west of the Paoli tavern. It follows the general course of the ridge about nine miles to the town of Westchester. This work has been directed by Major Wilson as principal, and Mr. Bailey, the resident engineer; by the latter it has been laid out and all the details arranged. The roadbed is finished. The roadbed is 25 feet wide, and it is intended ultimately for a double track. The superstructure, or railway, is in rapid progress, and the whole work will be finished in the course of the ensuing month. The whole cost is estimated at $81,000, of which $4,000 is of contingencies, $34,000 for road formation, and $43,000 for the superstructure. The latter is single and is composed of wooden string-pieces of North Carolina pine (5 inches wide and 7 deep) covered by flat iron bars (rounded at the upper edges) 2½ inches wide and five-eighths of an inch thick; the string-pieces rest on sleepers of oak (8 feet long and 8 by 10 inches thick) secured in notches near their extremities by wedges. The sleepers are four feet apart from center to center, and are founded on broken stone, which is laid in two trenches parallel to and immediately beneath the string-pieces. The cost of the latter was about $20,000 per mile. Thesleepers cost about 25 cents each, and the iron $30 per ton at Philadelphia.

In the report of the Commissioners for 1832, the cost of 81.5 miles of double track—the Philadelphia and Columbia Railroad—was estimated at $2,814,709.67, or $34,500 a mile; being less for a mile than the canal from Columbia to Duncan’s Island.

By the act of February 16, 1833, $1,112,000 were appropriated by the Legislature for the Philadelphia and Columbia Railroad.

By the resolution of March 26, 1833, the officers of the company owning the bridge over the Susquehanna near Columbia were directed "to lay on said bridge a double track of rails to be used for the passage of such cars as may be used on the Philadelphia and Columbia Railroad," and the Canal Commissioners were directed to connect the said railroads with the tracks laid on the bridge.

Although the road was not opened for traffic until the following year, the question of methods of management was discussed by the Board of Commissioners in 1833.

The canals and turnpikes then chartered by the State were public highways over which any man might transport his canal boat or wagon. Shall a similar method of management go into effect upon the new railroad? was a question that the Board also submitted to Moncure Robinson, who made the following reply:

The next inquiry of the committee is, "Would it, in your opinion, be practicable, by a rigid enforcement of by-laws and regulations, to make either of these roads, connected as they are with the lines of canal, valuable as a public highway to the State and to the districts of the country which they are intended to accommodate?"

In reply, I would observe that I do not think it can often be advisable to make any railroad, however short, a public highway, because a company possessing an exclusive privilege of transportation, and bound to transport whatever may be offered it, may accommodate any given amount of trade with a smaller disbursement for power, whether that power be locomotive or horse, and a smaller investment in carriages, than would be required to insure the same amount of accommodation to the public if transportation be effected by common carriages and individuals. A few considerations will suffice to make this apparent. Suppose the business of transportation placed in the hands of a company, the whole amount of trade on a railroad ascertained and the maximum transportation required in a given period known. A sufficient amount of power and
EARLY LAWS FOR PROTECTING RAILROADS.

115

an adequate number of cars and carriages may be procured and no more. The necessary shops being erected, and skilful workmen provided for repairs, these last are effected economically, promptly and properly. Presuming the capital invested to be diminished, and the power employed, the number of persons occupied, and the expenditure incurred for repairs to be lessened, the cost of transportation may obviously be reduced, and a company, although bound to transport without the least delay everything which may be offered it on a railroad, may afford to do so at a lower rate than individuals possibly can.

If, however, locomotive power be looked to on the Philadelphia and Columbia Railroad (and the reasons in its favor appear, from what has been said, to be decisive), it seems to follow, necessarily, that the railroad cannot be a public highway. Setting aside the difficulties, and, I might add, the impracticability of adopting such a police and enforcing such laws and regulations as would in that case be necessary, other considerations lead to the conclusion that, even if it were practicable, there would be no advantage in transportation by locomotives on a public highway.

To make use of locomotives on a line of railroad it is necessary that an adequate number of engines should be provided to guard against danger of delay from accident or other causes; that warehouses, depots, engine-sheds and water-stations should be erected; that there should be shops with competent workmen at different points on the line of railroad to effect repairs without delay and to keep the engines, cars and other vehicles used on it in the most perfect order. It is evident that no individual would be willing to make the permanent disbursement necessary to effect transportation advantageously with this description of power on a railroad entirely open; that if attempted at all, it would necessarily be also a charge to the producer or owner which would not be necessary under such a system as would afford to an individual or a company a guarantee of a regular and permanent business correspondent to the outlay which would be necessary to accommodate it effectually.

Should the railroads in question be public highways, it is not believed that any competition would insure an adequate amount of power and a sufficient number of cars for transportation to avoid delay during those seasons of the year when the trade on the canals would be most active, and if it were otherwise, as there can be no obligation on any particular carrier to transport what might be offered him, it would be necessary for an owner sending produce or merchandise by canal to accompany it or to engage the service of an agent on whom he could depend, at the point of transshipment, to forward it.

Concerning the proposition as to whether the commonwealth, by its officers, should become the transporter, or that the improvement should be leased for a term of years to a company that should be bound to transport at certain specified rates of toll and transportation, Mr. Robinson replied:

I should think the latter plan more advisable. I can entertain no doubt that, after a very short period, an estimate, sufficiently accurate, of the amount of trade on each of the two railroads might be made to admit of an arrangement between the commonwealth and a transporting company which would be fair and equitable; and if certain rates of toll and transportation were fixed on by the proper authority, that proposals would be made by a sufficient number of responsible individuals or associations for the privilege of transportation to insure a fair compensation to the commonwealth for the use of its railroads and the most complete accommodation to the public.

Soon after the railroad was opened it became evident to the managers that in order to operate it successfully it was desirable that the State should own all the motive power. This was bitterly opposed by those living along the line of railroad, on the ground that as the people were taxed to build and maintain the railroad, the farmers along the line should have the right to drive their own horses and cars to and from the Philadelphia market the same as on the turnpike. Among those that took this ground was the Hon. Thaddeus Stevens, who was the leader of his party at that time in the Legislature. After considerable opposition a bill was finally passed, and it was decided that the motive power should all be owned and managed by the State.

The general condition of the public works in the spring of 1833 is indicated by the following from the American Railroad Journal, February 21, 1833:

The late report of the Canal Commissioners of Pennsylvania gives an interesting view of the progress of the great system of improvement in the means of inland communication in that State. The great work is yet in an unfinished state, and the
great benefits which are to be anticipated from it
are but imperfectly felt in consequence of a want
of connection between the parts which are com-
pleted. The extent of railroads and canals built
at the sole expense of the State, now finished for
use in detached portions, measures five hundred and
one miles and one hundred and forty-one rods in
length. The extent which remains to be finished,
to complete the plan which is begun, is a little over
two hundred miles. The whole scheme embraces
an extent of artificial navigation and railroad of
seven hundred and two miles, besides nine miles of
navigable feeders. The principal works are a
communication by railroad, canal, and slack water
navigation from Philadelphia to Pittsburgh; a canal
from Bristol to Easton on the Delaware; a com-
munication from Philadelphia to the head of the
Wyoming Valley, passing through the anthracite
coal regions on the North Branch of the Susque-
hanna river and to the vicinity of the bituminous
coal beds in the Allegheny mountains in Lycoming
County, and a canal and slack water navigation
from New Castle, Mercer County, to steamboat
navigation on the Ohio river at Beaver, and from
the Allegheny river, at the mouth of the French
Creek, to a point near Meadville, and also to Con-
neaut Lake, in Crawford County.

Of the railroad from Philadelphia to Columbia,
81 miles in length, 22 at the Philadelphia termina-
tion, are nearly completed. The canal and slack water
navigation from Columbia to Hollidaysburg at the
eastern base of the Allegheny mountain, a distance
of 171 miles, is completed. The canal from the
western base of the Allegheny mountain at Johns-
town to Pittsburgh is also completed.

The Schuylkill viaduct was 984 feet long. The
Schuylkill plane was 2,805 feet in length, with a rise
of 187 feet, on which cars ascended and descended at
the same time "by being attached to an endless
rope moved by a stationary engine of 60-horse
power situated at the head of the plane." It was
stated that "the engines can draw 100 tons each,
regardless of the weight of cars, engine, etc., or
nearly 200 tons in all, at an average speed of 10
or 12 miles per hour."

The capacity of the Schuylkill inclined plane
at Philadelphia was estimated by the Commis-
sioners in their report for 1833 at 60 tons an
hour in each direction.

The Canal Commissioners were directed by
the act of April 5, 1834, to complete the Phila-
delphia and Columbia Railroad "with a dou-
ble track of rails, stationary engines and other
things and means to finish said road for trans-
portation, with the least possible delay," the
sum of $800,000 being appropriated for this
purpose.

By the terms of the act to protect the rail-
roads and canals constructed at the expense
of the State, approved April 8, 1834, it was
provided in section 3 that "if any person shall
willfully lead, drive or cause to be led or driven
any horse, cow, ass or mule hauling any stone
or timber or sled, sleigh, wagon, cart, dray or
any other carriage of any kind whatsoever,
except railroad cars, along or over any rail-
road belonging to the State, or over any bank,
wall, turning platform thereof, except at the
bridge or places specially constructed for
crossing the railroad . . . . such person shall
forfeit for every such offense a sum not ex-
ceeding one hundred dollars, and pay all dam-
ages consequent upon such offense; and in
case such damages shall not be paid, such
person shall be imprisoned in the county jail
in the county where said offense shall be com-
mitted, for a term not exceeding thirty days."

By the second section of the same act a
penalty of two hundred dollars or a term of
six months in the county jail were imposed
upon any person "who shall wantonly open
or shut, or cause to be opened or shut, any
door of a locomotive engine, stationary en-
gine, switch, turning platform, or machinery,
or shall put such engines or machinery in
motion, or shall kindle a fire for such purpose, or
shall drive any nails, spikes, pins or wedges
into any part of the railroad, or into any en-
gine, switch, turning platform or machinery
belonging thereto."

The canals between Columbia and Holli-
daysburg and between Johnstown and Pitts-
burgh having been completed in 1831, were
put in use in the summer of 1832; passengers
and freight being carried from West Chester
intersection to Columbia, and from Hollidays-
burg over the mountain by stage and wagon
until March 13th, 1834, when a single track
extending the full length of the Portage Rail-
road was completed, and on April 1, 1834, a
single track, sixty miles long, from West
Chester intersection to Columbia, was finished.
and ready for traffic, thus completing the chain of communication between Philadelphia and Pittsburgh.

On Monday, March 31, 1834, three passenger coaches drawn by horses arrived at Columbia from Lancaster.

The Governor and the members of the Legislature on the 16th of April, 1834.

On the afternoon of the 15th the Governor, accompanied by the Canal Commissioners and members of the Legislature, embarked on a handsome canal packet boat at Harrisburg, bound for Columbia. On arrival they were driven to the head of the plane at Columbia where cars were in waiting, and the locomotive attached with steam up. The cars were taken to Lancaster in one hour. The party came through to Philadelphia, where they were joined next morning by the Mayor and Aldermen of the city and other invited guests at Schuylkill Plane, who entered the train, consisting of a locomotive and four passenger cars, which started for Columbia upon the through trip to Pittsburgh, where the party arrived on the evening of the 18th, their arrival being duly celebrated. This was the first continuous journey made over the main line of the State works from Philadelphia to Pittsburgh, and the event was hailed with joy throughout the State.

Thus fifty years after the treaty of peace with Great Britain had been ratified by the Congress of the United States, at the close of the war of the Revolution, the waters of the

---

The Lancaster Examiner of April 3, 1834, says:

A single track of the railroad between this city and Columbia was finished last week, and on Sunday the first horse-car arrived from the latter place. On Monday three horse-cars with passengers left this city and arrived at Columbia (distance about 11 miles by the railroad) in an hour and a quarter. Yesterday the locomotive, with its tender, and four passenger cars in train, started from the depot in Chester Street, to make the first trip with steam power.

Traffic upon the main line of the State works was formally opened in the presence of

---

1 The Pennsylvania of April 15, 1834, contains the following:

Columbia Railroad.—Cars are now running daily between Columbia and Lancaster. The whole distance between Columbia and Philadelphia is ready for passing with the exception of the Gap section, which, it is said, will be in order to-day. The Columbia Star states that the locomotive and a train of cars will leave Columbia for this city tomorrow morning.
Atlantic Ocean and the Ohio River were, for the first time, connected by a transportation route, 395 miles long, constructed by the State of Pennsylvania at a cost of over $12,000,000.

The Pennsylvania Canal of May 7, 1834, says that:

The several lines of the Pennsylvania Canal are now in excellent navigable order. The difficulties on the North Branch Division have been overcome and the line has been navigable for a week past. Large amounts of toll are taken by the collectors, and the accounts from the different lines are of the most cheering character. The increase of trade and business since last year is immense and equals the most sanguine calculations. To give our readers an idea of the business doing upon our canals when they are yet in their infancy, we state the fact that upwards of five hundred canal-boats have been regularly registered and are in constant use.

The Canal Commissioners are making great exertions to facilitate the trade upon the Pennsylvania and Portage Railroads. They have engaged fifteen locomotive engines for the former and five for the latter. The greater portion of them will be placed upon these roads in the course of the present season.

The second track from Philadelphia through to Columbia was completed October 7, 1834, and the second track of the Portage Railroad, May 10 of the following year. The Commissioners in their report for the year 1834 state that "All the canals and railroads authorized by law are so far completed as to admit of transportation throughout their whole extent."

The author is indebted to W. Hasell Wilson for the following description of the formal opening of the Philadelphia and Columbia Railroad:

On October 7, 1834, the second track being completed, a formal opening took place. Two trains drawn respectively by the engines Lancaster and Columbia, conveying the Governor, Canal Commissioners, other State officials, engineers of the railroad, and invited guests, left Columbia at 8 o'clock in the morning and arrived at Philadelphia at about 6 in the afternoon. The residents along the line

1 Reminiscences of a Railroad Engineer, Philadelphia, December, 1895.
FORMAL OPENING OF ROAD TO COLUMBIA, 1834.

of the road turned out in force and great enthusiasm was manifested.

The engineer corps had a car to themselves and enjoyed the occasion, regardless of the fact that the event then being celebrated was the termination of the pleasant associations of several years, and that before many days elapsed the members would be dispersed to seek their fortunes elsewhere, with slight probability of coming together again.

The locomotive engines were, of course, detached at the head of the plane, and the cars were severally taken by horses from the foot of the plane to the terminus at Broad and Vine streets.

The Philadelphia Commercial Herald of July 2, 1834, informs its readers of "The advantages of this great State work which are already becoming developed," and states that "On Thursday afternoon, a lot of 80 bbls. superfine flour from Columbia was brought to the depot, corner of Vine and Broad streets. This is the first flour that has been brought from the Susquehanna by this route. A lot of between 200 and 300 bushels of corn has also been received from Columbia by this road."

The Harrisburg Reporter of September 7, 1834, says that:

The tolls collected on the Philadelphia and Columbia Railroad from the 3d to the 30th of August, 1834, amounted to eight thousand eight hundred and seventy-three dollars and twenty-five cents. At this rate the tolls in a year would reach one hundred and ten thousand and ninety-one dollars and fifty-five cents, equal to the interest upon two million two hundred thousand dollars. As it is believed that the whole cost of the road will not exceed three millions of dollars, this result cannot fail to be highly gratifying to all who take an interest in the progress of our public works. It should be remembered that only one track of the road is finished, and that is used but partially, owing to the interruptions consequent upon the prosecution of the work on the second track. It should also be remembered that the Western trade and the Susquehanna trade have not yet been brought upon the railway: from these facts it must be apparent that the completion of this great work and its use for the ends for which it is designed will amply compensate the State for the expenditure upon it and yield a large surplus revenue.

The Schuykill Viaduct was formally opened for business on Christmas day, 1834.

Previous to this date passengers and freight were conveyed across the Schuykill river by ferry boats.

Stone cross-ties and stone blocks.

Wooden ties between stone blocks. Philadelphia and Columbia Railroad. 1832.

The Pennsylvania of January 1, 1835, contains the following advertisement:

CITIZENS LINE FOR COLUMBIA.

The public is respectfully informed that the above line is now in full operation, and that the proprietor has spared no pains or expense in placing splendid and commodious cars, first-rate teams, careful, polite and experienced drivers on the whole route. Every attention shall be paid by the proprietor, agents and drivers to the wants and comforts of the travelling public, from whom a liberal share of patronage is solicited.

Passengers will be taken up and put down, free of expense, at the following hotels, where seats may be secured:

White Horse Hotel. Torbett's, Bank Street.
B. Duke's Indian Queen Hotel, South 4th Street.
M. Wade's Hotel, North 4th Street, above Market.
Bessennett's. 288 Market Street, Western Hotel.
United States Hotel, Dorrance's. Chestnut Street.
Also at the car office, Broad Street, two doors north of Chestnut Street.

Hour of departure from the railroad, 8 o'clock.
A. M. precisely, which in no case will be deviated from until further notice.

N. B.—This line has no connection with the Union Railroad Line or Amalgamation Company.
J. Tomlinson.

On January 6th the following notice was inserted in the same journal:

UNITED STATES ECLIPSE MAIL LINE FOR BALTIMORE.

FARE THROUGH $8, VIA COLUMBIA RAIL-ROAD.
THROUGH IN 18 HOURS.

Being 40 miles nearer than any other route, and escaping the inclined plane at Columbia—con-
sequently the shortest and most expeditious route between the two cities, and no more travelling in post coaches than by York and Columbia. Leaving the U. S. Mail Coach Office, 28 South Third Street daily, at 7½ o'clock A. M. for Baltimore via Rail-road.
Way passengers taken in the cars between Philadelphia and Fountain Inn.
Seats can only be secured at the U. S. Mail Coach Office. 28
North Third Street, where omnibuses are engaged to call for passengers in any part of the City.
Evans & Caldwell, Proprietors.
Extras furnished at any time by applying at the Office.
The registered capacity of the State railways in 1834 was 349 single cars, which in addition to the 664 boats on the canals the Commissioners speak of as "an imposing array."
The amount appropriated for the Columbia Railroad to April 5, 1834, was $3,207,000.36
Estimate of Commissioners to complete .................................. 110,575.21
$3,317,575.54
The above amount included
18 locomotives @ $6,300 ................................ $113,400.00
Machinery at two planes, real estate, building depots ................................ 191,780.00
$305,180.00

From the head of the inclined plane at Columbia to Lancaster, sandstone blocks twelve inches square were placed in the ground and cast iron chairs were fastened on with iron spikes driven into holes into the stone. Wrought iron T rails weighing forty pounds to the yard rested in iron chairs which had a groove into which the rails fitted. Iron wedges were driven between the rails to keep them in place. Trackmen were constantly along the line driving these wedges which were loosened by the jolting of the cars.
When the road was first opened it was operated as a public highway. Individuals and transporting firms owned the horses and cars. The latter were made of every conceivable size and shape, their capacity being from three to four tons. The drivers were rough fellows, and often gave great trouble through their stubbornness. No time-tables were then in force, and while only a single track of the road was being operated they often gave much annoyance.
The right of way was determined by the following rule: Midway between the turnouts, which were one and one-half miles apart, a large post, called the "halfway" post, was set up, and when the drivers on single track

The American Railroad Journal, January 2, 1835, states that "The passenger cars on the Columbia Railroad are propelled by locomotive engines. The trip from Philadelphia to Columbia, 82 miles, is made in about six hours; and it is believed that it will soon be made in four hours."

1 In the report for Dec. 31, 1836, this amount is increased to $3,330,127.55.

Half-way sign giving right to track to car-drivers. 1832. Philadelphia and Columbia Railroad.
As the road was so crooked that the drivers could not see far ahead, each would drive slowly after leaving the turnout, for fear he might have to be turned back. As he approached the center post he accelerated his speed, hoping to get beyond it before his rival reached it. Many exciting races and not a few accidents resulted from the eagerness of these drivers to gain the "Halfway" point.

A tourist from Boston thus describes his journey to St. Louis via the main line of the State works in 1835:

From Boston, May 14, 1835, took the Stonington boat to New York. Very pleasant. Wish I could say the same of the travelling accommodation between New York and Philadelphia, but conscientiously I cannot; only say that a most odious monopoly exists there and I pity those who are thrown within their merciless grasp.

At Philadelphia we took the cars for Harrisburg; where we struck the eastern terminus of the Susquehanna Canal. At West Chester, about 16 miles from Philadelphia, the locomotive ran against a dearnorn. Cars going at a tremendous rate, 20 miles perhaps—horse killed, crushed to atoms, and man's right leg cut off. Both engine and tender were thrown from the track owing to a collision. At Harrisburg we took canal-boat and travelled at a rapid rate—3 miles per hour. Our boat was calculated to accommodate 30 persons; we had 65. I leave for you to judge of our comfort, adding, only, that a portion of our number were of the lowest grade and exceedingly offensive in person and language—Whiskey.

At Hollidaysburg we left the boat and entered the cars by which we were to be borne over the mountain. The Portage Railroad over the Alleghenies is a wonderful work, and exhibits in a surprising manner the amazing power of mind and its vast superiority over the corporal world. Here we were hurled over a high, rugged mountain, whose toilsome and dangerous ascent and descent it but yesterday required more weeks than it now does hours. The planes are from three-quarters to one and a quarter miles in length, and the levels from one to sixteen miles. The short levels are furnished with horse power, the longer ones with locomotives.

The passage is perfectly safe, so it appeared to me, and is full of interest. The scenery is beautiful along the Juniata and Susquehanna.

Now we are drawn up an inclination of 35 degrees at the rate of seven or eight miles per hour by a single cord and an entirely invisible power; now we are descending from our giddy elevation at the same rate, and anon winding our crooked way along some deep defile or on the edge of some crag that overhangs an abyss which made the head swim that dared to glance below. On the other hand, peak after peak. On the summit we went through the ceremony of eating, and paid for it very libraIly. The amount of transportation on this railway is immense. There are two tracks and the engines are in continual operation. As one set of cars pass up, another attached to same rope (which moves like an endless chain, when an inclination) passes down and there is no cessation. It seems to me that when business is brisk, it can by no means answer the demands that would be made upon it. At the head of the last inclined plane on the west side we pass through the bowels of the mountain by a beautiful tunnel, which added to the variety and gave life to the scene.

Once more packed in the canal-boat, we floated down the Conenagh (the largest of the head-waters of the Ohio, and which is near the spot where we dined, and where it would have run through a gallon leg).

The Kiskiminitas and Allegheny river to Pittsburgh, where we arrived on Saturday evening, the 4th day from Philadelphia, albeit the agent promised us a passage of but sixty hours.

From New York to Philadelphia via steamboat and railroad, $3 and $4; meals extra. From Philadelphia to Pittsburgh via railroad and canal fare, $12; meals extra. From Pittsburgh to St. Louis via Ohio and Mississippi, $20 or $25, meals included. Through from Boston to Pittsburgh in 6 days, Cincinnati 8 days, St. Louis 12 to 14 days. We paid $32 for the same single person without baggage from Boston to St. Louis for about $50; it cost me $60. It covers all necessary expenses—fares, tavern bills, meals, l suit fare, etc., etc. They also charge one-half fare in the forward part of the car in all trains; a deck passage via the canal-boats on easy terms. By the payment of a 4, 5, 6, and occasionally a "wooding up" at the stopping places, a man may get from Pittsburgh to St. Louis at this rate. By putting in provisions at the large towns and taking a deck passage and the cheap (transportation) line between Philadelphia and Pittsburgh. I have known individuals to go from Boston to St. Louis at a cost of not to exceed $18.

The deck for cheap passage is amidsthip, forward of the engine and is protected from the weather.
Passengers furnish their own provisions and bedding. They sometimes take their meals at the cabin table with the boat hands, and pay 25 cents a meal. Emigrants usually travel this way.

The famous car "Victory" was built at Philadelphia in the spring of 1835 by J. Imlay for Jacob C. Corncross. The Pennsylvania of July 3, 1835, states that it is "36 feet in length, and run on 8 wheels. It is divided into three apartments, which are entirely separate from each other, two being designed for Philadelphia and Pittsburgh on the Pennsylvania canals and railroads, will despatch two substantial decked boats daily (Sundays excepted) from Walnut Street Wharf, Schuylkill, with merchandise for Pittsburgh and intermediate points, and from their stores in Broad Street, two trains of burthen cars, by the Philadelphia and Columbia Railroad. By this route goods will be delivered at Pittsburgh in ten days.

Midship or steerage passengers will leave the Depository in Broad Street daily at 8 o'clock A.M. Fare by the above line $6.

Also a Packet Line, with Cabin accommodations, viz.:

Passenger Car "Victory." This was one of the first passenger cars built with trucks (or bogies) and ran for some time between the business part of the city of Philadelphia and the ferry over the Schuylkill river, used before the railroad bridge was constructed near Belmont Plane.

Philadelphia and Columbia Railroad.

private parties of ladies and gentlemen, while the third is a kind of ordinary. The car will be drawn by four match horses, and run from the corner of Chestnut and Broad to the viaduct or bridge on the Schuylkill, or to any other place on the railroad when chartered by private parties for that purpose. The car was built by Mr. Imlay, and will be under the superintendence of Mr. Yerkes. It will commence regular trips on the 4th of July."

The Pennsylvania of Saturday, July 25, 1835, contains the following advertisement:

THE WESTERN TRANSPORTATION COMPANY.

D. Leech & Co.'s Line.

(Cut of canal-boat drawn by horses.)

Having made extensive arrangements for transporting passengers and freight between Philadelphia and Pittsburgh, the Packet Boats for Cabin passengers are fitted up in the most comfortable manner, each having a gentlemen's and ladies' cabin, with comfortable berths, exclusively for the accommodation of passengers. The cars on the Philadelphia, Columbia and Portage Railroads are of the best description. Through by this line as soon as any running the above route. Seats may be taken at their office, No. 43 Chestnut Street, below Second, north side, and at their warehouse, Broad Street near Vine, west side. Hour of leaving, 8 o'clock A.M. daily, passing over the Philadelphia, Columbia and Portage Railroads in daylight.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Fare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harrisburg</td>
<td>$3.00</td>
</tr>
<tr>
<td>New Port</td>
<td>138</td>
</tr>
<tr>
<td>Mexico</td>
<td>155</td>
</tr>
<tr>
<td>Lewistown</td>
<td>171</td>
</tr>
<tr>
<td>Huntingdon</td>
<td>216</td>
</tr>
<tr>
<td>Alexandria</td>
<td>226</td>
</tr>
<tr>
<td>Williamsburg</td>
<td>238</td>
</tr>
<tr>
<td>Hollidaysburg</td>
<td>254</td>
</tr>
<tr>
<td>Johnstown</td>
<td>290</td>
</tr>
<tr>
<td>Blairsville</td>
<td>320</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>7.00</td>
</tr>
</tbody>
</table>
THE BALDWIN LOCOMOTIVE LANCASTER, 1834.

Proprietors.—D. Leech, Leechburg; Thomas S. Clarke, Pittsburgh; Jacob Forsyth, Pittsburgh; John Tustin, Philadelphia; Thomas Tustin, Philadelphia.

For further information apply at the office, No. 43 Chestnut Street, below Second, Philadelphia.

JOHN CAMERON,
Agent for the Proprietors.

EARLY LOCOMOTIVES.

The success of steam locomotives abroad led the Canal Commissioners, early in the year 1830, to consider the advisability of ultimately introducing them upon the railroads belonging to the State.

In their report for 1830, comparing the horse with the locomotive, the statement is made that "a good Pennsylvania wagon horse will carry ten tons twenty-seven miles per day along the railroads." Of the performance of steam locomotives they say: "There can be no doubt that a locomotive engine of sixteen horse power, weighing five tons, will draw thirty tons and twelve wagons at the rate of six miles per hour up an elevation not exceeding a grade of 30 feet to the mile without fear of the weight causing the engine wheels to slide on the plane or to have only a rotary motion of the wheels without a progressive motion along the plane."

But it was not until three years later that the first locomotive was put in service on the State works.

A correspondent of the Columbia Spy, writing from Philadelphia, gives the following description of a new steam locomotive, now under construction in that city, "for the Pennsylvania Railroad, early in 1832:"

I examined a locomotive steam-engine Burson & Co. are constructing in this city for our road. It is entirely of a new construction and is as simple as common cart or wheel-barrow. There is not a cog-wheel about it; neither is there pin, wedge or screw bolt which can be possibly impaired. The steam is brought on the piston through valves formed by holes made in two cylinders which rub against each other, and are opened and shut by the natural operation of the piston in turning the crank on the hindermost axle-tree. The engine works complete and justifies the belief that it will outrun the far-famed Rocket and Novelty. In point of construction it is far more permanent and compact than either of them, and is entirely of American construction. The same writer mentions that the agent in England has written home that he has made a contract for the rails at 62 12s 6d per ton. The rails are what is called the "Clarence rail," said to be the best now used in England, and weigh 40 pounds per yard.

No further record has been found of the completion of this locomotive or of any experimental trial on the railroad.

The original design of making horse-paths was generally carried out, until 1832, when Col. Stephen H. Long, of the U. S. Topographical Engineers, who, in 1830, had made a survey for the Canal Commissioners of different routes for crossing the Allegheny mountains, having concluded his labors, was residing in Philadelphia. He became interested in experiments with locomotives and associated William Norris with him.

In 1833 Long and Norris constructed the first locomotive engine that ran on the Philadelphia and Columbia Railroad. It was called the "Green Hawk," and from what can be learned was not very successful. Their second engine, the "Black Hawk," was an improvement upon the first, and they then constructed a third, which had no name, but was named by the workmen the "Tomahawk."

These engines were frequently experimented with near the eastern terminus of the road. They were regarded as great curiosities, and invitations to accompany the inventors on the trial trips were eagerly accepted; but as it had been decided at that time to continue to use horse power on the road, no locomotives were purchased by the State until 1834.

In 1833 the relative advantages of locomotives and horses were under discussion, as will be shown by the following letter from Monroe Robinson, C. E., to Wm. H. Keating, Chairman, Canal Commissioners, dated Harrisburg, February 21, 1833:

Sir.—I have received your letter of yesterday, and with pleasure present the following reply to the questions proposed by the committee.

The first inquiry is, "On roads of the length and
undulating character of the Philadelphia and Columbia Railroad, or connecting two lines of canal, like the Allegheny Portage Railroad, what are the relative advantages of transportation by horse power or by locomotive engines?"

When the profile of a railroad is undulating, unless its grades or ascents and descents are very short, the useful effect of a horse is materially impaired. In other words, although in descents the force exerted by him may be but trifling, he cannot in consequence draw a proportionably large load on ascents. With locomotive power the diminution in useful effect is by no means in a corresponding ratio; and provided the graduation of a railroad be not at any point too steep to admit of an engine urging on its load by the adhesion of its wheels, a large portion of what would be useful effect on the level may be had. The engine, on ascents, travelling at a slower rate under an increased stress; on levels or on descents, exerting any disposable force in attaining a higher speed.

When a line of railroad is not only undulating, but a long one, the superiority of locomotive power becomes more decided. The loss of time and the waste of steam in starting and stopping become relatively of less moment, and the saving in time, by superior velocity which locomotives enable us to attain, becomes more important. In the case of the Columbia and Philadelphia railroad, for example, four days would probably be required, with horse power, for the transportation of merchandise and produce between Philadelphia and Columbia. With locomotive power the trip may be made with entire ease and safety in six hours, including stoppages. Supposing the cost of transportation to be the same with either power, a large accommodation would be afforded to the public in the greatly increased speed of transportation.

Persons coming to Columbia with their produce would have it in their power to travel with it to Philadelphia, and to attend personally to its disposition, without any sacrifice of time; and to the community generally, facilities in intercourse and travel and in the transportation of mail would be afforded, which can scarcely be appreciated until they have been realized.

There is no peculiar reason for using locomotive power on railroads connecting with lines of canal, except that the trade on such lines is, from many causes, more irregular and uncertain than on continuous railroads, and that the use of locomotive power, so far as the profile of the railroad may justify its introduction, enables us to provide an extra power to meet any exigencies of the trade without incurring any further expense, when the engine may be unemployed, than the interest on their cost.

Messrs. Long and Norris afterward established a locomotive manufactory at Bush Hill, and built engines for several railroads in the vicinity. Shortly after the road was opened to Columbia Mr. Baldwin's success with the "Ironsides" on the Germantown road, and the "Miller," built for the Charleston and Hamburg road of South Carolina, led the Commissioners to order a locomotive, and in June, 1834, the "Lancaster," weighing 17,000 pounds and having six wheels, was complete and delivered to the road for service. This was the first engine that went into regular service on the Pennsylvania Railroad. It hauled the train containing the Governor and other distinguished guests on the 16th of April, 1834, on the occasion of the formal opening of the road.

In an historical catalogue, issued by Baldwin & Co. in 1876, it is said that the engine "Lancaster," the first put in service on the Pennsylvania State Road, was similar to the "Miller" in dimensions. Cylinders 10 inches in diameter, stroke 16 inches, weight 7 tons 800 lbs. The valve motion was obtained by a single fixed eccentric for each cylinder. Each eccentric strap had two arms attached to it, one above and the other below. The arms on the eccentric strap were prolonged backward under the footboard with a hook on the inner side of the end of each. The rock-shaft had arms below and above its axis, and the hooks of the two rods of each eccentric were moved by hand-levers so as to engage with either arm, thus producing backward or forward gear. Diameter of driving wheel was 4 feet 6 inches. A model of this locomotive formed a part of the exhibit of the Pennsylvania Railroad Company at the World's Columbian Exposition, Chicago, 1893.

The American Railroad Journal of March 21, 1835, speaking of this engine, says:

The passenger cars on the Columbia Railroad are propelled by a locomotive engine. The trip from Philadelphia to Columbia, eighty-two miles, is made in about six hours, and it is believed that it will soon be made in four hours.
THE NORRIS LOCOMOTIVE GEORGE WASHINGTON, 1835.

The experiments with this engine were so gratifying to the State Board of Commissioners that they decided to use other steam locomotives, and by June 1, 1835, nine engines were at work on the road.

The following is from the American Railroad Journal of June 20, 1835:

There are seven of these Baldwin engines at work on the Pennsylvania State Road, on which they also have two English engines from the workshop of the most celebrated maker, R. Stephenson. The engineer who had charge of the locomotive department on this road informs me that the power of the American engines is 35 per cent. greater than that of the English. The Pennsylvania Road is almost a continuous series of curves, varying from 500' to 700 feet radius, and so severe is it upon the wheels of an engine that one of the English engines, the other having been out of repair most of the time, has, within two months, used up a part of the wheels on both engines.

By the end of the year 1835 the company had purchased seventeen locomotives, four of which were constructed in England by Stephenson & Co.

While the machinery of the Schuylkill plane was out of order in July, 1836, William Norris & Sons attracted the attention of men in railroad circles by placing the first locomotive to ascend a heavy grade in service at that place.

The engine, which weighed less than fifteen thousand pounds, hauled three loaded cars, which, including twenty-four persons, weighed slightly less than ten tons, up a grade of 369 feet to the mile. This locomotive was named the "George Washington," and its success in ascending a heavy grade was proclaimed in railroad journals in America and Europe, and marked an important step in the con-
The startling announcement of the "Rocket" excitement. This engine was built on the inclined plane near Philadelphia. In the morning, ready for use. The party proceeded to Lancaster, returning in the afternoon, the distance to the top of the grade being 67 miles, which distance was run in three hours up 47 feet grades and through curves of 600 feet radius.

On a level the high speed of 47 miles per hour was easily attained. Among those present were O. A. Norris (afterwards a member of the firm of Norris Brothers, by whom the works were conducted upon the retirement of William Norris), Franklin Peale, Joseph Harrison, Jr., H. R. Campbell, J. P. Morris, and many others then well known as mechanics and scientific men.

Nothing approaching these results had been attained before. The greatest power exerted in England was to ascend a grade of 1 in 60, and in America of 1 in 20. The possibility of such a performance was strongly denied by English mechanical papers, but I hope to show in a future letter that the facts given above are fully borne out by letters and certified statements of those present at the test.

The locomotive "George Washington" was a

1 "On the Portage Road until 1837, horse power was used between the planes, except between planes Nos. 1 and 2. On that stretch of 14 miles two locomotives were used, which were built in Pittsburgh, named, I think, 'Iron City' and 'Bush Hill.' Some time in 1837 a locomotive was sent from Col-
EARLY LOCOMOTIVE AND TRAIN SIGNALS

Six-wheeled machine, having but one pair of 48-in. drivers placed in front of the fire-box, and a four-wheeled, center-bearing truck with 30-in. wheels. There were 78 copper tubes 2 in. outside diameter, 8 ft. long, cylinders 10½ in. by 18 in. bolted to the frames and a stout bed-plate forming the leading feature of their engines. Most of the other builders, until 1840-2, used the "half crank" or "full crank" connection, upon neither of which plans could the same capacity of engine or the same compactness and simplicity of construction be obtained as with the outside connection.

W. De Sanno, writing to the author in 1892 concerning the early signals used on this road, says:

I enclose sketch of a ball signal carried on locomotives of the old Pennsylvania State Road in 1836. It must be remembered the State owned only the road and motive power; all freight (or burden) cars were owned by individuals, and there being no time card for freight trains, which only

LOCOMOTIVE "GEORGE WASHINGTON."

First locomotive to climb a heavy grade. This locomotive was built by William Norris and Sons, of Philadelphia, 1835, to demonstrate the fact that the Belmont Inclined Plane in the suburbs of Philadelphia could be dispensed with.

The side and bottom of the smoke-box, and placed outside of the frames and gearing. This was first done at the Norris Locomotive Works, and was

umbria to Hollidaysburg to be used on the grade between the Weigh Scales in Gaysport and the foot of Plane No. 10, four miles, named 'George Washington,' having no water tank. I was one of the bucket brigade to fill her boilers at the basin."—Letter from George Bingham to the author, Nov. 22, 1892.
ran in day time, it was important that shippers should know when the last train had passed east or west for that day, so they could arrange their business.

If the "ball" locomotive had gone up or down (passed east or west for that day) they had to wait until the next day. Any substitute in the way of an old broom, or a stick of wood with a bunch of rags on it, was understood to be the signal of the last train. For the want of something more conspicuous, a sheet-iron flag was substituted (painted in imitation of the American flag) with the words "Last Train" painted across the end; this flag was used until the business required night trains and a time card, and the telegraph was introduced, when it went out of use. It is barely possible that one of those old balls or a flag might be found about the old shops at Columbia, Pa., but it is doubtful. We are safe in saying that the ball was the first signal on the Pennsylvania Road, and before the Main Line west of Columbia was built. I remember them over 50 years ago.

Weighed 20,735 lbs. and hauled fifty-one four-wheeled cars, with a weight of 289 net tons.

As it was originally intended to operate the road by horse power, the space between the rails was filled in with broken stone or gravel to form a horse path, which was used by the car teams for several years.

In the earlier years, both passenger and freight cars were owned by individuals or transportation companies, who furnished the necessary teams, and paid tolls to the State as on turnpikes for road privileges, at rates determined by the Canal Commissioners. When locomotives were introduced they were supplied by the State and an additional rate of toll was exacted of those transporters who adopted the new method of motive power.

The receipts from tolls for motive power furnished by the State in 1835 were $53,695.21 less than the expenditures, but in 1836 there was some improvement, the deficit being $45,403.56.

The eight-wheel passenger coach, with trucks, was not introduced on the Philadelphia and Columbia Railroad until the autumn of 1835, and subsequent to the introduction of locomotives on the road. Coal and lumber merchants at Columbia and other points continued for several years to haul their four-wheel cars to Lancaster and Philadelphia by horses.


The Legislature early in 1836 directed that a careful investigation be made concerning the tracks and motive power of the Philadelphia and Columbia Railroad, and that a detailed report thereon be made by the engineer.

1 The Legislature by act approved April 15, 1834, directed the Canal Commissioners to purchase locomotive engines for the Columbia Railroad. Two locomotives were in use upon the eastern portion of that road before the close of that year.
RAILROAD OPENED TO HARRISBURG, 1836.

In conformity with these instructions, a lengthy report was made by E. F. Gay in July, 1836, in which he says that—

The superstructure of the railway has continued in an excellent condition during the past season; indeed, with the exception of the north track on the eastern 22 miles of the road (which is constructed chiefly of wood), the permanent character of the railway is a sufficient guarantee that few repairs of importance will be required on it for many years to come.

The superstructure of the road is generally of a solid and substantial character; the viaducts are the only works which are liable to injury from the heavy travel over them.

Great fear seems to have existed in the minds of the travelling public at that time concerning the danger from fire while trains were passing over the wooden bridges on the line of the Philadelphia and Columbia Railroad, and by direction of the engineer the floors of all bridges were covered with sand in order to prevent ignition from falling coals. Mr. Gay’s comment upon these matters will be read with interest:

As the fears of the travelling community have been frequently expressed in relation to the danger of these viaducts taking fire from the sparks emitted from the chimneys of the locomotives, it may be proper for me to remark that little fear need be entertained of fire from such a cause; this may be inferred from the fact that the cool atmosphere in the viaduct condenses the steam as it escapes from the exhaust pipes and so moistens the surface exposed as to prevent ignition from the sparks.

In discussing the operations of the inclined planes during the year he congratulates the Board upon the fact that “in the ordinary operation of ascending and descending the planes with the aid of the machinery, not a single accident of a serious nature has occurred during the past year,” and further comments upon the dissatisfaction of the patrons of the road, as follows:

. . . . The operation of the planes is, however, always attended with more or less delay, particularly in damp weather, when the adhesion of the rope is diminished, and the detentions which occur are exceedingly annoying to travellers, the fault-finding part of whom, without stopping to inquire into the cause, do not hesitate loudly to attribute it to the mismanagement of the public agents. . . .

During the year fifteen locomotives were placed upon the road in addition to the “Lancaster” and “Columbia,” purchased in 1834.

That the patrons of the road were beginning to change their opinion concerning the use of steam locomotives, each of which, it was boastfully stated, could draw “a train of fifteen cars loaded with three tons each,” is shown in the following paragraph:

It is also gratifying to me to be able to state that most of the prejudice which existed along the line against the use of the locomotive engines last year appears to have vanished, and in its place has arisen a prepossession in their favor; this, however, is nothing more than might reasonably have been expected, for certainly no intelligent individual can witness the performance of a single engine, drawing a train of fifteen cars loaded with three tons each, from one inclined plane to another (77 miles) in eight hours, without honestly acknowledging the decided superiority of steam over horses, at least so far as its application to railways.

During the first months that the railroad was open many persons desiring to pass from one point to another over the railroad, took advantage of their acquaintance with the drivers of teams who permitted them to ride upon the freight cars, so that when steam passenger trains were placed upon the road, many difficulties were encountered in arranging a system by which a proper amount of railway fares should be collected from the passengers.

The recommendation in regard to the keeping of a way-bill “upon which the names of passengers shall all be entered,” indicates that the early railway managers expected to continue the same methods of collecting fares from passengers on the railway as were then in vogue on the stage lines. Mr. Gay calls attention to the matter in the following paragraph:

During last year a large portion due the railroad was not collected in tolls from passengers. I would recommend that a careful and attentive agent of the commonwealth should be placed on each line of passenger cars, whose duty it shall be to keep a way-bill, in which he shall note the number of passengers in each car and the distance travelled by them, and who shall see that the conductors
Railroad Bridge over the Susquehanna River at Harrisburg, 1843.
of each car or train of cars keep a like way-bill upon which the names of passengers shall be entered. This plan would secure an important increase in the revenues of the commonwealth.

In order, however, to aid still further in obtaining a surplus fund for the renewal of engines, I would suggest the propriety of increasing the toll for the motive power, on each passenger to one cent per mile. This change would, probably, in connection with the appointment of agents to keep way-bills, ensure a sufficient revenue to meet all the demands upon the road for motive power.

In 1835 the line from Lancaster to Harrisburg, known as the Harrisburg, Mount Joy and Lancaster Railroad, was in process of location. Great opposition was manifested by the farmers, who frequently drove the surveyors from their farms, which they did not wish to have divided. In August, 1836, this road was finished as far as Middletown.

A writer in "Notes and Queries" describes the arrival of the first locomotive and car at Harrisburg, as follows:

In September, 1836, a locomotive engine was brought from the State Road (which had been previously constructed) from Columbia on a flat boat in the canal and landed at Middletown, from whence it was run here, and during the time Saturday and Sunday excursions were run to Middletown and back about every two hours with the car built by Mr. Miltimore, which was crowded all the time.

The car was a plain open four-wheel car, similar, though smaller, to the present excursion cars of the street railway now used. It was taken three miles down the road for its trial trip by two horses attached by a tow-line.

Governor Ritten, the heads of the State Department and prominent citizens were treated to a ride.

As very few had ever seen a locomotive, it was an object of great curiosity and caused many funny remarks from the crowd assembled on Faxtang Street during the trial trips of the engine.

The first locomotives built for the Harrisburg and Lancaster Road were built by Matthias Baldwin of Philadelphia, and named after three or four principal towns along the road. They had but two driving wheels, with the crank and piston inside; were used for both freight and passengers. The next engines were two built by Messrs. Norris & Sons of Philadelphia, and were named Henry Clay and David R. Porter, and were heavier and lower than the others, and having but two driving wheels, with the piston on the outside as now constructed.

The first locomotives were brought from Columbia on the canal and landed on the McCormick lot at 2d and Vine Streets, and were hauled over the Market Street bridge by six farm horses from Cumberland County.

The road to Harrisburg was not fully completed until 1838, difficult work on the tunnel causing much delay; passengers were, meanwhile, conveyed by stage coaches.

The Cumberland Valley Railroad was completed about the same period (1837) except the erection of the bridge over the Susquehanna river.

MISMANAGEMENT BY STATE RAILWAY OFFICIALS.

The Philadelphia and Columbia Railroad suffered the same inconvenience as the other railroads of the early times from the difficulty of obtaining competent mechanics to repair their locomotives and capable engineers to run them. Men who understood the construction of the locomotive and its working were in great demand and were permitted to do pretty much as they pleased. They started when they were ready, ran at whatever speed they wanted to, and managed the train as they desired. They were masters of the situation and were a law unto themselves. This condition of affairs became so unsatisfactory to the patrons of the road that a committee was appointed by the Legislature of 1836 "to examine into and report upon the present state of the motive power of the Philadelphia and Columbia Railroad." The following extracts from the report of the committee show an unfortunate lack of order and system in the working of the road:

The number of locomotive engines belonging to the commonwealth on the Philadelphia and Columbia Railroad is seventeen. The committee find that much dissatisfaction exists in regard to the inefficiency of the motive power, under its present management; and that it is, and has been for some months, decidedly and palpably insufficient for the required transportation. They have it in evidence, and that, too, from one of the officers employed by the State on the road, that in the month of December, of the
seventeen locomotive engines owned by the commonwealth, the average number actually running daily was but three or four. Some little improvement seems to have taken place since the commencement of the present month; but without a radical change of the whole system of management, the services of the motive power must remain insufficient and extremely uncertain. It has been satisfactorily proved to the committee that loaded cars have frequently stood waiting for conveyance by the motive power for several weeks, often to the great detriment and loss of the owners of merchandise and produce; and that wagons and other modes of conveyance have to be employed to forward it. It is believed that the loss to the State in tolls which would have accrued on produce forwarded by other means than the railroad, in consequence of this deficiency of motive power, is very great. The proprietors of one of the transportation lines, whose tolls alone amount to $3,000 per month, have stated to the committee that they have been compelled to take merchandise from their warehouse on the railroad and to forward it by the Union Canal. A large amount, also, of the merchandise and produce transported between Philadelphia and Ohio, for which our railroad would be preferred, if furnished with capable motive power, is sent by the way of Baltimore and Wheeling.

There is also little doubt that the locomotives are very frequently injured by the carelessness or incompetency of the engineers managing them. The want of a proper system of direction, and the necessity of a reform as regards the regulation of this branch of the subject confided to their examinations, the committee feel bound to say, is very apparent. From the time the engine leaves the depot, and while running the entire route, the engineer is under no control whatever, and is under no responsibility as to his conduct or the management of the engine. His speed is regulated by his own will; the times of his stopping and starting appear to be according to his own convenience or caprice; he takes on his train such way-cars as he chooses, and rejects those which he does not wish to take; and the farmer, or the miller, whose produce has been lying in the car for days, or even for weeks, waiting for a chance of conveyance to market, has no mode of redress. His complaints are unheeded, the locomotives pass by, and his cars must stand on the siding until some engineer is sufficiently obliging to attach them to his train.

The committee was also of opinion that the locomotives would be kept in much better repair, and less frequently injured, "if the present mode of paying the engineers by the day should be changed to that of paying them by the trip, or by the number of miles run in a week," and commented upon the fact that "at present it is a matter of indifference with the engineer whether his locomotive is in order or disabled—he receives his daily pay. Indeed it might occur that a locomotive would be designedly broken, by one whose inclination should lead him to prefer the period of rest and leisure consequent upon an accident." It was also believed "that much better care would be taken of the engines generally if the engineers were paid only for the actual service performed by them."

The recommendation of the committee in the following paragraph, that the speed of passenger trains should be limited to 15 miles an hour, and that of freight trains to 10 miles an hour, compares strangely with the practice of the present day. They recommended that—

Such regulations be put into effective operation as will in some measure equalize the velocity, and prevent immoderate running down grades and around curves; a material saving in the wear of both engines and road would be the consequence. The committee, in the course of their investigation of this branch of the subject, examined many persons possessed of science, intelligence and experience, and found them universally to agree in opinion that the speed of engines drawing passenger cars should be so regulated as not to exceed fifteen miles per hour, and that those with burden cars should be limited to ten.

The committee also discusses the question of the expediency of the commonwealth's continuing to own the motive power. It was thought by some that it would be best for the State to sell all the engines on the road to individuals or companies, who under a proper system of regulations would be much better able to manage the motive power than the State agents; they contended that greater facilities would be thus furnished to all classes who wished to use the road. Others believed that as the proper regulation of the motive power, "when only one interest is concerned, is found to be so difficult, it would be impossible, by any system of management, to regulate and control so many separate interests,
engaged in locomotive engines of different power and speed, stopping frequently at different places, and managed, perhaps, by persons unfriendly to each other, willing to hinder and obstruct the progress of their rivals, and that the inevitable consequence would be continual encounter, dispute and litigation.” They also asserted that “the lives of passengers would be endangered by the collision of rival companies, and the violence too often

The many disappointments and vexatious delays which the way-transporters suffered during the past season have induced them strongly to advocate the use of horse power. They have been compelled to resort to the use of it in order to prevent their produce from standing for weeks in loaded cars, which the engines were daily passing and the engineers unable or unwilling to transport. It is, however, believed that they would be generally satisfied if they could be served at all times with the steam power: but if this should be found impracticable during the next season, it is very desirable that

---

**UNITED STATES MAIL LINE**

**FOR HARRISBURGH AND PHILADELPHIA.**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Bill of</th>
<th>Date of Issue</th>
<th>Place from</th>
<th>Place to</th>
<th>Miles</th>
<th>VT when received</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wednes.</td>
<td></td>
<td>Pittsburgh</td>
<td>Philadelphia</td>
<td></td>
<td>1800</td>
</tr>
<tr>
<td>2</td>
<td>Thurs.</td>
<td></td>
<td>Pittsburgh</td>
<td>Philadelphia</td>
<td></td>
<td>1800</td>
</tr>
<tr>
<td>3</td>
<td>Tues.</td>
<td></td>
<td>Pittsburgh</td>
<td>Philadelphia</td>
<td></td>
<td>1800</td>
</tr>
<tr>
<td>4</td>
<td>Thurs.</td>
<td></td>
<td>Pittsburgh</td>
<td>Philadelphia</td>
<td></td>
<td>1800</td>
</tr>
<tr>
<td>5</td>
<td>Tues.</td>
<td></td>
<td>Pittsburgh</td>
<td>Philadelphia</td>
<td></td>
<td>1800</td>
</tr>
</tbody>
</table>

Way Bill, Pittsburgh to Philadelphia, June 13th, 1839.

consequent upon the conflict of opposing interests.” The same persons asked, “If this is alarming and dangerous when confined to stage travelling, what would it be when a machine of such tremendous speed and power as a locomotive engine might be made the instrument of malicious opposition or revenge?”

In relation to the occasional use of horse power on the road the committee reported that—

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Bill of</th>
<th>Date of Issue</th>
<th>Place from</th>
<th>Place to</th>
<th>Miles</th>
<th>VT when received</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wednes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Thurs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Thurs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

... some plan should be adopted by which the occasional use of horse power could be so regulated as to be both safe and useful.

The Superintendent of the Columbia Railroad reported, November 7, 1837, that “The heavy locomotives now used for the transportation of freight are capable of drawing thirty cars each with a load of three and a half tons, or one hundred and five tons in all, exclusive of the cars, engines, and tender.”
INAUGURATION OF GOVERNOR PORTER'S ADMINISTRATION, 1839. 133

Eleven freight engines of about thirteen tons made nine hundred and thirty-five round trips during that year, "averaging nineteen cars laden with three tons to the trip," the round trip, Philadelphia to Columbia and return, being 163 miles.

B. H. Latrobe, engineer of the Baltimore and Ohio Railroad, made the following communication to the Railroad Journal in 1837, in which he describes a journey to Parksburg from Philadelphia:

In describing the condition of the track and the results of wear, which Mr. Latrobe says "is altogether accordant with our experience on the Baltimore and Ohio Railroad, where similar compositions of track have been laid down," he continues:

The track was in good condition, with the exception that the joints at the ends of the bars were frequently too open, by which a sensible shock was felt in passing. The rails have square joints and are fastened in the chairs by means of two keys in each chair, that is, one on each side of the rail.

On the 1st of December, 1837, we travelled upon this road from Philadelphia to the shops at Parksburg, 44 miles—left Broad Street at 8 o'clock A. M., and alter a very short distance with horses, a locomotive engine of Norris' make conveyed the train to and across the Schuylkill to the foot of the inclined plane. We waited seven minutes for the descent and ascent of two trains then upon the plane, the ceasing of motion in the rope and the lashing to it of our heavy eight-wheel car, and in six minutes more we were at the head of the plane. There we waited twenty minutes for the ascent of the residue of our train and the attaching of the whole to a locomotive of Baldwin's construction. This point is 4 miles from the place of starting at Broad Street, and we were again in motion at 9 o'clock. At half-past eleven, or in two and a half hours, we reached Parksburg, distant 40 miles, being at the rate of 16 miles an hour, inclusive of all necessary detention. The road is very much curved in most of this distance, and frequently it seemed to us at a radius of no more than 600 feet. We made our journey upon the edge rail, supported at bearings every 3 feet upon cast-iron chairs.

These keys, like all others used in railways, are constantly loose or getting loose, and the rails left at liberty to obey the impulse of the wheels at the joints or other cause and to move endwise in the chairs. Whilst this track is comparatively good, those portions of the other track laid with the plate rail upon a continuous bearing of wood, and in some parts of stone, have become so dilapidated as to require renewal, and the Canal Commissioners in their late annual report of the 6th December, 1837, say that these parts of the railway have been a fruitful source of injury to cars and engines, and ought, in the opinion of the board, to be remedied by relaying the whole length with the iron edge rail, the next session.

George R. Bingham thus describes a trip over the Philadelphia and Columbia Railroad in 1838:

My first visit and trip over the road was in 1838 or the spring of 1839. While the locomotive "Lancaster" was built in 1834, my recollection is that at that time (1838) 8-wheel passenger coaches were being used, with seating capacity for 40 persons, the
truck turning on a king or center bolt, as the seats were permanent, not reversible as they now are. The cars were hauled by horses to the foot of inclined plane. Outside of Columbia, at the head of the plane, the locomotive took the car or cars and hauled them to the incline just west of the Schuylkill, where horses again took hold, taking the cars into Philadelphia.

Of twenty-seven locomotives on the Columbia Road, the new administration found only five fit for service. When Governor David R. Porter took his seat, January 15, 1839, after the "anti-Mason and reform" administration under Joseph Ritner had gone out of power, so great had been the wear and tear that

**UNIVERSAL MAIL**

**PERSEVERANCE LINE.**

**WAY BILL.**

From Philadelphia to Pittsburg.

Passenger Way Bill from Philadelphia to Pittsburgh, containing names of passengers and receipts for fare by agent. March 29th, 1839.

In regard to the passenger cars on the Allegheny Portage Railroad in 1836 he makes this description:

Take two Concord coaches, cut the boots off each, and set them back to back on a low four-wheel truck, with a six-inch board along the side for use of conductor to pass along, collecting the tickets or fares.

During these five years (1834-39) great and unlooked-for deterioration had taken place in the motive power and road-bed of the railroads, and in the locks and embankments of the State canals.

The Commissioners in their report for 1839 stated that they found it necessary, in order to put the lines in proper condition, to demand appropriations as follows:

For extraordinary repairs... $1,678,992
For ordinary repairs........... 1,225,761

Making a total of........... $2,804,753

During the year 1839 safety cars similar to those on the Portage Railroad were used for the first time on the Schuylkill plane.

The administration of Governor Porter proved to be a strong one. New and com-
petent men were placed in control of the State works and an effort was made to improve their condition. During the summer of 1840 a number of wooden cross-ties were placed in the tracks intermediate to the stone blocks. The Canal Commissioners in their report to the Legislature in January, 1841, call attention to the following circumstances connected with the operation of the Philadelphia and Columbia Railroad during the year 1840:

The travel upon this railway was much impeded in the early part of February last by the sudden breaking up of the frost. A considerable part of the road was originally laid upon blocks without a sufficient number of cross-ties to preserve the adjustment necessary for large trains propelled by heavy locomotive engines. The consequence has been that whenever the frost left the ground, the soil becoming saturated, afforded no support to the blocks, the rails would necessarily spread, and the engines and their trains thereby precipitated from the track, to the serious injury to the transporter, a loss of revenue to the commonwealth, and a most annoying interruption to the regular business of the road.

The increasing trade which is thrown on the road from the Cumberland Valley, added to that of a more local character which is constantly accumulat-

U. S. MAIL PERSEVERANCE LINE.

Passenger Way Bill from Philadelphia to Pittsburgh, containing names of passengers and receipts for fare by agent. March 29th, 1848.

with the operation of the Philadelphia and Columbia Railroad during the year 1840:

The travel upon this railway was much impeded in the early part of February last by the sudden breaking up of the frost. A considerable part of the road was originally laid upon blocks without a sufficient number of cross-ties to preserve the adjustment necessary for large trains propelled by heavy locomotive engines. The consequence has been that whenever the frost left the ground, the soil becoming saturated, afforded no support to the ing at several points near the city, is of sufficient importance to justify the erection of a depot at Lancaster.

Only one track was in operation from Whitehall to the head of the inclined plane, the north track having been taken up by the order of the Commissioners. One hundred thousand dollars was appropriated by the Legislature of that year to renew this track, which was completed in the following year.
In their report the Board recommends the repeal of the act of April 15, 1834, giving individuals the right of placing cars upon the railroad for the conveyance of passengers, and declaring their belief that all the passenger business “should hereafter be conducted by the commonwealth.” The Board also recommended that the State purchase the trucks in future, “for the conveyance of the three and four section canal boats over the road.” The report of the Board concludes with the following paragraphs:

One of the chief objections to the main line of our public works is its mixed character, being composed of alternate lines of canal and railroad, and causing, as it must necessarily do, serious delay and considerable expense in the several transshipments. Such a mixed line of communication requires those engaged in the business of transportation, as at present conducted, to be possessed of large capital, which, added to the expense and inconvenience of agencies at the points of transshipment, prevent persons of small means from engaging in the business, and thus in fact rendering the carrying trade a monopoly. The effect of encouraging individual enterprise by enabling every one who may own a boat, to load at Philadelphia and deposit his cargo at Pittsburgh without breaking bulk or without the intervention of agencies, would assuredly be by the reduction of tolls consequent on the competition which would ensue, to secure to our works a large portion of the trade which now seeks other channels.

The merchants of New York, Baltimore and Boston were, at this time, making strenuous efforts to control the vast and profitable trade from the West and the Lakes. Railroads were being constructed from Boston to Lake Erie through the States of New York and Massachusetts. The Boston and Worcester Railroad, the first link in this chain, had been in operation for some years, and the Western Railroad, between Worcester and the line dividing New York and Massachusetts, was partly completed and in a short space of time would be in operation over its entire length. This road, in conjunction with the Hudson and Berkshire Railroad, connected the Massachusetts line with the railroads operating between the Hudson river and Lake Erie. The New York and Erie Railroad, which was then in course of construction, would soon complete a continuous line of railroad from Dunkirk, on Lake Erie, to New York City. The Baltimore and Ohio Railroad, under construction to Cumberland, would surely divert the trade of Ohio from its passage through Pennsylvania to Philadelphia, if the fact was not made plain to the citizens of Pennsylvania that a route existed within their own State over which passengers and freight could be transported from the West and the Lakes at less expense than by any of the foregoing routes.

Under the acts passed July 19, 1839, and May 6, 1840, “the survey for the continuous railroad from Harrisburg to Pittsburgh” was authorized by the Legislature of Pennsylvania.

Charles L. Schlatter, the principal engineer in the State service, was appointed to take charge of the surveys, and began field operations, with the corps of engineers, about the first of September, 1839. He reported the result to the Board on December 27 of the same year.

The Commissioners in their report for 1840 made the following statement concerning Mr. Schlatter’s report:

This information was laid before the Legislature last year, and an act passed increasing the appropriation; also authorizing a survey “to ascertain the practicability of constructing a macadamized road of an easy grade, from some point at or near Chambersburg to a point west of Laughlinsktown.”

The Board have every reason to believe that the surveys have been prosecuted with great skill and vigor, and have proved far more successful than anticipated. A route has been discovered between Harrisburg and Pittsburgh (designated in the report of the engineer as the middle route), following the valley of the Juniata and Susquehanna to the summit of the Allegheny mountain, crossing the mountain two miles north of the Portage Railroad, and passing thence by the valley of the Black Lick to Blairsville, and from Blairsville, in a very direct course, to Pittsburgh, by which the distance has been computed not to exceed two hundred and forty-two miles. On this route no grade occurs having a greater inclination than forty-five feet per mile.

An important discovery has been made during the progress of these surveys, of a railroad line which will connect the Juniata Division to the Penn-
sylvania Canal at Huntingdon with a canal at Johnstown, avoiding the inclined planes on the Portage Railroad, and having no gradient exceeding forty-five feet per mile, without increasing the distance more than four miles.

This location, which was known as the Middle Route, was adopted practically by the engineers in locating the Pennsylvania Railroad six years later.

In 1840 the passage from Philadelphia to Pittsburgh consumed five days, as is shown by the following extract from the Pittsburgh Post of March 14, 1840:

Exchange Buildings, St. Clair Street, and nearly opposite the Pittsburgh Hotel, Wood Street, and at the Canal Basin, head of Penn Street. For the proprietors.

D. Leech & Co.

The same journal states that “This well known and long established line has during the past winter refitted their boats and cars, which are all of the first class, and they are prepared, at the opening of navigation, to carry daily to and from Philadelphia, seventy-five tons each way; having the advantage of owning all the stock which they employ, gives

D. Leech & Co.'s
PACKET EXPRESS
FOR THE CONVEYANCE OF
Merchandise, Bank Notes, Sporting, Jewellery, etc., etc.
Between Philadelphia & Pittsburgh.

Philadelphia, May 5, 1847.

I received of
J. Langhorne
the following packages, which I promise to deliver, (the dangers of the Rail Road and Canal navigation excepted.)

Upon presenting this receipt at our dock in Pittsburgh.

and paying freight at
per

D. Leech & Co.

D. Leech & Co.'s LINE OF PACKETS
AND FREIGHT BOATS, from Pittsburgh to Philadelphia and intermediate places, via canal and railroad. This line is particularly calculated for families and individuals traveling with large quantities of extra baggage, being furnished with a large baggage-room below deck. The cabins are large and comfortably furnished, and the price of passage being much lower than any other packet line on the canal, those to whom economy is an object will find it greatly to their advantage to travel by this line. Time of passage, 5 days—no midship passengers carried on these boats—all baggage at the owner’s risk. For passage, inquire at the offices in the

them the entire control, and consequently can deliver merchandise and produce in as good order and in as short time as the best of the lines on the canal. Their prices for transportation will always be such as may be customary by other good lines.”

The following is extracted from an article descriptive of the Philadelphia and Columbia Railroad, by W. Hasell Wilson, which appeared in the Journal of the Franklin Institute of May, 1840:

Way Bill, issued May 5th, 1847.
The rates of toll for the use of road vary from six mills to four cents per ton (of 2,000 pounds) per mile. There are twelve different rates, the average of which would be two cents per ton per mile. The lowest rates are for coal, stone, iron ore, vegetables, lime, manure and timber, and the highest are for dry goods, drugs, medicines, steel, and furs.

On the United States mail the toll is one mill per mile for every ten pounds. On every passenger, one cent per mile. In addition to these rates a toll is levied of one cent per mile on each burthen car, two cents per mile on each baggage car, and on every passenger car one cent per mile for each pair of wheels.

The motive power toll is; for each car having four wheels, one cent per mile; for each additional pair of wheels, five mills; for each passenger, one cent per mile, and for all other kinds of loading twelve mills per ton (of 2,000 pounds). The owners of cars now charge $3.25 for every passenger and $7.50 for every ton of merchandise conveyed the whole length of the road, they paying all tolls, which is at the rate of four cents per mile for passengers and 9.14 cents per mile for a ton of goods. Taking the length of the road at eighty-two miles, the average number of passengers to an eight-wheel car at thirty, and the load of a four-wheel burthen car at three tons, we have the following results:

- Road toll on an eight-wheel car, four cents per mile.
- Road toll on thirty passengers, thirty cents per mile.
- Motive power toll on car, two cents per mile.
- Motive power toll on thirty passengers, thirty cents per mile.

Total toll for thirty passengers, sixty-six cents per mile, or two and two-tenths cents per mile for each passenger, leaving one and eight-tenths cents per mile to the owners of the car for every passenger.

- Road toll on a four-wheel burthen car, one cent per mile.
- Road toll on three tons of dry goods, twelve cents per mile.
- Motive power toll on car, one cent per mile.
- Motive power toll on three tons of dry goods, three and six-tenths cents per mile.

Total toll on three tons of dry goods, seventeen and six-tenths cents per mile, or 5.86 cents per mile per ton to the owner of the car.

At that time the Superintendent of motive power received $4 a day; agents for passenger trains (now called conductors), $2 a day; agents for burthen trains (now called conductors), $1.50 a day; conductors of State cars, $1.25 a day; master machinist, $4 a day; foreman of workshops, $2 a day; signalmen and assistants, $1.25 a day; engineers of locomotives, $2 a day; firemen of locomotives, $1.25 a day.

The year 1840 closed what is generally designated as the first decade of the American Railroad. During these ten years the locomotive had been steadily improved in mechanism and in power and great advances had been made in railway management.

The railways in the States north and south of Pennsylvania were under the control of corporations and directed by men who, untrammeled by politics, were actuated only by a desire to administer the affairs of the lines under their control economically. The Philadelphia and Columbia Railroad, in connection with the other Pennsylvania State works, had been managed from the beginning by politicians, through whose influence a large number of the officials and employees were appointed. These officers handled large sums of money, and they and their associates had become "a powerful machine for political purposes." For these reasons, as may well be imagined, the Philadelphia and Columbia Railroad did not compare favorably, either in its physical condition, equipment or operation, with other railroads in Pennsylvania and adjoining States.

In the report of the Canal Commissioners for 1841, presented in the following January, the surveys for the continuous railroad from Harrisburg to Pittsburgh were still further discussed, and it was stated that the "Board feel the gravest solicitude in the success of these surveys, as it was rendered evident from the information then obtained that a route by a continuous railroad without inclined planes and low gradients existed within the borders of our own State, by which the trade and travel could be passed between Philadelphia and Pittsburgh cheaper than by any other route known."

The Commissioners believed that the immense cost of the proposed work "may be considered as counterbalanced by the advan-
SAGE TO AVOID COLUMBIA PLAN.

139

tage which must inevitably be given to that route which will convey passengers and trade from the West and from the lakes to the seaboard by the shortest distance and with the least expense for fare and freight. The surveys for a continuous railroad from Harrisburg to Pittsburgh, have, it is confidently believed, established the most desirable route within our own borders.

In 1842 the fare between Philadelphia and Columbia was $3.25 (four cents a mile). Of this amount the transporters paid $1.64 to the State for the use of locomotives and track, the transporters owning the cars.

A resolution, approved 24th of June, 1842, directed that no work except for repairs should be done on the public works of the commonwealth until thereafter ordered by law.

An act, approved July 1, 1842, authorized the Canal Commissioners to purchase trucks for the transportation of sectional boats over the Philadelphia and Columbia, and the Portage Railroads, "provided the whole expense shall not exceed $40,000."

For the first time in the history of the Philadelphia and Columbia Railroad its net receipts for the year 1843, as figured by the Commissioners, amount to five per cent of the original cost, which is alluded to in Governor Porter's message in January, 1844, as "a very gratifying result."

In 1844 there were forty-one locomotives on the Philadelphia and Columbia Railroad, valued at $240,000.

During this year the tonnage approximated 300,000 tons, carried at a cost of one and one-fourth cents per ton for motive power and about five mills per ton for all other expenses. Fifty thousand nine hundred and forty passengers were carried on the road, at the expense of one and four-tenths cents per mile.

The expenses of the Schuylkill plane were about $25,500 for the year. It was during this year (1845) that a system of through clearances was adopted. 55,785 passengers were hauled over the road in 1845, at a cost of one and a third cents per mile.

The freight hauled amounted to 108,354 tons, the cost per ton approximating one and a half cents per mile.

The passengers carried in 1846 numbered 58,248, at a cost of $8.09 c. per mile for motive power and repairs. 139,530 tons of freight were transported, at a cost of $0.84 c. per ton per mile.

In the report of the Superintendent for that year he recommends that the use of "section boats" be dispensed with. He also advises "uniformity in the construction of cars and the appointment of a State Car Inspector."

Forty-three locomotives were then in service on the road, valued at $176,000, or about $4,100 each.

In his report for 1847 the same officer states that nearly all the damage on the road during the year was caused by the breaking down of trucks under section boats. Many of the rails are reported to be entirely worn out.

In the diary of Philip Hone, deposited in the Philadelphia Library, under date of June 10, 1847, he mentions leaving Philadelphia on the cars at seven o'clock in the morning and reaching Harrisburg, 106 miles, at three o'clock in the afternoon, travelling an average speed of thirteen miles an hour.

65,751 passengers were carried and 234,229 tons of freight were moved on the Philadelphia and Columbia Railroad during the year 1847.

INCLINED PLANES DISPENSED WITH.

Soon after through traffic on the Philadelphia and Columbia Railroad was inaugurated, the delays on the Schuylkill and Columbia planes and the expense of maintaining them made it apparent to the railway managers that an effort should be made to construct branches to avoid both planes.

In July, 1835, the editor of the Philadelphia Herald thus comments upon the proposed improvement:

1 The expense of operating the Columbia inclined plane in 1836 was $17,400; of the Schuylkill plane, about $30,000.
We learn that there is a strong probability of a route being obtained by which the inclined plane on the west side, and near the Schuylkill river, may be avoided and the rise overcome by a grade of not more than 2 feet to the mile. The route leaves the present road at the foot of the plane, and if the plane can be dispensed with, the public will undoubtedly demand that it shall be done.

Is it not singular that a discovery so important should have been made at this late period? If so, it would appear that a desire to complete had entirely cast into the shade the importance of

NEW ARRANGEMENT.

PHOENIX LINE.

The proprietors of this Line are pleased to inform their friends that they have made arrangements with the York Rail Road Company to connect with them at Columbia,

Leaving the Depot, No. 272 Market St. Phil'a,

Every day at 10 o'clock, except the Sabbath.

For Downingtown, Lancaster, COLUMBIA AND YORK,

And on its return, will leave the Depot at York at a quarter before 7, Columbia at 8, and Lancaster at 9 o'clock; and will arrive in Philadelphia at 2 o'clock, P. M., thus giving to business men the advantage of five hours in the afternoon, and four hours in the morning before starting from the City.

It is deemed unnecessary to pay much in favor of this Line, as its character has been before the public for fifteen months, and we will leave them to judge whether it is deserving of further patronage or not. One thing we must say, our cars have no superior for either safety or comfort, with Weed's patent safety bench, the heaviest passengers seated on the road, and the bottom of the cars lined with iron. The fare on this line shall be as low on all occasions as any on the road, the Agents careful and accommodating that there be no cause to please the Public.

In order that the friends of this Line may not be deceived by the Agents of others, we give the color of the cars which is a TRUE BLUE.

Traveling Agent:  D. MILLER, (Prop'r.)

P. HAMILTON, J. TUMBLEH, F. HAMILTON.

SS' Passengers by this Line will be taken up and set down at any point along the Road.

D. MILLER & Co.

April 10th, 1845.


leans to the right for about fifteen miles, when it again unites with the road. By this route the distance is increased only about a mile and a half. A reconnaissance was made of this route at the request of the Canal Commissioners by Mr. Gill, who deemed it practicable. Mr. Gay, we understand, is now engaged in making a minute survey of the selecting the best route for this great work. It is, however, better, even late than never, to discover and acknowledge our errors.

The maintenance of the stationary engines and machinery at the Columbia inclined plane also proved to be expensive, and during the
autumn of 1835, by the direction of the Legislature, a survey was made for a branch road at Columbia to avoid the plane.

The success of the locomotive "George Washington," previously referred to, demonstrated the ability of the locomotive to overcome heavier grades than had previously been considered possible, and the route having been finally decided upon in the summer of 1836, the work of constructing the new line at Columbia was contracted for on the 30th of November, 1836.

In consequence, however, of insufficient appropriations the road was not available for use until March 4, 1839. The new line was six and a half miles in length, with an average grade of only about thirty-five feet to the mile.

The present roadbed of the Pennsylvania Railroad occupies the same ground. The intersection of the old road was made five and a half miles east from Columbia.

In 1835, by direction of the Board of Directors of what was known as the West Philadelphia Railroad Company, a survey was made for a new road from the Market Street permanent bridge to a point on the Columbia road known as Buck's Tavern. Under date of October 5, 1835, Mr. H. R. Campbell, engineer, made a report "to the President and Managers of the West Philadelphia Railroad Company," from which the following extract is taken:

In the location of the route, particular care has been taken to avoid curves, and no curves have been made upon a less radius than four thousand feet. The maximum rise of the graded surface of the road is 46 feet per mile, which is one foot per mile more than the maximum grade of the main line of the Columbia and Philadelphia Railroad. A small portion of the line is level, and about one and a half miles are graded at 38 feet per mile. The average grade is 43 3-10 feet per mile, its length being 7 ½ miles, and total rise 325 feet. From its junction with the Columbia Railroad, a short distance from the Buck's Tavern, the route is nearly straight to the Market Street Permanent Bridge over the Schuylkill river, and more direct than the main line of the Columbia Railroad. By its completion, a new outlet will be opened to the travel and transportation of the Columbia Railroad, and the inclined plane at Belmont will be avoided. The distance from the city of Philadelphia to the head of the inclined plane is about four miles, the nearest point to which the locomotives can approach the city. By the West Philadelphia Railroad, locomotives can carry their trains to the line of the city proper, at Market Street Permanent Bridge, and to the tide water of the Schuylkill opposite the city. Trains of cars by this route propelled by locomotive engines will gain one hour in advance of those which pass over the inclined plane by the main route of the Columbia Railroad. This circumstance alone is a sufficient inducement to divert the travel and a large portion of the transportation from the railroad. Statements have been made in the public papers, since the commencement of the West Philadelphia Railroad, that the construction of a line was contemplated by the Canal Commissioners of the State, by which the inclined plane is to be avoided without exceeding a grade of 25 feet per mile, and an increased distance of two miles. It is due to the stockholders of the West Philadelphia Railroad and to the public to state that no such route exists, and that the name of the engineer, given as authority upon which the statement was made, was used without his consent. It is also a fact, susceptible of the clearest proof, that no route exists by which the inclined plane of the Columbia Railroad can be avoided, embracing so many advantages as the route of the West Philadelphia Railroad.

Surveys under direction of the Canal Commissioners were begun in 1837 and conducted at intervals, until every possible route leading through the country in the vicinity of the eastern terminus of the existing railway had been thoroughly explored.

Extensive renewals of the ten miles of track on the eastern portion of the line were deferred in anticipation of a change of route.

In anticipation of increased business from the Pennsylvania Railroad under construction from Harrisburg westward in 1847, the condition of the tracks rendered it compulsory either to build the new branch or to make extensive and costly repairs to the old tracks.

Finally, by act of the Legislature in 1847, W. Milner Roberts was "appointed to survey and report upon a route for avoiding the Schuylkill Inclined Plane."

The survey was made in the summer and the report was completed in the fall, and with maps and all necessary information was sub-
THE PENNSYLVANIA RAILROAD COMPANY.

mitted to the Legislature at the session of 1848-1849.

The report advised the location of the terminus of the road on the west side of the Schuylkill river, near Market street, and the construction of a railroad thence to a point about five miles west of the head of the Schuylkill Plane, the new track to be eight miles long. Mr. Roberts also recommended the sale of the three miles of the old railroad between the old station at Broad and Vine streets and the Schuylkill Plane, including the long wooden bridge below Peter Island known as the Schuylkill Viaduct.

The Canal Commissioners were instructed by the act approved April 15, 1851, that "all that part of the Philadelphia and Columbia Railroad Company from the foot of the Schuylkill inclined plane to the intersection of the railway constructed for the purpose of avoiding said plane will be for sale . . . . to the highest and best bidder." The Commissioners were authorized, after giving public notice of the sale, to decide as to the last date upon which proposals would be received, and also to determine whether the bids were satisfactory. The Philadelphia and Reading Railroad Company purchased this portion of the railroad and also the wooden bridge across the Schuylkill river leading to the foot of the plane.

The line from Thirty-second and Market streets to a point a short distance east of Ardmore was, in 1849, located substantially as advised in Mr. Roberts' report.1

The Market street bridge was soon afterwards adapted for railroad purposes, and railroad tracks were laid across the bridge and east on Market street to the center of Penn Square at Broad street, the city bearing the expense of all the improvements east of the west shore of the Schuylkill river.

That portion of the railroad between the inclined plane and Broad street, with the bridge over the Schuylkill, was afterward bought by the Philadelphia and Reading Railroad Company, and has since constituted a part of that line to Reading. The same company subsequently purchased the remaining portions, from the foot of the plane westward to the point of divergence with the main line of the Columbia Railroad, but the superstructure was soon afterwards removed and the route abandoned.

The business that came over the Pennsylvania Railroad, as it was gradually extended to the West, increased in volume to such an extent that the rapid completion of the new branch avoiding the Schuylkill Plane was necessitated, and by October 14, 1849, the new branch was completed, when the State road from 32d and Market streets, Philadelphia, to Columbia, in fact the whole line from Philadelphia to Altoona, was freed from inclined planes and left with a maximum grade of forty-three feet to the mile at the Gap, and a general limit of thirty feet to the mile.

INCREASED TRAFFIC FOLLOWS OPENING OF PENNSYLVANIA RAILROAD.

In September, 1849, the Pennsylvania Railroad was opened for traffic as far west as Lewisburg, and the receipts of the Philadelphia and Columbia Railroad for the year 1850 increased to $638,450 as against $474,500 received in the year 1846, when the work of construction on the line west of Harrisburg was inaugurated; 265,113 tons of freight and 98,300 passengers being transported over the road as against 139,500 tons of freight and 58,248 passengers transported over that road in 1846.

The traffic continued to increase in 1853, when 170,000 passengers, averaging seventy miles each, passed over the road, the total

1 A substantial station and train-shed was built at 32d and Market Streets prior to the Centennial Exposition of 1876, and was the principal station of the Pennsylvania Railroad Company in Philadelphia until the Broad Street Station was completed in 1893.
SABBATH TRAFFIC CONDEMNED.

There are now on this road FIFTY-FOUR locomotives: 8 first-class, power 130 tons; 9 ditto, power 100 tons; 9 second-class, power 100 tons; 20 third-class, power 70 tons; and 8 fourth-class, power 50 tons, of loading or freight in cars.

This power has been no more than sufficient to do last year's business. To haul next year's ton-

Opposed to all Monopolies.

THE subscribers have placed on the State Road, an entire New Line of Passenger Cars, called

OUR LINE.

These Cars have no superior in point of style, comfort and convenience. They have all the modern improvements, and are No. 1 in every sense of the word.

This Line leaves

NO. 272, MARKET STREET, PHILADELPHIA,

every day at 11; o'clock, A. M. (except the Sabbath,) for LANCASTER, COLUMBIA, YORK, AND HARRISBURG, and on its return leaves Perry's Hotel, Columbia, at 12, Lancaster at 12, and Downingtowns at 2 o'clock, P. M. and arrives at Philadelphia at 4 o'clock, in time to take the eastern line at 5 o'clock, for New York.

These Cars are attached to the Way Train and run in the rear, which gives them a decided preference over any other Cars in case of a collision or a run off, which under the best of management will sometimes occur. Our Passengers and Cars must, from their position in the train, be comparatively free from danger.

The subscribers are aware of the monstrous monopoly against which they have to contend, but they are determined to encounter it, and relying upon the encouragement of all who are opposed to monopolies and in favor of low rates of fare, they will run this line at the following rates, viz:—

THREE CENTS PER MILE,

no more nor no less,—under any circumstances. These are the lowest rates at which passengers can be carried over this road under the present rates of toll charged by the State, which are two cents per mile on each passenger, and $4,99 on each Car.

In order that our friends may not mistake "OUR LINE," we give the color of the Cars, which is "TRUE BLUE," and ask the patronage of a generous public to sustain us in our undertaking.

DAVID MILLER & CO.

April 28, 1861.


Poster.—"OUR LINE.” “TRUE BLUE.” “Opposed to all Monopolies.” Issued by David Miller & Co., the proprietors.

miles travelled being nearly 12,000,000. Of these passengers, 13,763 were emigrants bound for the West. 203,000 tons of freight were moved over the road this year. This increase is explained from the fact that the Pennsylvania Railroad was completed through to Pitts-

burgh, except the mountain division, where the Portage Road was in use, and opened for traffic on the 10th of December, 1852. In commenting upon the condition of the equipment, J. B. Baker, superintendent, states:
In view of the near completion of relaying of both tracks, I would recommend the adoption of a resolution fixing a time for the dismissal of all cars whose journals are less than \( \frac{2}{5} \) in. in diameter.

Mr. Baker also calls attention to the fact that "two trains are run over this road on treasury or the carriers, but on the other hand is a loss. One train may be deemed necessary on account of the mail and the travel from the West. Persons employed on the road are worked briskly and laboriously during the week, and the State would be more advantageously served by affording them one

---

**GREAT REDUCTION OF FARE**

on

**COLUMBIA RAIL ROAD.**

---

The proprietors of the Columbia Rail Road Line having obtained the consent of the Canal Commissioners to a reduction of Toll, the fare on the Columbia Rail Road, on and after June 1st, prox. will be as follows:

- Between Philadelphia and Park... 50 cts.
- Do do Downingtown... 75 cts.
- Do do Lancaster... 85 cts.
- Do do Columbia... 83 00

And to other Stations at the rate of 2½ cents per mile.

**THO’S. MOORE,**

Agent of Columbia Rail Road Line, and of Pennsylvania Rail Road Company.

---

Printed Poster, announcing "Great Reduction of Fare." Issued May 24th, 1852. Philadelphia and Columbia Railroad.

Sunday, one of which might profitably be dispensed with," and further, puts his stamp of disapproval on railroad operations on the Sabbath in the following terms:

The travel on this day affords no profit to the day of rest; besides it may not be improper for me to say that it has been decided that some avocations are not lawful when pursued on this day, and that this great thoroughfare should set an example of its respect for the laws as well as the day by ceasing the uproar and excitement consequent upon passing trains on Sundays.
SALE OF THE STATE'S RAILROADS, 1857.

The State Treasurer reported to the Legislature in 1854 that during the twenty years 1834 to 1853, inclusive, the total salaries paid on all the State works to Canal Commissioners, engineers, superintendents, weigh-masters, collectors and lock-keepers had amounted to $1,678,413.

The following is a statement of the receipts and expenditures on the Philadelphia and Columbia Railroad for the ten years 1845 to 1854, inclusive:

**PHILADELPHIA AND COLUMBIA RAILROAD.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Receipts</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>$417,659</td>
<td>$197,931</td>
</tr>
<tr>
<td>1846</td>
<td>474,550</td>
<td>343,548</td>
</tr>
<tr>
<td>1847</td>
<td>574,088</td>
<td>355,241</td>
</tr>
<tr>
<td>1848</td>
<td>558,236</td>
<td>371,016</td>
</tr>
<tr>
<td>1849</td>
<td>582,750</td>
<td>394,856</td>
</tr>
<tr>
<td>1850</td>
<td>638,296</td>
<td>371,016</td>
</tr>
<tr>
<td>1851</td>
<td>698,983</td>
<td>336,284</td>
</tr>
<tr>
<td>1852</td>
<td>763,644</td>
<td>389,237</td>
</tr>
<tr>
<td>1853</td>
<td>810,479</td>
<td>399,761</td>
</tr>
</tbody>
</table>

And the Pennsylvania Railroad Company, under whose ownership these works passed on the first day of August, 1857, became the purchasers at the price of seven million and a half dollars, they being the only bidders. In anticipation of the sale of the public works, before January 1, 1857, the equipment of the Philadelphia and Columbia Railroad had been reduced to nineteen narrow passenger cars.

1 Pennsylvania Railroad opened to Lewistown, September, 1849.

2 Through railroad to Pittsburgh opened December, 1852.

3 Further information concerning this subject will be found in the chapter entitled “The Decadence of the State Works.”
six emigrant cars, eight baggage cars, which in addition to seventy-nine locomotives turned over to the Pennsylvania Railroad Company in August, were found to be in very poor condition.

Since the purchase of the Philadelphia and Columbia Railroad by the Pennsylvania Railroad Company many criticisms were made upon the crooked line and other defects of the road, but it should be remembered that when the original location of the road was made in 1829-30, railroad engineering in America was in its infancy and only two locomotives had been experimented with on the Western Hemisphere.

While the internal improvements of the State were not successful from a financial point of view, when considered per sc, the commonwealth was fully recompensed for the amount expended in their construction by the benefits which afterward resulted from the development of the resources of Pennsylvania and the adjoining States. Philadelphia became the market for the inhabitants of an extensive section of the country, who would otherwise have sent their commodities to other points on the Atlantic seaboard. By the impetus given to industrial pursuits of all kinds Pennsylvania became a wealthy and powerful State.

As has been stated by W. Hasell Wilson, the veteran civil engineer, in his valuable paper on "The Internal Improvements of Pennsylvania," to the pages of which, written seventeen years ago, the author is indebted for many of the facts here recorded: "Errors were without doubt committed in the design as well as the execution of the State internal improvements, but in reviewing their history, allowance should be made for the times and circumstances under which they were projected and constructed. They compared favorably with contemporaneous works in any part of the world, and it is neither fair nor just to criticise them by the superior light of the present day."